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AMS-94-020

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U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

SUBJECT: Quad Cities Nuclear Station Units 1 and 2  
Changes, Tests, and Experiments Completed  
NRC Docket Nos. 50-254 and 50-265

Enclosed please find a listing of those facility and procedure changes, tests, and experiments requiring safety evaluations completed during the month of June, 1994, for Quad-Cities Station Units 1 and 2, DPR-29 and DPR-30. A summary of the safety evaluations are being reported in compliance with 10CFR50.59 and 10CFR50.71(e).

Respectfully,

ComEd  
Quad-Cities Nuclear Power Station

Anthony M. Scott  
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AMS/dak

Enclosure

cc: J. Martin, Regional Administrator  
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SAFETY\NRC.LTR

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PDR ADOCK 05000254  
R PDR

JEH7

**DESCRIPTION:**

This change allowed the use of the same unit (Unit 2) RHR SW pumps to provide containment cooling and shutdown cooling. The opposite unit RHR SW pumps were previously used to crosstie to same unit RHR pumps.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Fire Hazards Analysis for Fire Area RB-2      Appendix R

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because this change will utilize a Unit 2 RHR SW pump instead of a Unit 1 RHR SW pump (through the cross-tie) to provide containment and shutdown cooling. Any Unit 2 or Unit 1 RHR SW pump will provide adequate containment cooling.

Addition of alternate cooling to the RHRSW pump ensures the RHRSW pump/motor is receiving adequate cooling to function properly.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

This procedure change enhanced the HPCI/RCIC +48" high reactor water level trip testing by adding a contact check. A jumper was used to close the 1-7 contacts on relays 2330-144/13A-K27 for the HPCI/RCIC systems high reactor water level trip and as a result the 1-7 contact was not tested closed. This procedure change enhanced the testing by energizing the 2330-144/13A-K27 relay so that the closed 1-7 contact was used as part of the functional test. The 2330-144/13A-K27 relay only purpose is to close the 1-7 contact on a high reactor water level signal from the LIS 1(2)-263-72A/B. By testing the system logic function in this way the system's logic is verified and the individual contact is verified to operate both "open" and "closed". Testing the individual contact for HPCI/RCIC system satisfies the Logic System Functional Test (LSFT) requirements for the system contained in the Technical Specifications. A LSFT requires a test of all the relays and contacts of a logic circuit from sensor to activated device to ensure all components are operable per design intent. Quad Cities interprets the testing requirement to mean that all states of a contact will be tested.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Control Rod Drop Accident	UFSAR SECTION	15.4.10
Inadvertent initiation of HPCI during Power Operation	UFSAR SECTION	15.5.1
Steam Line Break Outside of Containment	UFSAR SECTION	15.6.4
LOCA	UFSAR SECTION	15.6.5

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the purpose of procedure QCIPM 100-10 is to provide instructions for performance and documentation of Refuel outage instrumentation checks required to be performed prior to ECCS logic tests. This procedure change will enhance the testing by energizing the relay which closes the HPCI/RCIC 1-7 contacts that is currently jumpered closed. By testing the system logic function in this way the system's logic is verified and the individual contact is verified to operate both "open" and "closed". Testing of the individual contact for HPCI/RCIC system will satisfy the Logic System Functional Test (LSFT) requirements for the system contained in the Technical Specifications. A LSFT requires a test of all the relays and contacts of a logic circuit from sensor to activated device to ensure all components are operable per design intent. Quad Cities interprets the testing requirement to mean that all states of a contact will be tested.
3. The margin of safety, as defined in the basis for any Technical Specification, is not reduced because this procedure change will enhance the testing performed in QCIPM 100-10 by energizing the 2330-144/13A-K27 relay so that the closed 1-7 contact is used as part of the HPCI/RCIC high reactor water level trip functional test. The 2330-144/13A-K27 relay only purpose is to close the 1-7 contact on a high water level signal from the LIS 1(2)-263-72A/B. By testing the system logic function in this way the system's logic is verified and the individual contact is verified to operate both "open" and "closed". Testing of the individual contact for HPCI/RCIC will satisfy the Logic System Functional Test (LSFT) requirements for the system contained in the Technical Specifications. A LSFT requires a test of all relays and contacts of a logic circuit from sensor to activated device to ensure all components are operable per design intent. Quad Cities interprets the testing requirement to mean that all states of a contact will be tested. Therefore the margin of safety is increased by assuring that the HPCI/RCIC satisfy the intent of the LSFT.

**DESCRIPTION:**

Upgraded procedure to QC format, added steps for starting NH<sub>2</sub> analyzer, added steps to flush compressor condenser section, and clarified steps.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

LOCA

UFSAR Section 15.6

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because as described earlier, this change does not create new operating modes or functions. This upgrade provides clarification and additional instruction for operating the equipment the same as it is operated currently. No new malfunctions can be created by this type of change.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

Upgraded procedure to QC format, included heater  $\Delta T$  calculation in procedure body, increased compressor operating discharge pressure range, added fail-safe test of FCV 1/2-5741-333, and clarified layout of steps in procedure.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

LOCA

UFSAR Section 15.6

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because a compressor failure has already been evaluated. This is not changed by the new discharge pressure operating range. The ability of the compressor to adequately cool the CR emergency zone will be unaffected because the compressor will continue to operate within its design constraints. The fail-safe testing will not affect how the system operates since it will be performed with the system shutdown. All other changes do not alter how the system was operated previously.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

Installed jumpers across the main steam line high-high radiation trip aux relay contacts to bypass the SCRAM trip only.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Control Rod Drop Accident                      UFSAR Section 15.4.10

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the purpose of the main steam line radiation monitoring subsystem is to guard against the significant release of fission products from the fuel to the reactor. Coolant and subsequently to the turbine. The trips provided by MSL rad monitors upon detection of a high-high radiation condition include a reactor scram, MSL isolation, and SJAE suction valve isolation. This temp alt affects the SCRAM trip only. There will be no fuel in the reactor vessel with this temp alt in place. Therefore, there is no risk of fuel rod failure and released fission products.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.



**DESCRIPTION:**

Added timing closed test for the 1(2)-2499-1A/B and 1(2)-2499-3A/B.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the procedure change will not affect the normal operation of the valves being tested. The procedure change is intended to enhance the procedure to better identify degraded components and initiating corrective measures. The valves are not operated in any manner outside of their intended function, so there is no possibility that an accident or malfunction of a type different than those already addressed by the UFSAR has been created.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

The change moved the stroke and time test for the 2301-4 & 5 from cold shutdown to a quarterly frequency, added a open stroke and time test to the 2399-40 & 41 valves, and updated the closure statements to provide more detail.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the procedure change will not affect the normal operation of the valves being tested. The procedure change is intended to enhance the procedure to better identify degraded components and initiating corrective measures. The valves are not operated in any manner outside of their intended function, so there is no possibility that an accident or malfunction of a type different than those already addressed by the UFSAR has been created. This testing method and scope is still in accordance with the UFSAR paragraph 6.2.6.3. which states, "During normal operating, each power-operated isolation valve is exercised by fully opening (or Closing) at regular intervals. Closure times of all power-operated isolation valves are measured on a regular basis." Also, a Tech Spec's LCO is entered when stroking the HPCI 4 & 5 valves to ensure the plant remains within its design basis.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

## Interim Procedure for flushing of Core Spray System into

**DESCRIPTION:**

This interim procedure provided direction for performing a Core Spray System line flush into the reactor vessel. QCOS 1400-9, Flushing Core Spray Into the Reactor, is an approved QC procedure used to prove operability of the Core Spray Check Valves, 1402-9A/B. This interim procedure differed from QCOS 1400-9 in that suction for the system was from the CCST due the Torus being drained for recoat work. Also, the system test return line valve, 1402-4A/B and the min flow line valve, 1402-38A/B, were OOS and Closed for the performance of the line flush. This was required to ensure that water does not enter the Torus during painting. With the 1402-38A/B valve unavailable, the Core Spray pump will not have its usual min flow protection. This was controlled procedurally by simultaneously starting to throttle open the discharge valve, 1402-25A/B and starting the pump. Also, when shutting down the pump, the pump was shut off prior to closing the 25 valve. These procedure steps ensured that the Core Spray pump had a flow path at all times during the performance of this surveillance.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Large Break: LOCA

UFSAR SECTION 15.6

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the performance of this interim procedure will not adversely impact systems or functions so as to create the possibility of an accident or malfunction of a type different from those evaluated in the UFSAR. This procedure provides guidance to flush the Core Spray lines into the reactor vessel in order to declare the system available for support of Q1R13 fuel reload. This process is a design function of the system and is normally performed in accordance with QCOS 1400-9, Flushing Core Spray Lines into the Reactor. This interim procedure is required to address the performance of this activity without the Torus being available as a suction source and to ensure that adequate precautions are taken to provide a flow path for the pump since the min flow and test return lines are also unavailable due to the configuration of the torus.

An adequate suction source is available from the CCST. This is designed as a backup source of water for the Core Spray system.

The procedure will ensure that adequate capacity is available in the reactor cavity to absorb the water being transferred to it by this activity.

The fuel pool will not be impacted by this procedure since the fuel pool gates will be installed prior to running the pump.

No new accidents or malfunctions will be created by the performance of this procedure.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

SE-94-52  
Set Point Change 94021I

**DESCRIPTION:**

Changed the span of the feedwater flow transmitters to reflect provide the proper flow indication as determined by Special Tests 1-176 and 1-178, NDIT Calculation MSD-94-018, and NDIT Calculation EIC 94-052. The tests and subsequent calculations were performed to calibrate the feedwater flow transmitters. The transmitters required respanning to implement the change in nozzle coefficients to provide the proper flow signal. The feedwater flow measurement are an input to the core thermal power calculation, fuel thermal limits, and a calibration of APRMs at high power.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

LOCA/Transient Analyses

UFSAR SECTION

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the setpoint change ensures that feedwater flow is properly determined specifically for accurate calculation of core thermal power. The span was calculated by CECO NED Nuclear Design Information Transmittal (NDIT) MSD-94-018 and an uncertainty analysis was performed under NDIT EIC-94-052. These calculations were based from Feedwater Flow Nozzle Calibration Special Tests 1-176 and 1-178. The uncertainty analysis performed determined that the feedwater flow loop measurement uncertainty is less than the generic 1.76% assumed in the

accident analyses and thus remains bounded. Feedwater flow provides an input into the heat balance calculation which is used to determine core thermal power and calibrate APRMs. Since the flow input will be accurately measured, the assumed starting point of a LOCA/Transient analyses and the accurate calibration of APRMs is ensured.

There will be no change in the operation of the plant. Non-conservative flow measurement will be corrected by this change which will have an end result of reducing electrical output at full thermal power. There is no change to system logic or interrelationships as a result of this change.

This change does not create any new failure modes because only the span is changed. There are no other components affected. The change does not affect the transmitter failure modes which were analyzed during their installation.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

Changed the span of the feedwater flow transmitters to provide the proper flow indication as determined by Special Tests 2-110 and 2-112, NDIT Calculation MSD-94-018, and NDIT Calculation EID-94-052. These tests and subsequent calculations were performed to calibrate the feedwater flow nozzles by a tracer methodology. The transmitters required respanning to implement the change in nozzle coefficients to provide the proper flow signal. The feedwater flow measurement are an input to the core thermal power calculation, fuel thermal limits, and a calibration of APRMs at high power.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

LOCA/Transient Analysis

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because this setpoint change ensures that feedwater flow is properly determined specifically for accurate calculation of core thermal power. The span was calculated by CECO NED Nuclear Design Information Transmittal (NDIT) MSD-94-018 and an uncertainty analysis was performed under NDIT EIC-94-052. These calculations were based from Feedwater Flow Nozzle Calibration Special Tests 2-110 and 2-112. The uncertainty analysis performed determined that the feedwater flow loop measurement

uncertainty is less than the generic 1.76% applied in the statistical analyses NEDO-20340 and GESTAR II which are used to establish the fuel cladding integrity Safety Limit MCPR value.

There will be no change in the operation of the plant. Non-conservative flow measurement will be corrected by this change which will have an end result of reducing electrical output at full thermal power. There is no change to system logic or interrelationships as a result of this change.

This change does not create any new failure modes because only the span is changed. There are no other components affected. The span change does not affect the transmitter failure modes which were analyzed during their installation.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

SE-94-54  
QAP 300-12 System Temporary Alterations

**DESCRIPTION:**

Changes have been made which provide clearer responsibilities for controlling plant temporary alterations. Expanded definitions were also provided.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the change improves administrative controls for temporary alterations. Individual temporary alterations are subjected to review per 10CFR50.59 (either a screening or an evaluation) to ensure that the plant changes do not create the possibility of an accident or malfunction different from those evaluated in the UFSAR. By clarifying responsibilities and enhancing administrative controls, the procedure revision takes into account these aspects and provides sufficient controls and reviews to preclude the installation of temporary alterations which would adversely affect the operation or design of the plant.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

Modification M04-1/2-79-11  
NRC IE Bulletin 79-02 & 79-14 Hanger Supports

**DESCRIPTION:**

The modification responded to IE Bulletins 79-02 and 79-14. The installation and quality control of concrete expansion anchors were inspected to verify anchor capacity. A verification was also performed on safety related piping ( 2 1/2" and greater) to assure the as-built condition was as seismically analyzed. In cases where deviations existed between the design documents and as-built conditions, the design documents were updated and safety related piping supports reanalyzed to reflect the as-built conditions.

**SAFETY EVALUATION SUMMARY:**

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR is not increased because this modification will assure that the piping hangers meet the minimum required factor of safety for load conditions.
2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the factor of safety of the piping hangers will be improved, and thus the possibility of a different type of accident is not created.
3. The margin of safety, as defined in the basis for any Technical Specification, is not reduced because the margin of safety for the affected systems will be increased.

Modification M04-2-93-006  
Reactor Feed Pump Low Suction Pressure Logic Modification

**DESCRIPTION:**

The existing low suction pressure trip switch for the Reactor Feed Pumps were replaced by two new pressure switches arranged in a two-out-of-two logic configuration. A time delay relay was also installed to trip the RFPs on a suction pressure of <125 psi for three seconds. The switches also have a second trip setpoint for a suction pressure of <50 psi to instantaneously trip the RFPs. The additions of the second switch and the relay improved the reliability of the feedwater system.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Loss of Feedwater                      UFSAR SECTION 15.2

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the closed failure of both switches or time delay relay would initiate a low for feedwater accident, which has been previously evaluated. A open failure of a switch during a low suction pressure event will also initiate a loss of Feedwater accident. No other accident can result from the failure of this equipment.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

Modification M04-1-81-010  
Installation of High Density Spent Fuel Racks  
and Modification of Fuel Pool Cooling for Unit 1

**DESCRIPTION:**

This modification was installed to increase the fuel rod storage capacity of the Unit 1 Fuel Pool from 1140 to 3657 fuel rods. The capacity was increased by the use of High Density Fuel Racks (HDFR). These racks store the fuel rods closer together with a layer of poison material, Boraflex, in between. The Keff of this new configuration is less than or equal to 0.95.

The Keff of less than or equal to 0.95 is a change from the previous limit of 0.90. Quad Cities Station requested and received approval from the Nuclear Regulatory Commission for the increased Keff on 4/9/82. This new Keff value has been incorporated into the Technical Specifications and UFSAR.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Spent Fuel Storage Accident                      UFSAR SECTION 15.7.2  
Within Containment

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the original fuel racks are being replaced to increase the capacity of the spent fuel storage area. In addition, the newly installed HDFR are Safety Related and seismically qualified to provide better assurance of their performance during a seismic event. The

Modification M04-1-81-010 CONTD

original racks were classified as non-Safety Related, non-seismic. The impact of failure of the new fuel racks on operation of the plant will be the same as the existing configuration except for the potential degradation of Boraflex material. This phenomena has been monitored by the station for 10 years. There has been no degradation beyond allowable levels. There are no adversely impacted systems or functions of equipment.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

E04-1-93-326  
Fire Suppression & Detection Change-Out  
for Unit 1 Unit Aux Transformer

**DESCRIPTION:**

E04-1-93-326 replaced the existing fire protection system piping and fire detection method. The deluge piping was replaced due to the physical differences between the existing GE UAT and the new SMIT UTA. The detection method was changed in order to make it more reliable. The overall operation of the system will not change.

Two other exempt changes are required to complete the replacement of the Unit 1 UAT:

E04-1-93-325 installed new concrete piers. These new concrete piers were required for the fire suppression deluge system which was redesigned due to physical differences between the existing GE and the new SMIT transformer.

E04-1-93-327 reinstalled the transformer control circuitry and evaluate the electrical compatibility of the new transformer. These changes are necessary due to slight differences between the GE and SMIT transformers. The control circuitry changes will not affect the operation of the plant.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Loss of Auxiliary Power                      UFSAR SECTION 8.3.1

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the UAT is being replaced by a newer transformer. The failure mode of this new transformer, fire protection system, and control circuitry is the same as for the existing transformer. The failure rate due to these changes is reduced due to the more reliable transformer and enhancements to the fire protection system. Therefore, an accident different from those previously evaluated in the SAR is not created.
  
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

The speed of the main hoist jog pushbutton was removed from the QFP 150-2, Refueling Platform Operation, due to exempt change E04-1-93-236.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Design Basis Fuel Handling Accident Inside Containment & Spent Fuel Storage Bldg.	UFSAR SECTION 15.7.2
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For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the use of variable speed control bounds the change of the jog speed from 2 feet per minute to 4 feet (or less) per minute. The probability of fuel and core component damage has been discussed Nuclear Fuel Services. The change in the jog speed does not create a new accident or malfunction different from those in the UFSAR.

A UFSAR update request has been submitted for the change to the jog speed.
3. The margin of safety, as defined in the basis for any Technical Specification, is not reduced because the main hoist jog speed is not used as a basis in establishing any technical specification limit.

E04-1-93-330  
Pull New High Voltage and Signal Cables  
for the Four Main Steam Line Radiation Monitors

**DESCRIPTION:**

This exempt change replaced the high voltage and instrument cables to the Main Steam Line Radiation Monitors 1-1705-2A, 2B, 2C, and 2D. These cables were replaced due to deterioration of their outer jackets.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the implementation of this exempt change will have no adverse effect on the operation or system description as contained in the UFSAR or Technical Specifications. The replacement of the deteriorated cables will actually increase the reliability of the radiation monitors by eliminating a potential failure of the cables due to damage to the outer jackets.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

The guide disk nut to disk threads were stripped on the 2-1301-64, RCIC exhaust stop check. Because of no availability of replacement parts, the disk nut to disk assembly was welded.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Loss of Feedwater with Reactor Isolated from Condenser	UFSAR SECTION 15.1, 15.2, 15.3, 5.4.6
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For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because this exempt change does not contain any system interfaces or failure modes that have not been evaluated. Therefore, this exempt change does not create or increase the probability of a failure of other systems or components. There are no accidents caused by a failure of the added new weld to the 2-1301-64.

This exempt change alters the design of the 2-1301-64, however, the change has been analyzed and proven not to functionally change the operation of the valve.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

This DCR documented the installation of a jumper in 4KV SWGR 13-1, cubicle 3 which feeds Core Spray Pump 1A. The jumper was installed to match the field conditions to the design drawings. The schematic diagram (4E-1429) shows the jumper connection between XT2 and XT3 and the internal schematic diagram (4E-1655E) shows a metal jumper installed between XT2 and XT3. Work Request Q15585 installed a jumper between XT2 and XT3 and drawing 4E-1655E was revised to show that the installed jumper is not a metal jumper. The jumper provides a ground connection for the overcurrent relay circuit on the neutral.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Decrease in Reactor Coolant Inventory UFSAR SECTION 15.6

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the function and operation of the 4KV and Core Spray Systems remains unchanged. The installation of the jumper makes the as-installed condition consistent with the design drawings. The change associated with this DCR does not create the possibility of the 4KV or Core Spray Systems malfunctioning or of causing an accident different than those evaluated in the SAR.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

These changes involved incorporation of as-built information into Station Service Water P&IDs M-22 Sht. 1 and M-69 Sht. 1 to identify the following additional tap lines:

- 2" stub with gate valve 1-3999-685 off of line 1-3902-30"-0 (SW supply to RBCCW heat exchangers);
- 3" stub with 2" gate valve 1-3999-686 off of line 1-3917-30"-0 (SWQ return from RBCCW heat exchangers);
- 1 1/2" stub with gate valve 2-3999-688 off of the 48" SW standpipe (i.e. king hole) on the Mezzanine level

This revision was implemented to ensure consistency among applicable design documents and the physical plant and operating practices.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the Service Water System operation and physical process variables are not affected by this DCR, and the System's interaction with the plant is unchanged. Therefore the system does not operate in a fashion that would introduce potential for a new type of interaction or failure, and will not react differently to equipment or system malfunction.

The physical design of "new" components are consistent with original design, and added components are not of a functionally or physically "new" type. These changes therefore do not introduce a failure mechanism or failure mode of a new type.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

RBCCW TCV 2-3904B and existing operator was replaced with a 12" Copes Vulcan, Class 125, Series D-600 valve, with a Model D-600-16-50 actuator with hush style anti-cavitation trim. Two lateral supports were added to the supply air tubing to minimize tubing vibrations. The 12" to 18" reducers on each side of the valve were replaced with reducers coated with Belzona. The new valve anti-cavitation trim allows for multi-stage pressure reductions across the valve which will minimize the occurrence of cavitation. The existing TCV was replaced due to cavitation induced erosion and vibration.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the replacement of the RBCCW TCV is a like for like replacement in physical configuration and function. The new valve weights 500 lbs more than the old valve. The increase in valve weight has been shown to be acceptable for the existing pipe support configuration. The piping has been evaluated for all piping design loads appropriate for this non-safety, non-seismic system. The CV of the new valve (880) is lower than the old valve (1460). However, the lower CV of the new valve is still greater than the required CV of the system (564). The flow characteristics of the new valve are adequate and will throttle properly. All original design basis requirements

have been met for the valve replacement. This is a non-safety related system whose failure will not create a accident of a different type that would adversely affect the health and safety of the public.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

E04-0-93-144  
Standby Gas Treatment System

**DESCRIPTION:**

This Exempt Change provided for the replacement of the Standby Gas Treatment (SBGT) system charcoal absorber trays (1/2-7509 A&B) and the tray end covers. The reason for this change was to install trays of a different design than the existing trays to eliminate current sealing problems and provide new replacement trays. The current tray design has integral covers which makes it difficult to maintain a tight seal on both the internal tray surface and the housing cover surface when the trays are installed. The existing trays are also obsolete and replacement trays are no longer available. The new tray design allows for independent sealing on the two perpendicular surfaces by providing the covers separate from the tray. The new design eliminates the sealing problem on the existing trays. The mounting of the new charcoal absorber trays has been seismically qualified and is essentially the same as the existing tray configuration. New side-loaded test canisters are also incorporated into the new design. The new test canisters facilitate their removal during testing cycles by providing easier access. The function, capacity, and operation of the charcoal absorber trays is not be changed or adversely affected by this exempt change.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Break in Reactor Coolant Pressure Boundary Instrument Line Outside Containment	UFSAR SECTION	15.6.2
LOCA	FSAR SECTION	14.2.4
	UFSAR SECTION	15.6.5
Refueling Accident	FSAR SECTION	14.2.2
	UFSAR SECTION	15.7.2

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the design basis function of the SBTG system charcoal absorber will not change. The replacement absorber trays will not alter the function, operation, capacity or effectiveness of the absorber to perform its Safety Related function. There are no new potential interactions with other systems. Therefore, the possibility of an accident or malfunction different from those previously evaluated will not be created.
3. The margin of safety, as defined in the basis for any Technical Specification, is not reduced because this exempt change will simply replace the charcoal absorber trays for the SBTG system with a new design. The function, capacity, efficiency, and operation of the trays is not impacted by this Exempt Change. There are no Technical Specification revisions associated with this change. The margin of safety for applicable Technical Specifications 3.7.B/4.7.B (Standby Gas Treatment) has been reviewed and is not affected. This Exempt Change will eliminate the sealing problem due to competing perpendicular forces acting on the SBTG charcoal absorber trays when sealed to the housing. This new design will allow for the trays to be sealed more easily by providing separate tray covers. Thus the new covers will then be sealed to housing separately from the trays. The new trays themselves will seal in only the direction of gas flow.

**DESCRIPTION:**

This DCR involved incorporation for detailed as-built information into the Standby Liquid Control (SBLC) P&IDs of both units. These changes are incorporating the as-built SBLC pump and skid drain lines which are constructed from PVC piping and plastic tubing.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Anticipated Transients Without SCRAM	UFSAR SECTION 15.8
Fire Hazards Analysis Report	UFSAR SECTION 15.8

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because this DCR does not alter the SBLC system function or degrade its physical integrity or reliability. The functional design of equipment important to safety remains unaltered, and no new failure modes or mechanisms are introduced. The possibility of an accident or malfunction for this or any related system due to the operation of or interaction with the SBLC drain system has not increased.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

The need for an additional pipe support for a 3" station heating line above 4.16 KV switch gear 14-1 was identified during a walkdown to determine status of all NSR piping over SR electrical distribution centers that must be installed as per ANSI B31.1 seismic 2 over 1 guidelines.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because implementation of this design change will have no affect on the operation or system description as contained in the UFSAR. The addition of one pipe line support would actually decrease the possibility of pipe line failure and the subsequent flooding of the safety-related switchgear below during a seismic event. This accident has been previously evaluated. No new accident or system malfunction, of any type not previously evaluated, will be created by the implementation of the referenced design change.
3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.



E04-2-93-221 CONTD

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

Installed three one inch thread-o-lets at various locations on the CRD Repair Room Sink drain line. The drain line runs from the Reactor Building, through the Extraction Steam Pipeway, to the Chemical Waste Tank in Radwaste.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Loss of Coolant	UFSAR SECTION	15.6.5; 15.6-30
Refueling	UFSAR SECTION	15.7.2

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because the design function of the drain line is not altered by the installation of the thread-o-lets. Since the thread-o-lets are welded to the drain line, they will have the same integrity as the pipe. This installation will facilitate cleaning of the drain line which will result in better flow through the drain line and reduce the source term in the line. Threaded plugs will be installed in the thread-o-lets during normal operation of the drain line.

If the welded connections on one or more of the thread-o-lets were to fail or if one or more of the threaded plugs fell out, Secondary Containment integrity would not be impacted. Secondary Containment test results, station surveillance QTS 160-5, indicate that Secondary Containment can be maintained with an induced leak equivalent to a four inch hole (surface area of 12.566 square inches).

The failure of all three of the thread-o-lets would be equivalent to a hole with a surface area of approximately 2.356 square inches. This is well below the size of the leak induced during the Secondary Containment test. Thus, Secondary Containment integrity will be maintained.

The installation of the thread-o-lets does not adversely impact systems or functions which create the possibility of an accident or malfunction.

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

This Exempt Change installed a time delay relay in the "loss of control signal" circuitry for the 2-0642B valve. When the valve switched from level control to flow control, a loss of signal was detected during the transfer. This loss of signal caused the valve to "lock up" and it had to be manually reset by the operator prior to further operation. The time delay relay will block the loss of signal until the transfer from level to flow control is complete. Upon a loss of power to the time delay relay (which receives power from the valve actuator), the valve will lock up as designed.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.
  - Operation or failure of the changed structure, system, or component could lead to the accident.

The accidents which meet these criteria are listed below:

Increase in Heat Removal                      UFSAR SECTION 15.1

For each of these accidents, it has been determined that the change described above will not increase the probability of an occurrence or the consequence of the accident, or malfunction of equipment important to safety as previously evaluated in the UFSAR.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR is not created because two accidents could result from a failure of the time delay relay and associated circuitry concurrent with a similar failure of the second FWRV: an increase in heat removal from the valves failing open or a decrease in heat removal from the valves failing closed. Both accidents have been evaluated by the UFSAR. No other accidents will result from a failure of the new time delay relay.

E04-2-93-367 CONTD

3. The margin of safety, is not defined in the basis for any Technical Specification, therefore, the safety margin is not reduced.

**DESCRIPTION:**

RBCCW Supply DW penetration X-23 was found leaking during normal testing. The existing bellows was a two-ply bellows and was installed in conjunction with the process pipe during original construction. The existing bellows could not be replaced with an identical unit without disassembly of the process pipe. Ergo, replacement required splitting the bellows in half and welding the two halves around the process pipe. Longitudinal welding along the convolutions was not required during original installation and is not feasible for a two-ply bellows. Therefore, a single-ply bellows was developed to the same requirements as the existing two-ply bellows. This single-ply bellows was designed as a primary containment boundary while permitting relative motion between the drywell penetration sleeve and the flued head anchor.

As identified previously, local pressure tests on existing two-ply bellows have failed to quantify leakage according to the 10CFR50 Appendix J, Type B testing requirements. The two plies were found in contact with each other, significantly restricting or eliminating flow of the test medium to potential crack locations. A bellows test enclosure (BTE) has been developed that was placed over the newly installed single-ply bellows. Thus, a free volume was created between the bellows and the BTE, establishing valid Type B test capability. In addition, the BTE was left in-place to preclude damage to the bellows. Consequently, the existing protective cover is no longer required.

Modification to the flued head anchor was necessary to provide clearance for installation of the bellows and complies with all the design requirements. Integrity of the flued head was not compromised due to this modification.

**SAFETY EVALUATION SUMMARY:**

1. The change described above has been analyzed to determine each accident or anticipated transient described in the UFSAR where any of the following is true:
  - The change alters the initial conditions used in the UFSAR analysis.
  - The changed structure, system or component is explicitly or implicitly assumed to function during or after the accident.

