

DUANE ARNOLD ENERGY CENTER
TECHNICAL SPECIFICATION IMPROVEMENT PROGRAM

BASES FOR PROPOSED TECHNICAL SPECIFICATION
CHANGES TO ACCOMMODATE 18-MONTH OPERATING CYCLES

APRIL 1986

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1.0 INTRODUCTION AND SUMMARY

The core of the Duane Arnold Energy Center (DAEC) has been designed and analyzed to demonstrate the capability of fulfilling the safety and operational requirements for an 18-month operating cycle. The licensing analyses, including the updated safety analysis, supporting an 18-month operating cycle, are contained in Reference 1. The licensing analyses did not address changes to the technical specifications which are necessary to effectively implement 18-month operating cycles consistent with plant operational requirements.

The current technical specifications (Reference 2) define "operating cycle" (the interval which governs instrument and electrical surveillance) as 15 months or less. This definition is inconsistent with plant operational requirements, as many surveillance tests required by the technical specifications should be or must be performed during periods of planned plant shutdown, such as refueling. In order to be consistent with plant operational requirements, the surveillance frequencies must be changed. However, before this can be done, all surveillance tests now required to be performed with the frequency of once per operating cycle must be evaluated to assess the impact of longer intervals between surveillance tests.

The purpose of this report is to provide the bases for changing the current technical specifications for surveillance frequencies to accommodate core designs for operating cycles up to 18 months in length with a 25 percent allowance for operational uncertainties. In developing

the proposed technical specification changes, there are five primary considerations:

1. The allowable plant operating mode for performing the required surveillance tests;
2. The available surveillance test data base, including any deviations from expected results encountered during the surveillance tests;
3. The relative safety importance of the surveillance tests;
4. The significance of any deviations encountered during the surveillance tests; and
5. The current plant surveillance program requirements.

In evaluating surveillance test frequencies, it was determined that, in order to implement revised technical specifications for 18-month operating cycles, the definitions of "operating cycle," "refueling outage," and "surveillance frequency" would be changed and a new definition of "annual," as related to surveillance frequency, added. These revised definitions are provided in Section 2.0 and are included in the technical specifications accompanying this report.

In order to identify which technical specifications required changing, the current technical specifications were reviewed. All current technical specifications with a surveillance frequency of 12 to 36 months, including

those stated as "once per operating cycle" or "performed during refueling outages," were listed. These technical specifications were then examined, using the criteria contained herein, to establish which surveillance tests were candidates for increased surveillance test intervals. The results of this review and evaluation are contained in Section 3.0.

Each candidate for change was then evaluated to determine whether sufficient bases existed to justify extension of the surveillance test interval. The results of these evaluations are contained in Section 4.0 and a summary of each individual technical specification change evaluation is presented in Appendix A.

The evaluation of "no significant hazards consideration" is provided in Section 5.0.

Based upon our engineering judgment, as confirmed by the evaluations of the specifications reviewed, it was concluded that sufficient bases existed for extending the surveillance test intervals set out in the technical specifications which are addressed in the attached technical specification change request. Our conclusions are presented in Section 6.0, and the references are included in Section 7.0.

2.0 REVISED TECHNICAL SPECIFICATION DEFINITIONS

The current technical specifications are based on an operating cycle of approximately one year in length. As a result, certain definitions in the technical specifications require modification to reflect the use of 18-month operating cycles with a 25 percent allowance for operational uncertainties. The definitions which require change are: "operating cycle," "refueling outage," and "surveillance frequency." In addition, a new definition, "annual," should be added to the technical specifications to describe surveillance tests which will continue to be performed every 12 months. The proposed revised definitions are provided below.

Operating Cycle: For the purpose of designating surveillance test frequencies, the duration of an operating cycle shall not exceed 18 months plus 25 percent. Surveillance tests designated "once per operating cycle" shall be conducted during each operating cycle except that surveillance tests performed during an outage which commences before expiration of the operating cycle may be considered timely.

Refueling Outage: Refueling outage is the period of time between the shutdown of the unit prior to a refueling and the startup of the unit after that refueling. For surveillance test purposes, tests are to be performed during refueling outages as indicated in these technical specifications. In cases where the surveillance test frequency is required to be performed more than once during a refueling outage (e.g., once per week during refueling), the surveillance test shall not be performed less frequently than required by these technical specifications plus or minus 25 percent.

Annual: Occurring every 12 months. For the purpose of designating surveillance test frequencies, annual surveillance tests are to be conducted once every 12 months plus or minus 25 percent.

Surveillance Frequency: Periodic surveillance tests, checks, calibrations and examinations shall be performed within the specified surveillance intervals. In cases where the elapsed interval for annual and more frequent tests is within the specified interval (100 percent plus or minus 25 percent of the allowable interval), the next surveillance interval shall commence at the end of the original specified interval (100 percent of the allowable surveillance interval). In cases where the elapsed interval is less than 75 percent of the specified interval, the next surveillance interval may commence upon completion of the surveillance test.

3.0 TECHNICAL SPECIFICATION REVIEW AND EVALUATION

To identify the technical specification surveillance tests which should be considered candidates for increased test intervals, the current technical specifications were reviewed to determine which specifications could be affected by the use of longer operating cycles. During the review, a list of each surveillance test with a frequency of 12 to 36 months was prepared. Included on this list were all surveillance tests performed "once per operating cycle" and "during refueling outages."

Only surveillance tests listed in the current technical specifications were considered. Technical specification reporting requirements, tests performed in accordance with the requirements of the American Society of Mechanical Engineers (ASME), tests resulting from commitments to the NRC's Office of Inspection and Enforcement, and tests to comply with the requirements of the Fire Protection Insurance Program were excluded.

After the list of potentially-affected technical specifications was prepared, the related Surveillance Test Procedures (STPs) were identified. The STPs were then screened to identify those test intervals which were candidates for extension. The primary considerations were engineering judgment, the current STP frequency, current technical specification test frequency, and a preliminary assessment of the failure occurrences which had been encountered in past performances of the STPs. The detailed review of the STP data base to evaluate longer surveillance intervals is described in Section 4.0.

Surveillance tests currently performed annually during a specified month, which do not require plant shutdown or a change in plant operating status, were eliminated as candidates for extension. An evaluation of the surveillance test data base was then made for the remaining surveillance tests following the screening process to determine which test intervals should be evaluated to be increased because of their impact on current plant test practices. As a result of this process, we concluded that the surveillance test frequency intervals for the 50 technical specifications which are listed in Table 3-1 should not be increased at this time.

The technical specification surveillance tests identified in Table 3-1 should continue to be performed on an annual basis. Although the revised definitions will apply to these technical specifications, the test intervals for the listed surveillance tests remain unchanged and the revised definitions do not affect the original technical bases. Therefore, no unreviewed safety questions, as defined by 10 CFR 50.59, exist.

Next, those tests with a required frequency of once per 18 months to once per 36 months were identified. Included in this group are tests which must be performed on a "special" test frequency as stated in the technical specifications and are not associated with a refuel or plant shutdown mode. In 17 cases, it was determined that the recommended surveillance test frequency was the same as or more frequent than the current test frequency. The language of the technical specifications for the surveillance tests identified in Table 3-2 requires revision in order to maintain the same inspection frequency and incorporate the proposed new definitions. However, the test intervals for the tests identified in

Table 3-2 remain unchanged, as do the original technical bases. Therefore, the changes recommended in Table 3-2 should be implemented to be consistent with current plant test practices and recommended changes in technical specification definitions. Because the proposed changes in technical specification definitions do not change any technical specification tests or surveillance intervals, no unreviewed safety questions, as defined by 10 CFR 50.59, exist.

Finally, those tests now required to be performed during refueling outages were reviewed to determine whether the reactor must be in the refueling mode in order to perform the test. In 17 cases, it was determined that the tests were related directly to the refueling or plant shutdown mode and were not affected by the length of the operating cycle. These surveillance tests are identified in Table 3-3.

In some cases, the language of the technical specifications for the tests identified in Table 3-3 must be changed to incorporate the proposed new definitions. Because of the unique nature of the tests identified in Table 3-3, the revisions of definitions do not change the original technical bases and must be implemented to be consistent with current test practices. Because the proposed changes in technical specification definitions do not change any test or surveillance intervals, no unreviewed safety questions, as identified by 10 CFR 50.59, exist.

After completion of the review and evaluation process described in this section, we evaluated the remaining technical specifications for possible changes in surveillance frequency. The process for evaluating the proposed technical specification changes is described in Section 4.0.

Table 3-1

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM

ANNUAL SURVEILLANCE TEST INTERVALS

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
1)	3.1-2	4.1.B.2	RPS MG Set OV, UF, UF, and EPA Functional Test and Calibration	Annual	1/0.C.
2)	3.2-24	Table 4.2-A Item 3	Main Steamline Area High Temperature Instrument Functional Test/ <u>Calibration</u>	Annual	1/0.C.
3)	3.2-24	Table 4.2-A Item 4	Reactor Low Water Level (Recir. and MSIV Trip) Functional Test/ <u>Calibration</u>	Annual	1/0.C.
	and				
	3.2-34	Table 4.2-G			
4)	3.2-24	Table 4.2-A	PCIS (Steamline Isolation) Logic System Functional Test	Annual	1/0.C.
5)	3.2-24	Table 4.2-A Item 9	Reactor Water Cleanup System Steam Leak Detection Instrument Functional Test/ <u>Calibration</u>	Annual	1/0.C.
6)	3.2-24	Table 4.2-A Item 11	Main Condenser Loss of Vacuum Instrument Functional Test & <u>Calibration</u>	Annual	1/0.C.
7)	3.2-24	Table 4.2-A	PCIS (Reactor Water Cleanup Isolation) Logic System Functional Test	Annual	1/0.C.
8)	3.2-26	Table 4.2-B Item 10	RCIC Steam Leak Detection Temperature Monitoring System Functional Test/ <u>Calibration</u>	Annual	1/0.C.
9)	3.2-26	Table 4.2-B Item 10	Suppression Chamber Steam Leak Detection Temperature Monitoring System Functional Test/ <u>Calibration</u>	Annual	1/0.C.
10)	3.2-26	Table 4.2-B Item 10	HPCI Steam Leak Detection Temperature Monitoring System Functional Test/ <u>Calibration</u>	Annual	1/0.C.

Table 3-1

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM

ANNUAL SURVEILLANCE TEST INTERVALS
(continued)

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
11)	3.2-26	Table 4.2-B Item 13	4KV Emergency Bus Degraded Voltage Functional Test/ <u>Calibration</u>	Annual	1/0.C.
12)	3.2-26	Table 4.2-B Item 13	4KV Emergency Bus Under- voltage Relay Instrument <u>Functional Test/Calibration</u>	Annual	1/0.C.
13)	3.2-26	Table 4.2-B Item 4,13	4KV Emergency Bus Sequential Loading Relay Instrument <u>Functional Test/Calibration</u>	Annual	1/0.C.
14)	3.2-26	Table 4.2-B Item 13	4KV Emergency Bus Under- voltage Instrument Calibration	Annual	1/0.C.
15)	3.2-26	Table 4.2-B Item 13	ECCS Bus Power Relay Drop Out Voltage Measurement	Annual	1/0.C.
16)	3.2-26	Table 4.2-B Item 14	Instrument AC and Battery Bus Undervoltage Relay Calibration	Annual	1/0.C.
17)	3.2-27 and 3.2-26	Table 4.2-B Item 1,8 Item 4	Core Spray Trip System Logic Functional Test and Timer Calibration	Annual	1/0.C.
18)	3.2-27 and 3.2-26	Table 4.2-B Item 2,8 Item 4	LPCI Trip System Logic Functional Test and Timer Calibration	Annual	1/0.C.
19)	3.2-27	Table 4.2-B Item 3,8	Containment Spray Cooling Logic System Functional Test	Annual	1/0.C.
20)	3.2-27	Table 4.2-B Item 4,8	HPCI Actuation Logic System Functional Test	Annual	1/0.C.

Table 3-1

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM

ANNUAL SURVEILLANCE TEST INTERVALS
(continued)

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
21)	3.2-27	Table 4.2-B Item 5	HPCI System Auto Isolation Logic Functional Test	Annual	1/0.C.
22)	3.2-27	Table 4.2-B Item 7	RCIC System Auto Isolation Logic Functional Test	Annual	1/0.C.
23)	3.2-27	Table 4.2-B Item 9	Low-Low Set Instrument Functional Test and Calibration	Annual	1/0.C.
24)	3.2-29	Table 4.2-D	Steam Jet Air Ejector Offgas Line Isolation Logic System Functional Test	Annual	Refuel
25)	3.2-29	Table 4.2-D	Steam Jet Air Ejector Charcoal Bed Bypass Logic System Functional Test	Annual	Refuel
26)	3.2-30	Table 4.2-E	Drywell Equipment & Floor Drain Sump Flow Timer Functional Test and <u>Calibration</u>	Annual	1/0.C.
27)	3.2-34	Table 4.2-G	Reactor High Pressure (Recirc. Trip) Instrument Functional Test/Calibration	Annual	Refuel
28)	3.2-34a	Table 4.2-H	Reactor Building Stack Radiation Monitoring System Functional Test/ <u>Calibration</u>	Annual	1/0.C.
29)	3.2-34a	Table 4.2-H	Turbine Building Vent Radiation Monitoring System <u>Calibration</u>	Annual	1/0.C.
30)	3.2-34a	Table 4.2-H	Offgas Stack Radiation Monitoring System <u>Calibration</u>	Annual	1/0.C.

Table 3-1

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM

ANNUAL SURVEILLANCE TEST INTERVALS
(continued)

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
31)	3.2-34a	Table 4.2-H	Post-Accident Sampling System Functional Test	Annual	1/O.C.
32)	3.2-34a	Table 4.2-H	Post-Accident Analysis Laboratory Operational Test/Calibration	Annual	1/O.C.
33)	3.5-1	4.5.A.1a	Core Spray Quarterly & <u>Annual</u> Operability Test	Annual	1/O.C.
34)	3.5-2	4.5.A.3a	LPCI System Quarterly & <u>Annual</u> Operability Test	Annual	1/O.C.
35)	3.5-7	4.5.E.1a	RCIC Actuation Logic System Functional Test	Annual	1/O.C.
36)	3.5-11	4.5.H.2	LPCI Filled Discharge Piping Functional Test (Combined with 45A002-A)	Annual	1/O.C.
37)	3.5-11	4.5.H.2	Core Spray Filled Discharge Piping Functional Test (Combined with 45A001-A)	Annual	1/O.C.
38)	3.7-13	4.7.A.6a	Containment Atmospheric Dilution System Functional Test	Annual	1/O.C.
39)	3.7-13 -14	4.7.A.6c	CAD Systems Analyzers Functional Test and Calibration	Annual	1/O.C.
40)	3.7-15	4.7.B.1a	Standby Gas Treatment System Pressure Drop Test	Annual	1/O.C.
41)	3.7-15	4.7.B.1b	Standby Gas Treatment System Heater Output Check	Annual	1/O.C.
42)	3.7-15 and 3.7-16	4.7.B.1c 4.7.B.2a	Standby Gas Treatment System HEPA & Charcoal Filter Efficiency Tests	Annual	1/O.C.
43)	3.7-15	4.7.B.1e	Standby Gas Treatment System Bypass Operability Test	Annual	1/O.C.

Table 3-1

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM

ANNUAL SURVEILLANCE TEST INTERVALS
(continued)

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
44)	3.8-2	4.8.A.1e	Standby Diesel Generator Annual Inspection	Annual	Annual
45)	3.10-1 and 3.10-1	4.10.A.1 4.10.A.2a	Main Control Room Ventilation Standby Filter Units Test	Annual	1/O.C.
46)	3.10-2	4.10.A.3	Main Control Room Ventilation Test	Annual	1/O.C.
47)	3.13-3 and 3.13-4	4.13.B.1e 4.13.B.1h	Diesel & Electric Fire Pump Operability	Annual	1/18 mos & Annual
48)	3.13-5	4.13.C.1a	Deluge System Operability Tests (5 rooms)	Annual	Annual
49)	3.13-6	4.13.D.1b	CO ₂ System Simulated Actuation Test	Annual	Annual
50)	3.13-7	4.13.E.1b	Fire Hose, Gasket, & Valve Integrity	Annual	Annual

Table 3-2

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM
CURRENT TECHNICAL SPECIFICATION SURVEILLANCE INTERVAL UNCHANGED

	TS Pg #	Tech Spec #	Item	Proposed TS Frequency	Current TS Frequency
1)	3.1-1	4.1.A.2	RPS Channel Response Time Check	1/0.C.	1/18 Mos
2)	3.1-1	4.1.A.2	Reactor High Pressure (RPS) Instrument Response Time	1/0.C.	1/18 Mos
3)	3.1-1	4.1.A.2	Reactor Low Water Level Instrument (RPS) Response Time	1/0.C.	1/18 Mos
4)	3.2-29	Table 4.2-D	Refuel Area Exhaust Monitors Test and Calibration	1/0.C.	Refuel
5)	3.2-29	Table 4.2-D	Reactor Building Area Exhaust Monitors Test and Calibration	1/0.C.	Refuel
6)	3.2-29	Table 4.2-D	Offgas Post-Treatment Radiation Monitors Test and Calibration	1/0.C.	Refuel
7)	3.2-29	Table 4.2-D	Offgas Pre-Treatment Radiation Monitors Test and Calibration	1/0.C.	Refuel
8)	3.5-9	4.5.F.1.a	ADS Simulated Automatic Actuation Test	1/0.C.	Refuel
9)	3.5-9	4.5.F.1.b	ADS Accumulator Check Valve Test	1/0.C.	Refuel
10)	3.6-10	4.6.H.1	Hydraulic & Mechanical Snubber Visual Inspection	Current Tech Spec	SP
11)	3.6-12	4.6.H.3	Hydraulic & Mechanical Snubber Operability Check	Current Tech Spec	SP
12)	3.7-4 and 3.7-6	4.7.A.2 a(9) 4.7.A.2d(1)	Primary Containment Leak Rate Test (Type A Test, or Integrated Leak Rate Test)	Current Tech Spec	SP
13)	3.7-6	4.7.A.2 d(2)(a)	Leak Rate Test - Type B Penetrations Test	Current Tech Spec	SP
14)	3.7-6	4.7.A.2 d(2)(b)	Airlock Local Leak Rate Test	Current Tech Spec	SP
15)	3.7-7	4.7.A.2 d(3)	Containment Isolation Valve Tightness Test - Type C Penetrations	Current Tech Spec	SP
16)	3.13-3	4.13.B.1f	Fire Suppression Water System Ring Header Flush	Current Tech Spec	SP
17)	3.13-8	4.13.F.1a	Fire Barrier Penetration Seals Inspection	Current Tech Spec	SP

NOTE: SP is used to indicate a special surveillance test frequency as defined by the specific current technical specifications.

Table 3-3

DAEC TECHNICAL SPECIFICATION (TS) IMPROVEMENT PROGRAM
SURVEILLANCE TESTS RELATED TO REFUELING OUTAGES OR PLANT SHUTDOWN

	<u>TS Pg #</u>	<u>Tech Spec #</u>	<u>Item</u>	<u>Proposed TS Frequency</u>	<u>Current TS Frequency</u>
1)	3.1-8 and 3.2-28	Table 4.1-1 Table 4.2-C	IRM Trip Functional Test & Calibration (High Flux & Inoperative)	Current Tech Spec	SP
2)	3.1-8	Table 4.1-1	APRM High Flux (15% Scram) Instrument Functional Test/Calibration	Current Tech Spec	SP
3)	3.1-12	Table 4.1-2	APRM to IRM Comparison on Controlled Shutdowns	Current Tech Spec	SP
4)	3.2-28	Table 4.2-C	SRM/IRM Detector Not in the Startup Position Calibration	Current Tech Spec	SP
5)	3.2-28	Table 4.2-C	SRM/IRM Detector Not in the Startup Position Functional Test	Current Tech Spec	SP
6)	3.2-28	Table 4.2-C	SRM Trip Functional Test & Calibration	Current Tech Spec	SP
7)	3.2-31	Table 4.2-F	APRM Gain Adjust Calibration	Current Tech Spec	SP
8)	3.3-3 3.3-3 and 3.3-4	4.3.B.1a 4.3.B.1b 4.3.B.1c	Nuclear Instrument Response to Control Rod Motion & Control Rod Coupling Integrity Check	Current Tech Spec	SP
9)	3.3-4	4.3.B.3	RSCS & Rod Worth Minimizer Capability Tests	Current Tech Spec	SP
10)	3.3-5	4.3.B.4	Control Rod Withdrawal Requirements	Current Tech Spec	SP
11)	3.3-7	4.3.D	Reactivity Anomalies Check	Refuel	SP
12)	3.6-1	4.6.A.1	Heatup and Cooldown Rate Log	Current Tech Spec	SP
13)	3.6-2	4.6.A.3	Reactor Vessel Head & Head Flange Thermal Limitation	Current Tech Spec	SP
14)	3.6-3	4.6.B.1c	Reactor Coolant Gamma and Iodine Activity	Current Tech Spec	SP
15)	3.6-3b	4.6.B.2a	Reactor Coolant Chloride Ion and Conductivity	Current Tech Spec	SP
16)	3.9-1	4.9.A.1	Refueling Interlocks Functional Tests	Current Tech Spec	SP
17)	3.9-4	4.9.B	SRM Daily Response Check	Current Tech Spec	SP

NOTE: SP is used to indicate a special surveillance test frequency as defined by the specific current technical specifications.

4.0 TECHNICAL SPECIFICATION CHANGE EVALUATION

The technical specification candidates for extension of surveillance test intervals were identified through the process described in Section 3.0. Each candidate was evaluated considering the available Surveillance Test Procedure (STP) data. At the DAEC, approximately 10 years of surveillance test results exist and can be used in the evaluation process. The sources of data were Deviation Reports (DRs) and Licensee Event Reports (LERs) as recorded in the plant computer data bases. This information was used in conjunction with our engineering judgment to determine whether extension of each surveillance test interval was warranted.

The majority of STPs are performed to demonstrate compliance with technical specification test requirements. DRs are prepared each time there is an equipment malfunction, a failure to satisfy the STP acceptance criteria, or other occurrence resulting in the unsatisfactory completion of an STP. A computer sort of the DR data base was performed for each STP related to a candidate technical specification. This process provided the DR data base pertinent to the tests being considered for increased surveillance intervals.

The DRs identified through the sorting process were then reviewed to determine whether the particular surveillance test under consideration would uniquely identify the equipment failure modes which had been encountered.

LERs are prepared and submitted to the NRC as required by NRC regulations. Prior to the January 1984 revision of the LER reporting requirements, LERs were generally prepared for equipment performance outside the limits identified in the technical specifications. The LERs, therefore, constitute an important data base that includes more failures than are currently required to be reported. Evaluation of the LER data base identified LERs applicable to the STPs which, in turn, are associated with specific candidate technical specifications.

Initially, all LERs were computer sorted to identify those originated in surveillance testing. Those LERs were then reviewed to establish whether the failure mode encountered would have been only identified by an STP that is used to demonstrate compliance with any of the technical specifications which are candidates for extension of surveillance intervals. Through this process, a list of applicable LERs and their associated STPs was prepared for further evaluation. Through the collective sorting process described above, the DRs and LERs applicable to the candidate technical specifications and associated STPs were identified for further evaluation. Each candidate technical specification and associated STP was evaluated to determine whether an increase in surveillance test interval would involve an unreviewed safety question in accordance with 10 CFR 50.59.

In the evaluation process, three types of situations were encountered. In the first case, no applicable DR or LER was identified. In the second case, three or less applicable DRs and LERs were identified which were random in nature. In the third case, a larger number of DRs and LERs were encountered. The evaluation process is described below and documented in Appendix A.

In the first case, the absence of DRs or LERs provides confidence that the technical specification surveillance interval can reasonably be increased without introducing an unreviewed safety question. The introduction of a longer technical specification test interval does not significantly increase risk and is considered acceptable. Should future performance of the STPs detect a potential generic concern, a specific test program may be implemented to reduce the likelihood of recurrence or determine the root cause.

In the second case, each applicable DR and LER was evaluated to determine its significance. As long as the failures appeared to be random, e.g., different failures modes, and actions had been taken to prevent recurrence, the change in risk introduced by a longer technical specification test interval does not significantly increase risk and is considered acceptable.

In the third case, each applicable DR and LER was evaluated to determine its significance. In addition, the test results and the apparent failure mechanism were reviewed and extension of the surveillance test frequency was evaluated for safety considerations. If the evaluation concluded that no unreviewed safety question existed, a longer technical specification test interval is considered acceptable. The evaluation process described in this section, and documented in Appendix A, provides the bases for the conclusion that the proposed extension in surveillance test intervals involved "no significant hazards consideration." The "no significant hazards consideration" evaluation is described in Section 5.0.

5.0 "NO SIGNIFICANT HAZARDS CONSIDERATION" EVALUATION

The proposed technical specification changes recommended as a result of the evaluations described in this report have been reviewed and have been determined to involve no significant hazards. The changes which result only from the proposed revisions of definitions (i.e., "operating cycle," "refueling outage," "annual," and "surveillance frequency") and do not extend the surveillance interval or change its technical bases (as described in Section 3.0) are considered to involve no significant hazards because they are administrative changes and do not involve changes in technical specification testing requirements. The bases for conclusions regarding those proposed revisions of technical specifications which involve an actual extension of surveillance test interval identified in Section 4.0 are provided below, with specific responses to the considerations identified in 10 CFR 50.92.

- (1) Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No. Each of the proposed technical specification changes which involves an extension in surveillance test interval was specifically evaluated using the Duane Arnold Energy Center (DAEC) surveillance test data. Based upon these evaluations and engineering judgment, it has been determined that the proposed increases in surveillance test intervals represent a negligible potential increase in the consequences of accidents previously evaluated. The proposed technical specification changes are generally not associated

with safety analysis event initiators described in Chapter 15 of the DAEC UFSAR and therefore do not significantly affect event probability.

The basis for this conclusion is explained by the evaluation process and engineering judgment as described in Section 4.0 and documented in Appendix A.

- (2) Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No. Each of the proposed technical specification changes which involves an extension in surveillance test interval was specifically evaluated to determine whether the change could create the possibility of a new or different kind of accident. The increase in surveillance test interval does not involve any change in technical specification setpoints, plant operation, or plant configuration. Therefore, the changes in surveillance test interval do not create the possibility of a new or different kind of accident from any previously evaluated.

- (3) Does the proposed license amendment involve a significant reduction in a margin of safety?

Response: No. Each of the proposed technical specification changes which involves an extension in surveillance test interval was specifically evaluated to determine whether the change could reduce

the plant margin of safety. Based upon this evaluation, it has been determined that any small changes in equipment performance introduced by increased technical specification surveillance test intervals would not be expected to impact significantly the plant safety analysis, and therefore would not result in a significant reduction in the margin of safety of the plant. In the April 6, 1983 Federal Register, the NRC published examples of amendments that are not likely to involve a significant hazards consideration if operation of the facility in accordance with the proposed amendment involves only one or more of the following examples. Example numbers (i), (iii), (iv), and (vi) of that list state:

- (i) A purely administrative change to technical specifications: for example, a change to achieve consistency throughout the technical specifications, correction of an error, or a change in nomenclature.
- (iii) For a nuclear power reactor, a change resulting from a nuclear reactor core reloading, if no fuel assemblies significantly differ from those found previously acceptable to the NRC for a previous core at the facility in question are involved. This assumes that no significant changes are made to the acceptance criteria for the technical specifications, that the analytical methods used to demonstrate conformance with the technical specifications and regulations are not significantly changed, and that NRC has previously found such methods acceptable.

- (iv) A relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated. This assumes that the operating restriction and the criteria to be applied to a request for relief have been established in a prior review and that it is justified in a satisfactory way that the criteria have been met.

- (vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

The above examples fit within the framework of the proposed technical specification changes. The changes in technical specification definitions are intended to achieve consistency throughout the technical specifications and are similar to example (i). The extension of technical specification test intervals results from core reload design changes which permit 18-month operating cycles. A safety analysis of the reload using previously approved methodology is documented in Reference 1 and is similar to example (iii). The technical specification surveillance intervals were generally established in the original plant license and, as described in Section 4.0, the surveillance test data base has been evaluated (in conjunction with engineering judgment) to provide the bases for

extension of the surveillance interval. This is a "relief" similar to example (iv). The changes satisfy existing safety analysis event acceptance criteria, and thus fall within example (vi). Therefore, based upon the above information, the proposed technical specification changes should be judged to involve "no significant hazards consideration."

6.0 CONCLUSIONS

Based upon evaluations of the DAEC surveillance test data base, in conjunction with engineering judgment, it is concluded that the technical specification surveillance test intervals, as evaluated in Appendix A, can be extended to accommodate an 18-month operating cycle without the introduction of an unreviewed safety question and without involving a significant hazards consideration, as identified by 10 CFR 50.92.

Specifically, 17 STPs had no applicable LERs or DRs; 16 STPs had 3 or less applicable DRs and LERs which were apparently random in nature and found to involve no unreviewed safety question; and the 5 STPs which had more than 3 applicable DRs and LERS were subjected to safety evaluations which determined that no unreviewed safety questions existed pursuant to 10 CFR 50.59. Collectively, the specific evaluations performed on the proposed technical specifications provide assurance that the changes involve "no significant hazards consideration."

In addition, the proposed revisions of definitions discussed in Section 2.0 should be incorporated into the DAEC Technical Specifications. It is anticipated that adoption of the revised definitions will eliminate potentially confusing requirements, such as which surveillance tests must be performed during a refueling outage because they are associated with the refueling process and which tests may be performed during a convenient opportunity.

Also, the technical specifications identified in Tables 3-1, 3-2, and 3-3 will be changed by virtue of revising the definitions although no increase

in surveillance test interval is involved. None of these changes represents an unreviewed safety question in accordance with 10 CFR 50.59, or involves a significant hazards consideration in accordance with 10 CFR 50.92.

In conclusion, it should be recognized that the extension of the operating cycle from 12 to 18 months represents a negligible or, at most, a small incremental risk. We recommend extension of the intervals for 47 technical specification surveillance tests, and there are strong operational, safety, and economic reasons for these extensions. The benefits of the proposed longer surveillance intervals associated with 18-month operating cycles include the following:

1. A longer operating cycle should improve the DAEC plant capacity factor by reducing the number of refueling outages during the plant lifetime.
2. The longer operating cycle should reduce the overall plant shutdown and cooldown cycles over the plant lifetime.
3. The increased surveillance test intervals should result in slightly reduced radiation exposures to plant personnel performing surveillance testing.
4. The increased surveillance test intervals should result in slightly reduced component wear.

5. The proposed changes in technical specification definitions should result in more efficient utilization of manpower during refueling outages by providing more flexibility in test scheduling.
6. The proposed changes in technical specifications are consistent with current plant surveillance practices and can be implemented with minimal impact.
7. The STP intervals are more consistent and easier to understand and should be more consistently interpreted.

7.0 REFERENCES

1. 23A1739, "Supplemental Reload Licensing Submittal for Duane Arnold Atomic Energy Center - Reload 7," December 1984.
2. DPR-49, "Operating License and Technical Specifications - Duane Arnold Energy Center," through Revision No. 131, March, 1986.
3. "Updated Final Safety Analysis Report - Duane Arnold Energy Center," Revision 3.
4. NEDO-24011, "General Electric Standard Application for Reactor Fuel."*

*Approved revision number at time analyses are performed.

APPENDIX A

10CFR50.59 ANALYSES

KEY TO
10 CFR 50.59 ANALYSIS

Surv Test No. <u>1</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>5</u>	<u>Plant Status</u>	
Tech Spec No. <u>2</u>	4		Current TS Freq <u>6</u>	8	
Tech Spec Pg. <u>3</u>			Current STP Freq <u>7</u>		
Observed DRs & LERs 9	Accident Type 10	Failure Probability 11	Consequences 12	New Accident 13	Safety Margin 14

1. Surveillance test number corresponding to the Technical Specification number in item 2.
2. Technical Specification whose Surveillance Test Interval is being evaluated.
3. Page number of the Technical Specification being evaluated through Amendment 107.
4. Title of the Surveillance Test being evaluated.
5. Recommended Technical Specification test frequency interval using the proposed definitions.
6. Current Technical Specification test frequency interval using the current definitions.
7. Current Surveillance Test frequency interval.
8. Plant status indicates if the Surveillance Test requires shutdown and if the STP is related to fuel reconfiguration.
9. Observed DRs and LERs that would not have been identified during similar STPs performed on an extended interval.
10. Safety Analysis or System Design basis providing primary basis for surveillance test.
11. Qualitative change of failure probability as a function of STP test interval.
12. Qualitative change of failure consequence as a function of STP test interval.
13. Could an unanalyzed "new" accident occur because the DR/LER was not discovered due to an extended STP test interval.
14. Qualitative change in plant safety margin because the DR/LER was not discovered due to an extended STP test interval.
15. System or component function that the STP test is intended to verify.
16. If the DR/LER event is bounded by current design bases for safety analyses, then the STP test interval can be extended.

TEST PURPOSE: 15	CONCLUSION: 16
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Surv Test No. <u>41A012</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>Table 4.1.1 & Table 4.3.A.2.e</u>	Mode Switch in Shutdown Instrument Functional Test		Current TS Freq <u>Refuel</u>	Shutdown Required	
Tech Spec Pg. <u>3.1-8 & 3.3-2</u>			Current STP Freq <u>Refuel</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 010477 - 77001 Pressure trip point below that allowed in STP-Instrument Drift. PS B21-NQ20A-D - one of the four channels tripped below 600 psig.	7.2 - RPS Design Basis	No Increase Tripped in conservative direction. Individual channel trip not a drift of all four channels. Monthly functional tests and quarterly calibrations will catch drift.	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
The Shutdown Mode bypasses main steam line isolation. Test signals (high press) then determine if each trip system will give a 1/2 scram.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>41A020</u>		Surveillance Test Procedure Title		Recommended TS Freq <u>1/O.C.</u>		Plant Status	
Tech Spec No. <u>Table 4.1-1</u>		Scram Test Switch Instrument Functional Test		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.1-8</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
None	7.2 RPS Design Basis	No Increase No failures observed	No Increase	None	No Decrease		
TEST PURPOSE:				CONCLUSION:			
Check of the individual rod scram test switches to assure that each functions.				Extend Test Intervsl No Unreviewed Safety Questions Exist			

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Surv Test No. <u>41A006 & 41A006.1</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/O.C.</u>	<u>Plant Status</u>		
Tech Spec No. <u>Table 4.1-2 & Table 4.2-C</u>	Discharge Volume High Water Level	Current TS Freq <u>Refuel</u>	Shutdown required		
Tech Spec Pg. <u>3.1-12 & 3.2-28</u>	Instrument Functional Test and Calibration	Current STP Freq <u>Refuel</u>	Not related to refuel		
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 072276 - 76155 Test switch tripped at 10.75 inches. Setpoint is 10.50. DR 060484 - 84221 LS-1862 "B" tripped 3/4" from setpoint. STP tolerance is 1/2". LER 012875 - 75005 LS-1861 "D" tripped at + 2". Tech Spec limit is $\pm 1/2$ ".	7.2 RPS Design Basis	No Increase All failures associated with instrument drift. Each of the 6 trip channels have a level switch. Redundant channels available.	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
Assure that the level instruments will generate a scram signal if there is not enough empty volume in the SDV piping.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>41A007</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>Table 4.1-2</u>	Turbine Control Valve Fast Closure		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.1-12</u>	Response time Test & RPT Initiate Logic		Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 04237B - 18091 EHC CV-4 response in 40 ms, should be 30 ms DR 042384 - B4153 CV-3 response time was greater than 30 ms from chart trace.	15.2 NSSS Press Increase	No Increase Each of the four control valves has a pressure switch and a position switch in EHC hydraulic fluid. Redundant and diverse trips available.	No Increase	None	No Decrease
TEST PURPOSE: Assure that TCV closure will rapidly initiate a scram				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>41A009</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plnt Status</u>	
Tech Spec No. <u>Table 4.1-2</u>		MSIV Closure Instrument Functional Test and <u>Physical Inspection</u>		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.1-12</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
None	15.2 NSSS Press Increase	No Increase No failures observed	No Increase	None	No Decrease		
TEST PURPOSE:				CONCLUSION:			
Physical inspection and actuation is to identify possible deterioration.				Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>41A019</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>Table 4.1-2</u>		Recirculation Pump Flow Transmitter - Calibration		Current TS Freq <u>Refuel</u>		Shutdown Required	
Tech Spec Pg. <u>3.1-12</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
DR 032978 - 78071 FT-4631A,C,D and FT4632B were out of calibration. Instrument drift. DR 041480 - 80072 FT-4631D could not be calibrated. DR 040781 - 81066 FT-4632C could not be calibrated.	Not used in analysis of design basis events.	No Increase One case of instrument drift. Redundant channel available in all cases.	No Increase	None	No Decrease		
TEST PURPOSE:					CONCLUSION:		
Calibrate the recirc flow transmitters that provide signals to the recirc flow controller and rod block monitor					Extend Test Interval No Unreviewed Safety Questions Exist		

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Surv Test No. <u>41A014</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/O.C.</u>	<u>Plant Status</u>
Tech Spec No. <u>Table 4.1-2 & 4.2.A</u>	Steamline High Radiation	Current TS Freq <u>Refuel</u>	Shutdown required
Tech Spec Pg. <u>3.1-12 & 3.2-24</u>	Instrument Calibration	Current STP Freq <u>Refuel</u>	Not related to refuel

Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
None	Not used in analysis of design basis events.	No Increase No failures observed	No Increase	None	No Decrease

<p>TEST PURPOSE:</p> <p>Calibrate sensors RE 4448 A,B,C,D with a radiation source.</p>	<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>
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Surv Test No. <u>41A010</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>Table 4.1-2</u>	RPT Initiate Logic Functional & Turbine Stop Valve Closure Instrument		Current TS Freq <u>Refuel</u>	Shutdown required	
Tech Spec Pg. <u>3.1-13</u>	Functional Test & Physical Inspection		Current STP Freq <u>Refuel</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Fsilure Probability	Consequences	New Accident	Safety Margin
None	15.2 NSSS Press Increase	No Increase No failure observed	No Increase	None	No Increase
TEST PURPOSE:				CONCLUSION:	
Physical inspection of 8 position switches to check for deterioration.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>42A009</u>	Surveillance Test Procedure Title		Recommended TS Freq <u>1/0.C.</u>	Plant Status	
Tech Spec No. <u>Table 4.2-A</u>	PCIS (RHR & Drywell Isolation) Logic System Functional Test		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.2-24 & 3.2-25</u>			Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 032476 - 76060</p> <p>CV04301, Torus outboard vent valve won't close. Pilot valve disassembled and cleaned.</p> <p>DR 051981 - 81103</p> <p>RHR MOV-1900 did not shut. Breaker 34-42 smoked. (Shutdown cooling supply valve)</p> <p>DR 052381 - 81106</p> <p>RHR MOV-1900 failed to close. Closed contactor not picking up completely causing contractor coil to burn up. (Shutdown cooling supply valve)</p>	15.6 Decrease in Reactor Coolant	<p>No Increase</p> <p>Redundant valves on each line were operable.</p> <p>These valves are normally closed & must stay closed.</p>	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
Test signals initiate PCIS; valve positions are checked for correct position.				<p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>	

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Surv Test No. <u>42B012</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>4.5.F.1</u>	ADS Trip System Logic Functional		Current TS Freq <u>Refuel</u>	Shutdown required	
Tech Spec Pg. <u>3.2-27 & 3.5-9</u>	Test and (Timer) Calibration		Current STP Freq <u>Semi-Annual/Refuel</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 060978 - 78140 ADS 'A' Trip System Timer found inoperable. 'A' timer replaced and tested satisfactorily. DR 030184 - 84091 Test switch in AB posi- tion ADS timers did not start. Cause: faulty HS-4462	15.6 Decrease in Reactor Coolant	No Increase Random failures. Redundant channel avail- able. Diverse system (HPCI) available. Timer calibration and function- al test semi-annually.	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
Logic test to confirm that test signals for (a) Rx Low Level or (b) High Drywell Pressure and (c) LPCI/Core Spray will initiate ADS. Timers are set at 120 seconds to allow HPCI or RCIC to be the primary response.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No.	<u>420005</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq	<u>1/0.C.</u>	<u>Plant Status</u>
Tech Spec No.	<u>Table 4.2-D & 4.7.B.1d</u>	Standby Gas Treatment System Actuation & Reactor Building Isolation Logic System Functional Test	Current TS Freq	<u>1/0.C.</u>	Shutdown required
Tech Spec Pg.	<u>3.2-29 & 3.7-15</u>		Current STP Freq	<u>Refuel</u>	Related to refuel

Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 122378 - 78205</p> <p>SBGT HS-5718A, MOV-5716A, MOV-5728A, disabled or broken. CV-5703A & 5719A did not open. CV-4307 did not open IV-EF-3A.</p> <p>DR 021680 - 80029</p> <p>IV-RF-1A, IV-RF-1B and MO-5727B fans tagged out for D/W work. Unable to get indication; MO-5727B has open light and does not go out when valve is closed. Reset limit switches.</p> <p>DR 040482 - 82090</p> <p>CV-5703A would not open.</p>	15.7 Radio-active Release	<p>No Increase</p> <p>Redundant train is available. Logic is tested semi-annually.</p>	No Increase	None	No Decrease
<p>TEST PURPOSE:</p> <p>Testing verifies that SBGT 'A' and/or 'B' will start and run, thus assuring filtered releases from the Rx building.</p>			<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>		

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Surv Test No. <u>42F010</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>Table 4.2-F</u>		Drywell & Torus Pressure (Indicator) Instrument Calibration		Current TS Freq <u>1/0.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.2-31</u>				Current STP Freq <u>1/0.C.</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
None	15.6 NSSS Inventory Decrease	No Increase No failures observed	No Increase	None	No Decrease		
TEST PURPOSE:				CONCLUSION:			
Calibration of drywell pressure indicator PI-4368A and Torus pressure <u>indicator</u> PI-4368B.				Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>42G002</u>		Surveillance Test Procedure Title		Recommended TS Freq <u>1/O.C.</u>		Plant Status	
Tech Spec No. <u>Table 4.2-G</u>		End of Cycle (EOC) RPT System Response Time		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.2-34</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
None	15.2 NSSS Press Increase	No Increase No failures observed	No Increase	None	No Decrease		
TEST PURPOSE:				CONCLUSION:			
Repsonse time from initiation of turbine control valve fast closure or turbine stop valve closure actuation of recirc pump trip breaker.				Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>42B043</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>		
Tech Spec No. <u>Table 4.2-H</u>	Safety & Relief Valve Position Indicator <u>Calibration</u>	Current TS Freq <u>1/0.C.</u>	Shutdown required		
Tech Spec Pg. <u>3.2-34a</u>		Current STP Freq <u>1/0.C.</u>	Not related to refuel		
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 052782 - 82158 Pressure switch PS-4404A Inop. Switch did not actuate above 25 + 6.75 psig. Reset for 25 + 6.75/-2.25 psig.	15.6 NSSS Inventory Decrease	This is an indication of an open valve. Redundant and diverse indication is available.	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
Calibration of the ADS valve pressure switch which receives a signal from drywell pressure sensors.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>42F015</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>Table 4.2-H</u>	Drywell and Torus Room High Range Radiation Monitors Instrument Calibration		Current TS Freq <u>Refuel</u>	Shutdown required	
Tech Spec Pg. <u>3.2-34a</u>			Current STP Freq <u>Refuel</u>	Not related to refuel	
Observed DRs & LERs None	Accident Type 15.6 NSSS Inventory Decrease (Post Accident Monitoring Instruments)	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease
TEST PURPOSE: Calibrate the sensors with a known radiation source.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>43A001</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>Refuel</u>	<u>Plant Status</u>	
Tech Spec No. <u>4.3.A.1</u>	Shutdown Margin Test		Current TS Freq <u>Refuel</u>	Shutdown required	
Tech Spec Pg. <u>3.3-1</u>			Current STP Freq <u>Refuel</u>	Related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
None	15.4 Reactivity Anomalies	No Increase No failures observed	No Increase	None	No Decrease
TEST PURPOSE:				CONCLUSION:	
Based on rod pull from full in to criticality, a shutdown margin of 0.38% dk/k must be demonstrated.				Extend Test Interval No Unreviewed Safety Questions Exist	

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Surv Test No. <u>43C001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>Refuel</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.3.C.1</u>		Scram Insertion Time Test		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.3-6</u>				Current STP Freq <u>Refuel</u>		Related to refuel	
<p>Observed DRs & LERs</p> <p>DR 031379 - 79045</p> <p>Control Rod 22-31 did not scram while using individual scram switches on IC-16. Failed scram solenoid valve. Rod driven to full in and left.</p> <p>DR 010883 - 83006</p> <p>CRD 30-27 gave a "Rod Overtravel" annunciator. Rod was uncoupled. Rod driven full in and left.</p>		<p>Accident Type</p> <p>4.6 Control Rod Drive Design Basis</p>		<p>Failure Probability</p> <p>No Increase</p> <p>Single control rod failures only. Scram requirements for core average satisfied.</p>		<p>Consequences</p> <p>No Increase</p>	
				<p>New Accident</p> <p>None</p>		<p>Safety Margin</p> <p>No Decrease</p>	
<p>TEST PURPOSE:</p> <p>Check of mechanical clearance - no binding or blocking - as verified by control rod insertion rate.</p>				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>44A002</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.4.A.2</u>		Standby Liquid Control System Refueling/Once/Cycle Tests		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.4-1</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
Observed DRs & LERs None	Accident Type SLCS Design Basis	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease		
TEST PURPOSE: Test the operability of the explosive squib valves and ability to pump water into the reactor vessel.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>45D001</u>		Surveillance Test Procedure Title		Recommended TS Freq <u>1/O.C.</u>		Plant Status	
Tech Spec No. <u>4.5.D.1a & 4.5.D.1e</u>		HPCI System Monthly/Cycle Operability Tests		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.5-6</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
<p>Observed DRs & LERs</p> <p>LER 122076 - 76089</p> <p>HPCI turbine tripped on fast start with high flow indication. Other ECCS operable. High flow PDIS setpoints were corrected and HPCI system test satisfactorily.</p>		<p>Accident Type</p> <p>15.6 NSSS Inventory Decrease</p>		<p>Failure Probability</p> <p>No Increase</p> <p>Procedural error - one occurrence only</p>		<p>Consequences</p> <p>No Increase</p>	
				<p>New Accident</p> <p>None</p>		<p>Safety Margin</p> <p>No Decrease</p>	
<p>TEST PURPOSE:</p> <p>During startup from cold shutdown, demonstrate the ability of the HPCI to deliver 3000 gpm at 150 psig.</p>				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>45E001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.5.E.1e & 4.5.E.1f</u>		RCIC System Monthly/Once Per Cycle Operability Tests		Current TS Freq <u>1/0.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.5-8</u>				Current STP Freq <u>1/0.C.</u>		Not related to refuel	
Observed DRs & LERs None	Accident Type 15.6 NSSS Inventory Decrease	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease		
TEST PURPOSE: During startup from cold shutdown, demonstrate the ability of the RCIC to deliver 400 gpm at 150 psig.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>45J001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.5.J.1a</u>		River Water Supply System Simulated Automatic Actuation		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.5-12</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs None	Accident Type 15.6 NSSS Inventory Decrease	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease		
TEST PURPOSE: Test signals simulate automatic actuation.					CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist		

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Surv Test No. <u>46D001</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>4.6.D.1</u>	Reactor Safety Valve Check		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.6-5</u>			Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 040577 - 77072 LER 040577 - 77027 PSV-4404 lifted at 1266 psig. Requirement is 1240 +/- 12 psig. Valve reset.</p> <p>DR 040378 - 78075 SRVs 8491, 189, 227 & 218 tripped 9 psi high, 93 psi high, 4 psi high, & 4 psi low. Pilot valves reworked and restarted.*</p> <p>DR 041681 - 81071 PSV-4403 lifted at 1310. Requirement is 1240 +/- 12 psig. Second valve lifted at 1253.</p> <p>* Relief valve DRs and LERs should be associated with STP 46D002.</p>	5.2.2 Overpressure Protection	<p>No Increase</p> <p>All occurrences are attributable to setpoint drift. Valves were operable and would have opened, but at an elevated pressure. The DAEC data is consistent with experience at other BWRs which indicates that the occurrences are random in nature.</p>	<p>No Increase</p> <p>Safety valves are provided to satisfy ASME Code requirements for overpressure protection. The setpoint drift experience would not lead to the ASME Code limits being exceeded.</p>	None	<p>No Decrease</p> <p>The safety margin is considered to be the difference between the ASME Code limits and vessel failure. Setpoint drift could slightly increase peak calculated vessel pressure; however, the Code limit would not be exceeded. For example, analyses presented in the FSAR (Ref. 3) indicate for a valve failure to open, the increase would increase peak vessel pressure less than 20 psig. The valve failure case bounds</p>

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Surv Test No. <u>46D001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.6.D.1</u>		Reactor Safety Valve Check		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.6-5</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	<p>Safety Margin</p> <p>the setpoint drift for safety values experienced.</p> <p>Currently, the licensing limit for the over-pressure protection analysis is 1375 psig, whereas the Code would allow 1500 psig (Ref. 4).</p>		
TEST PURPOSE:				CONCLUSION:			
Check of high pressure safety valve setpoints.				<p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>46D002</u>	Surveillance Test Procedure Title		Recommended TS Freq <u>1/0.C.</u>	Plant Status	
Tech Spec No. <u>4.6.D.1</u>	Reactor Relief Valve Check		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.6-5</u>			Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 030480 - 80040</p> <p>PSV-4406 pilot valve leaked. Delay time exceeded.</p> <p>DR 031080 - 80044 LER 031080 - 80010</p> <p>PSV-4400, 4407 & 4405 lifted at 1097, 1123 & 1111 psig. Required at 1110, 1100 & 1080 +/- 11 psig, respectively. Pilot valves reworked.</p> <p>DR 040981 - 81068 LER 040981 - 81014</p> <p>SRVs serial # 189, 218, 226 & 227 lifted at 1080, 1094, 1076 & 1090 psig.</p>	15.2 NSSS Pressure Increase and 5.2.2 Overpressure Protection	<p>No Increase</p> <p>All occurrences are attributable to setpoint drift. Valves were operable and would have opened, but at an elevated pressure. The DAEC data is consistent with experience at other BWRs which indicates that the occurrences are random in nature.</p>	<p>No Increase</p> <p>Relief valves are provided to limit the pressure increase during transients. In addition, they act with the safety valves to satisfy the ASME Code requirements for overpressure protection. The setpoint drift experience would not lead to the transient or ASME Code limits being exceeded.</p>	<p>None</p> <p>The setpoint drift could slightly increase peak steamline pressure which may slightly increase the probability of a spurious safety valve opening during a transient. However, a safety valve opening, should it occur, would be of a short duration. The consequences are bounded by an inadvertent opening of a safety or relief event which is evaluated in the FSAR (Ref. 3). Therefore, a new type of accident is</p>	<p>No Decrease</p> <p>The safety margin is considered to be the difference between the ASME Code limits and unacceptable results for the event. Setpoint drift could slightly increase peak calculated vessel pressure; however, the Code limit would not be exceeded. Based on previous analyses (Ref. 3), a valve failure (bounding for setpoint drift) would be expected to increase peak vessel pressure less than</p>

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Surv Test No. <u>46D002</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.6.D.1</u>		Reactor Relief Valve Check		Current TS Freq <u>1/0.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.6-5</u>				Current STP Freq <u>1/0.C.</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident not created.	Safety Margin 20 psi. Recent analyses (Ref. 4) indi- cate greater margin. Thus, the Code limits would not be exceeded.		
<p>DR 032483 - 83084</p> <p>SRV serial #218 and 176 lifted at 1097 & 1062 psig. Required at 1110 & 1080 psig.</p> <p>LER 032877 - 77026 During bench testing, four SRVs did not open and two opened at elevated pressure. Re- placed Dresser pilot valves with Target Rock model 67F.</p> <p>LER 040378 - 78018 One S/V lifted 9 psi high; three R/Vs lifted and 93 psi high, 4 psi high, and 4 psi low. Pilot valves reworked and retested.</p>							
TEST PURPOSE:				CONCLUSION:			
Check of high pressure relief valve setpoints.				Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>46D003</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.6.D.2</u>		Reactor Relief Valve Inspection		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.6-6</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
<p>Observed DRs & LERs</p> <p>DR 050383 - 83153</p> <p>PSV-4402. Main disc assembly inspection revealed the weld holding the seat was eroded. Valve operation was not impeded. Main body assembly replaced.</p>		<p>Accident Type</p> <p>15.2 NSSS Pressure Increase</p>		<p>Failure Probability</p> <p>No Increase</p> <p>Only one reported occurrence of internal valve wear since commercial operation began for DAEC. Valve was operable.</p>		<p>Consequences</p> <p>No Increase</p>	
				<p>New Accident</p> <p>None</p>		<p>Safety Margin</p> <p>No Decrease</p>	
<p>TEST PURPOSE:</p> <p>Check of internal valve wear.</p>						<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>	

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Surv Test No. <u>46D004</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.6.D.3</u>		Automatic Depressurization System Relief Valve Test		Current TS Freq <u>1/0.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.6-6</u>				Current STP Freq <u>1/0.C.</u>		Not related to refuel	
Observed DRs & LERs None	Accident Type 15.2 NSSS Pressure Increase	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease		
TEST PURPOSE: Move the ADS valves off their seat to assure that internals have not stuck closed.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>47A001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.7.A.1d & 4.7.A.2a(1)</u>		Suppression Chamber & Drywell Visual Inspection		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.7-1 & 3.7-2</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
<p>Observed DRs & LERs</p> <p>LER 032977 - 77025</p> <p>"A" RHR Torus suction strainer found deformed.</p> <p>"B" strainer undamaged.</p> <p>"A" strainer replaced.</p>		<p>Accident Type</p> <p>15.6 NSSS Inventory Decrease</p>		<p>Failure Probability</p> <p>No Increase</p> <p>This single damage report is for one of the two strainers. It does not relate to drywell or torus structural deterioration. System operable.</p>		<p>Consequences</p> <p>No Increase</p>	
				<p>New Accident</p> <p>None</p>		<p>Safety Margin</p> <p>No Decrease</p>	
<p>TEST PURPOSE:</p> <p>Visual examination for evidence of deterioration.</p>				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>47A009</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.7.A.4c</u>		Drywell-Suppression Chamber Vacuum Breaker Inspection		Current TS Freq <u>1/0.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.7-11</u>				Current STP Freq <u>1/0.C.</u>		Not related to refuel	
<p>Observed DRs & LERs</p> <p>DR 070682 - 82194</p> <p>CV-4327A would not operate properly.</p>		<p>Accident Type</p> <p>15.6 NSSS Inventory Decrease</p>		<p>Failure Probability</p> <p>No Increase</p> <p>Only one reported event.</p> <p>There are monthly operability checks of these vacuum breakers.</p>		<p>Consequences</p> <p>No Increase</p>	
				<p>New Accident</p> <p>None</p>		<p>Safety Margin</p> <p>No Decrease</p>	
<p>TEST PURPOSE:</p> <p>Visual inspection is for evidence of material deterioration.</p>				<p>CONCLUSION:</p> <p>Extend Test Intervals</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>47A010</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.7.A.4d</u>		Drywell to Suppression Chamber Leak Test		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.7-11</u>				Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs None		Accident Type 15.6 NSSS Inventory Decrease		Failure Probability No Increase No failures observed		Consequences No Increase	
						New Accident None	
						Safety Margin No Decrease	
TEST PURPOSE: Test assures that steam/water leakage is quenched by the suppression chamber and does not bypass the pool and over-pressurize the torus.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>47C001</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>Refuel</u>	<u>Plant Status</u>	
Tech Spec No. <u>4.7.C.1c</u>	Secondary Containment Integrity		Current TS Freq <u>Refuel</u>	Shutdown required	
Tech Spec Pg. <u>3.7-17</u>			Current STP Freq <u>Refuel</u>	Related to refuel	
<p>Observed DRs & LERs</p> <p>DR 042384 - 84154</p> <p>Neither SBT train could maintain more than 0.23" vacuum. Isolation was complete. Recalibrated DP-7638.</p>	<p>Accident Type</p> <p>15.7 Radio-active Releases</p>	<p>Failure Probability</p> <p>No Increase</p> <p>Only one reported event of this type. Cause is instrument drift not system capability.</p>	<p>Consequences</p> <p>No Increase</p>	<p>New Accident</p> <p>None</p>	<p>Safety Margin</p> <p>No Decrease</p>
<p>TEST PURPOSE:</p> <p>Demonstrate that secondary containment can be isolated and that releases are filtered.</p>				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>	

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Surv Test No. <u>47D001</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>		
Tech Spec No. <u>4.7.D.1a</u>	PCIS Valve Closure Time Test	Current TS Freq <u>1/0.C.</u>	Shutdown required		
Tech Spec Pg. <u>3.7-18</u>		Current STP Freq <u>1/0.C.</u>	Not related to refuel		
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
DR 011177 - 77008 Steam Line Drain Valve, MOV-4423, does not meet closing time. Closed in 16 seconds; requirement is 15 seconds.	15.7 Radio- active Releases.	No Increase Redundant valves 4423 and 4424 are normally closed and stay closed.	No Increase Containment isolation valves are re- dundant. Re- dundant valve closure time within speci- fications.	None Valves closed. Therefore, a new type of accident not created.	No Decrease Releases during a slow closure are minor. Accident con- sequences for slow closure time are bounded by the design basis event.
DR 100677 - 77217 RWCU Return Line Valve, MOV-2740, closed in 11.7 seconds. Requirement is 10.0 seconds. Valve open limit switch out of adjustment.		The downstream check valves on this 4" return line will close when system inlet valves close.			
DR 050283 - 83149 Torus Purge Outlet Valve CV4301 closed slower than 5 seconds.		Redundant valves CV4300 and 4301 are normally closed and stay closed.			

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Surv Test No. <u>47D001</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.7.D.1a</u>		PCIS Valve Closure Time Test		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.7-18</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin		
<p>LER 061074 - 73013 RCIC Steam Supply Valves, MDV-2400 D& 2401, closed slower than 20 seconds. Design change made.</p> <p>LER 032476 - 76024 Torus Purge Vent Valve, CV-4301 closed slower than 5 seconds. Dirty pilot solenoid valve. See DR 050283.</p> <p>LER 091180 - 80047 RWCU Return Line Valve, MOV-2740, closed in 10.4 seconds vs 10.0 required. Loose set rod for limit switch.</p> <p>LER 122083 - 83047 Steamline Drain Valve, MOV-4423 closed in 15.2 seconds vs 15.0 required. See DR 011177.</p>		<p>These redundant 4" valves are normally open and will stay open if RCIC is needed.</p> <p>These redundant valves are normally closed and stay closed. Therefore, the test interval is not a factor.</p> <p>The downstream check valves on this 4" return line will close when system inlet valves close.</p> <p>Redundant valves 4423 & 4424 are normally closed and stay closed.</p>					
TEST PURPOSE:				CONCLUSION:			
Tests automatic initiation and closing time of containment isolation valves.				Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>47D002</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.7.D.1d</u>		Instrument Excess Flow Check Valve Test		Current TS Freq <u>1/O.C.</u>		Shutdown required	
Tech Spec Pg. <u>3.7-19</u>				Current STP Freq <u>1/O.C.</u>		Not related to refuel	
<p>Observed DRs & LERs</p> <p>DR 021476 - 76028 LER 021476 - 76010 XfV - 4528, 4611 & 4612 failed to close. 4528 replaced; test points for 4611 and 4612 changed.</p> <p>DR 031377 - 77055 XfV - 4504 blowing a fuse when pressure switch reset.</p> <p>DR 021283 - 83029 LER 021283 - 83007 With reactor at 400 psig, XfV-4643A would not check closed. XfV-4637 and 4458B had faulty position switches and gave both open and closed signals--valves closed properly. 4643A had insufficient flow.</p>		<p>Accident Type</p> <p>15.6 NSSS Inventory Decrease</p>		<p>Failure Probability</p> <p>No Increase</p> <p>Failures in test equipment and indicators. Valves operable.</p>		<p>Consequences</p> <p>No Increase</p> <p>Instrument lines have orifices installed to limit inventory loss.</p>	
				<p>New Accident</p> <p>None</p> <p>Instrument line break evaluations consider valve failure. Therefore, new type of accident not created.</p>		<p>Safety Margin</p> <p>No Decrease</p> <p>Orifice provides backup to valve operation to limit inventory loss.</p>	
<p>TEST PURPOSE:</p> <p>Functional test of valves that isolate a primary containment instrument line break.</p>				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>			

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Surv Test No. <u>47E002</u>		Surveillance Test Procedure Title		Recommended TS Freq <u>1/0.C.</u>	Plant Status
Tech Spec No. <u>4.7.E.1a & 4.7.E.1e</u>		MSIV-Leakage Control System Simulated Actuation and Blower Capacity Tests		Current TS Freq <u>1/0.C.</u>	Shutdown required
Tech Spec Pg. <u>3.7-19a</u>				Current STP Freq <u>1/0.C.</u>	Not related to refuel
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 041377 - 77080 LER 041677 - 77034 PS-8404A, 8415A and 8315B had out of tolerance trips due to loose set-point lock screw.</p> <p>DR 082577 - 77187 PS-8415A & 8425B tripped at 40.5 and 44.4 psig. Should be 49.2 +/- 1.6 psig.</p> <p>DR 011378 - 78013 PS-8415C trips at 44.8 psig. Should be 49.2 +/- 1.6 psig.</p> <p>DR 041580 - 80074 PS-8415B & 8415C out of tolerance.</p> <p>DR 051281 - 81091 PS-8415C trips at 2.0 psig. Should be 5 +/- 1.6 psig. Diaphragm leaks.</p>	<p>Not required for Design Basis Events. Provided for Additional Capability.</p>	<p>No Increase</p> <p>Majority of occurrences attributable to instrument drift. System would still be functional, but at a slightly higher value.</p> <p>Other failures are apparently random in nature and have not recurred.</p>	<p>No Increase</p> <p>System is manually initiated. Instrument drift would not significantly delay its availability especially when compared to the fission product transport time identified in the FSAR (Ref. 3).</p> <p>Other failure mechanisms would lead to failure of the system to one MSIV.</p> <p>Failure of an MSIV to close is more limiting.</p>	<p>None</p>	<p>No Decrease</p> <p>System not required for any design basis event. Therefore, no reduction in safety margin if system or part of system is not available.</p>

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Surv Test No. <u>47E002</u>	<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>	
Tech Spec No. <u>4.7.E.1a & 4.7.E.1e</u>	MSIV-Leakage Control System Simulated Actuation and Blower Capacity Tests		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.7-19a</u>			Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs DR 040782 - 82093 LER 040782 - 82026 PS-8404C failed rendering MSIV-LCS 'C' Inop. Terminal strip corrosion. No similar occurrences. DR 042883 - 83134 LER 042883 - 83014 Relay B21-K2A would not activate on a high flow signal rendering the system inoperable. Sticking plunger in flow meter. FM-8408A. DR 043083 - 83147 PS-8415A tripped at 51.1 vs 50.8 psig. DR 050183 - 83148 PS-8415B trips at 52.4 psig. Should be 48 +/- 1.6 psig.	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
TEST PURPOSE: Test signals simulate automatic initiation. Blower capacity tests are similar to monthly operability tests.			CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist		

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Surv Test No. <u>48A002</u>	Surveillance Test Procedure Title		Recommended TS Freq <u>1/0.C.</u>	Plant Status	
Tech Spec No. <u>4.8.A.1b & 4.8.C.1a</u>	Standby Diesel Generator Simulated Automatic Start Test and Emergency		Current TS Freq <u>1/0.C.</u>	Shutdown required	
Tech Spec Pg. <u>3.8-2 & 3.8-6</u>	Service Water Simulated Auto Actuation		Current STP Freq <u>1/0.C.</u>	Not related to refuel	
Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 051481 - 81096 1G-31 Diesel; RHR 1P-229C did not start. Started manually. Output breaker did not close.</p> <p>LER 042375 - 75025 RHR pump start logic relay E11-K70B did not trip; therefore, RHR pump 229B did not start. The other 3 RHR pumps started. Relay was replaced.</p>	Loss of Off-site power.	<p>No Increase</p> <p>RHR pump start failures not DG failures.</p> <p>There are monthly DG start tests & quarterly pump & valve (load) tests.</p>	No Increase	None	No Decrease
TEST PURPOSE: Demonstrate that DGs will auto start and are ready to accept load within a specified time. Demonstrate auto start of Emergency Service water pumps and actuation of steam valves.				<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>	

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Surv Test No. <u>48A006</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>
Tech Spec No. <u>4.8.A.2c</u>	Battery Discharge Tests	Current TS Freq <u>1/0.C.</u>	Shutdown required
Tech Spec Pg. <u>3.8-3</u>		Current STP Freq <u>1/0.C.</u>	Not related to refuel

Observed DRs & LERs	Accident Type	Failure Probability	Consequences	New Accident	Safety Margin
<p>DR 032278 - 78060 250 VDC batteries failed to maintain 210 VDC for 8 hours. Weak cells replaced.</p> <p>DR 042284 - 84150 1D5 24V battery cell #2 voltage read 1.03V at 4 hours and 8 hours vs 1.75V required. Went to 1.83V upon load removal.</p> <p>DR 042284 - 04166 125V Sys II; cell 16 fell below 1.75V at 1 hour and cell 46 fell below 1.75 at 4 hours.</p>	Loss of off-site and on-site AC.	<p>No Increase</p> <p>Sufficient battery capability was available to satisfy design requirement for automatic system operation.</p> <p>Currently, there are weekly and quarterly cell voltage, specific gravity, temperature and overall voltage tests.</p> <p>Normally, DC is supplied through inverters from either of 2 off-site sources or either of 2 onsite (DG) sources-- 4 normal sources.</p>	No Increase	None	No Decrease
<p>TEST PURPOSE:</p> <p>24V, 125V & 250V batteries are discharged under simulated load to demonstrate ability to deliver continuous DC power to 2E systems for a specified time duration.</p>			<p>CONCLUSION:</p> <p>Extend Test Interval</p> <p>No Unreviewed Safety Questions Exist</p>		

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Surv Test No. <u>4108002</u>		<u>Surveillance Test Procedure Title</u>		Recommended TS Freq <u>1/O.C.</u>		<u>Plant Status</u>	
Tech Spec No. <u>4.10.B.2</u>		Emergency Shutdown Manual		Current TS Freq <u>Refuel</u>		Shutdown required	
Tech Spec Pg. <u>3.10-2</u>		Depressurization Functional Test		Current STP Freq <u>Refuel</u>		Not related to refuel	
Observed DRs & LERs None	Accident Type 15.2 NSSS Pressure Increase	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease		
TEST PURPOSE: Demonstrate that ADS valves can be opened manually--assure valves don't stick.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist			

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Surv Test No. <u>685001</u>	<u>Surveillance Test Procedure Title</u>	Recommended TS Freq <u>1/0.C.</u>	<u>Plant Status</u>		
Tech Spec No. <u>6.8.5</u>	Leakage Measurement Program	Current TS Freq <u>Annual</u>	Shutdown required		
Tech Spec Pg. <u>6.8-2a</u>		Current STP Freq <u>1/0.C.</u>	Not related to refuel		
Observed DRs & LERs None	Accident Type 15.6 NSSS Inventory Decrease	Failure Probability No Increase No failures observed	Consequences No Increase	New Accident None	Safety Margin No Decrease
TEST PURPOSE: Measure and identify any visible leakage from selected components outside containment.				CONCLUSION: Extend Test Interval No Unreviewed Safety Questions Exist	