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RAR-88-41

August 31, 1988

Director of Nuclear Reactor Regulations
U. S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

Enclosed please find a listing of those changes, tests, and experiments completed during the month of August, 1988, for Quad-Cities Station Units 1 and 2, DPR-29 and DPR-30. A summary of the safety evaluation is being reported in compliance with 10 CFR 50.59.

Thirty-nine copies are provided for your use.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

R. A. Robey
Services Superintendent

RAR/vmk

Enclosure

cc: T. Johnson
T. Watts/J Galligan

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SPECIAL TEST 1-112

Special test 1-112 was completed on August 26, 1988. The purpose of this test is to determine the High Pressure Coolant Injection (HPCI) System Steam Line High Flow Setpoint. Per Technical Specifications Table 3.2-1, the HPCI System is required to isolate at $\leq$ 300% of rated steam flow. Steam line flow is measured as a differential pressure (DP) across a flow elbow installed in the steam supply line. This test will measure the differential pressure developed under system test conditions and then calculate a value corresponding to 300% of rated steam flow using a formula provided by General Electric.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because this test will not affect the operation of the HPCI system or change the function of any system components. Data will be collected during system operation using existing test connections.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because this test will be performed concurrently with normal surveillance procedure QOS 2300-1. Therefore, no new probability for an accident or malfunction is created.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the Technical Specification limit for HPCI Steam Line High Flow isolation will remain unchanged.

SPECIAL TEST 1-113

Special test 1-113 was completed on August 26, 1988. The purpose of this test is to determine the High Pressure Coolant Injection (HPCI) System Steam Line High Flow Setpoint. Per Technical Specifications Table 3.2-1, the HPCI System is required to isolate at $\leq$ 300% of rated steam flow. Steam line flow is measured as a differential pressure (DP) across a flow elbow installed in the steam supply line. This test will measure the differential pressure developed under system test conditions and then calculate a value corresponding to 300% of rated steam flow using a formula provided by General Electric. This test is similar to special test 1-112 which was previously used to determine this setpoint but differs in the method of measuring the differential pressure.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because this test will not affect the operation of the HPCI system or change the function of any system components. Data will be collected during system operation using existing test connections.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because this test will be performed concurrently with normal surveillance procedure QOS 2300-1. Therefore, no new probability for an accident or malfunction is created.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the Technical Specification limit for HPCI Steam Line High Flow isolation will remain unchanged.

SPECIAL 1-114

Special test 1-114 was completed on August 26, 1988. The purpose of this test verifies the operability of the auto-transfer logic for the 1/2 Diesel Fuel Oil Transfer Pump. This is accomplished by opening the breaker for the normal feed and verifying the alternate feed will supply power.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because this test involves opening a feed breaker for 1/2 Diesel Fuel Oil Transfer Pump. The breaker can be closed, should it be necessary, during the performance of this test.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because there are no new failure mechanisms created during this test. The 1/2 Diesel Generator will remain operable during the test.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the margin of safety is unchanged. The 1/2 Diesel Generator will be operable at all times during this test.

SPECIAL TEST 1-115

Special test 1-115 was completed on August 25, 1988. The purpose of this test verifies the operability of the auto-transfer logic for the 1/2 Diesel Vent Fan. This is accomplished by opening the breaker for the normal feed and verifying the alternate feed will supply power.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because this test involves opening a feed breaker for the 1/2 Diesel Vent Fan. The breaker can be closed at anytime during the performance of the test should it be necessary.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because there are no new failure mechanisms created during this test. The 1/2 Diesel Generator will be operable during the test.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the margin of safety is unchanged. The 1/2 Diesel Generator will be operable at all times during this test.

SPECIAL TEST 2-82

Special test 2-82 was completed on August 22, 1988. The purpose of this test was to replace the High Pressure Coolant Injection booster pump impeller, then conduct a flow test.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because the impeller is supplied by the original manufacturer and is equal to or greater than the original impeller and will not change any of the guidelines already set forth by the FSAR. It will not cause an occurrence of an accident or increase the probability of a malfunction of equipment important to safety as previously evaluated.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because the replacement impeller from the original manufacturer is equal to or exceeds the original equipment specifications and will not create any condition than those already evaluated by the FSAR.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the impeller is equal to or exceeds the original impeller specifications, and the margin of safety in the Technical Specifications are not reduced.

SPECIAL TEST 2-85

Special test 2-85 was completed on August 26, 1988. The purpose of this test is to determine the High Pressure Coolant Injection (HPCI) System Steam Line High Flow Setpoint. Per Technical Specifications Table 3.2-1, the HPCI System is required to isolate at $\leq$ 300% of rates steam flow. Steam line flow is measured as a differential pressure (DP) across a flow elbow installed in the steam supply line. This test will measure the differential pressure developed under system test conditions and then calculate a value corresponding to 300% of rated steam flow using a formula provided by General Electric.

Safety Evaluation

1. The probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report is not increased because this test will not affect the operation of the HPCI system or change the function of any system components. Data will be collected during system operation using existing test connections.

2. The possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report is not created because this test will be performed concurrently with normal surveillance procedure QOS 2300-1. Therefore, no new probability for an accident or malfunction is created.

3. The margin of safety, as defined in the basis for any Technical Specification is not reduced because the Technical Specification limit for HPCI Steam Line High Flow isolation will remain unchanged.

Modification M-4-2-81-12

Description

Modification M-4-2-81-12 was initiated to install a new 125 VDC switchgear to meet the fire protection requirements specified in 10CFR Part 50, Appendix R. A new room and associated HVAC ductwork was built inside the existing Unit Two battery charger room to provide a separate fire zone. Installed in this new room is the new 125 VDC Turbine Building Bus 2A (Division I). In the old battery charger room, old Turbine Building Bus 2A and 2B were electrically tied together and now make up Turbine Building Bus 2B (Division II). To maintain the original Division I and II arrangement, a large number of cables were moved from old Bus 2A to new Bus 2A.

Evaluation

The basic design of the 125 VDC distribution system is unchanged. The new switchgear is in a new physical location, however, the distribution system remains a two-battery, shared system. Also, this modification provides 3 hour fire separation between Division I and II Unit Two 125 VDC distribution buses which did not previously exist. Therefore, plant safety has been enhanced.

Modification M-4-1/2-83-1

Description

This modification was implemented to provide a crosstie pipe (1/2-10124B-16") connecting the 1B and 2B RHR service water lines, between the RHRS service water pumps and flow elements. The crosstie pipe ties into the Unit 1 Loop B RHRS service water line (1-1005B-16") in the Unit 1 RCIC room, goes thru the wall, and ties into the Unit 2 Loop B RHR service water line (2-1005B-16"). A 16" manual gate valve (1/2-1099-1B) isolates crosstie usage.

This modification was initiated per AIR 4-82-27.

Evaluation

This modification is required to enable the use of the Unit 2 RHR System in the event of failure of the underground portion of RHR line 2-1005-16". The installation of the system does not change any previous FSAR evaluations.

The installation of the new piping and valve system will not affect the availability of the RHR System. The crosstie line is being installed to allow continued operation of both units in the event Loop 'B' fails.

Modification M-4-1-83-003

Description

This modification (M-4-1-83-3) was installed to replace a flange on the 1A and 1B RHR Heat Exchanger Tube side drain line with a union. Previously, to remove the bottom of the Heat Exchanger, the flange must be cut off the tube side drain line so the bottom could slide down. With the installation of the union, the heat exchanger bottom will slide down over the male end of the union and can be removed.

Evaluation

The probability of an occurrence or the consequences of an accident or malfunction of equipment will not be increased due to the replacement of the flange with a union, because the union connection will be able to withstand the system pressure adequately. The union will serve the same purpose as the original flange, in joining two lines of the tube side drain system. Therefore, an accident or malfunction of the system would be of the same type as previously evaluated. The replacement of the flange with the union will not reduce the margin of safety in that the union will ensure integrity of the drain line, and therefore will ensure there will be no loss of service water from the heat exchanger through the connection.

Modification M-4-2-84-016

Description

Modification M4-2-84-016 is to provide a reliable Auto-Reset reset logic. The modification is needed because there is a relay race between the two agastat relays K113A(B) and K103A(B) in the reset logic. When K113A(B) 30 second time delay relay times out its R2-M2 contacts opens and recloses before the K103A(B) relay drops out.

Evaluation

The wiring revision in the ARI-Auto reset logic does not create the possibility for a new accident or malfunction, it also improves the reliability of the system.

Modification M-4-2-84-27

Description

General Electric Service Advice 721-PSM-174.1, dated May 12, 1983, reported that the seismic capability of these HGA relays has been previously listed in error. The error involved only the "b" contacts on the HGA relays. An evaluation of all HGA relays installed in Unit 1 and Unit 2 was performed to determine the effects of the "b" contacts cycling during a seismic event. Six relays were identified on each unit as potential concerns.

Therefore, six HFA relays, which are seismically qualified and have no "b" contacts in use, were chosen to exchange functions with the six HGA relays in questions. The wiring was swapped on a one-for-one base between the relays.

Evaluation

The safety impact of this modification is to improve the reliability of relays needed during a seismic event. The margin of safety has not changed from original plant design, but has been udpated to remedy the problem associated with HGA relays as described above.

Modification M-4-2-85-09

Description

The purpose of modification M-4-2-85-09 is to provide an alternate non--safety related source of cooling water to the HPCI room cooler. The alternate source will allow the coolers to operate independently of the Diesel Generator Cooling Water Pumps, thus increasing the availability of the coolers. This will allow a reduction in the temperature of the rooms, and improve the environment for the electrical equipment and instrumentation located in the HPCI room. The alternate source is provided from service water line 2-3912-16" and ties into the existing cooler source line 2-3956-2½".

Evaluation

The loss of HPCI system has been evaluated in the FSAR. The modification has been seismically designed to preclude increasing the probability or consequence of an accident/event previously evaluated in the FSAR. The margin of safety is increased by addition of another source of cooling water even though this source of water is non-safety related. Check valves are provided to isolate the non-safety source from the safety related source of water.

Modification M-4-2-86-21

Description

This modification (M-4-2-86-21) involves the separation of ATS Divisions to prevent crosstalk/interference between them. Spurious signals and trips in Analog Trip systems have been attributed to a phenomenon known as crosstalk. Crosstalk occurs when the electrical signal from one cable shows up as a signal on a physically adjacent cable. This happens because of the electro-magnetic field surrounding an electrical signal.

There are two ways to control crosstalk and modification M-4-2-86-21 uses both: 1. Spacial separation of adjacent cables. In the modification relays and their cables were moved apart, and 2. Shielding of cable by use of a braided shield on several cables.

Evaluation

This modification decreases spurious malfunctioning of the analog trip system thereby increasing the reliability and safety of the plant's operation.

Modification M-4-1(2)-86-32

Description

Modification M-4-1(2)-86-32 updates the model of the 4-way valves used on the Automatic Valve Corporation (AVCO) air manifolds which operate the Main Steam Isolation Valves (MSIV's). Replacement of the elastomers on the 4-way valves was required by the Environmental Qualification (EQ) program. However, the model of the 4-way valves previously installed was obsolete. Consequently, new 4-way valves had to be installed. In addition, the Station decided to add 2-way valves to the air manifolds. The 2-way valves will add additional reliability to the safety-related function of the MSIV's by providing an additional path for air on the under side of the piston in the main valve to exhaust, allowing the springs to close the MSIV's. The exhaust path provided by the 2-way valves is in addition to the exhaust path provided by the 4-way valves under normal operation.

Evaluation

The only significant change to the air manifolds is the addition of the 2-way valves. This increases the reliability of the safety function of the MSIV's by helping to assure closure by providing redundancy to the 4-way valve operation. No additional failure mode is introduced. The refurbished air manifolds will comply with Quad Cities' EQ program and will be qualified to 10CFR50.49.

Modification M-4-2-87-50

Description

In the 208V Motor Control Centers, the voltage for the control logic was obtained by using control transformers, prior to modification M-4-2-87-50. The control transformers were rated at 240V/120V. This resulted in a reduced voltage of approximately 104 Volts for the control logic. Modification M-4-2-87-50 was initiated to increase the control voltage to approximately 120 Volts. This ensures the performance of the 208V circuits during worst case minimum bus voltage conditions. The new circuit design removed the 240/120 control transformers. A connection from line-to-neutral was made to supply the 120V control voltage.

Evaluation

The replacement of the 240/120 control transformers with a line-to-neutral configuration ensures proper control voltage during minimum bus voltage conditions. Consequently, the margin of safety has been increased with the installation of this modification.

Modification M-4-2-88-33

Description

Impell has evaluated the Quad-Cities Unit 2 Inboard MSIV Drywell Pneumatic Lines, for compliance to FSAR requirements. The 1" diameter line to MSIV 2-203-1C exceeds FSAR allowables. This modification adds a hanger to the line so that allowable stresses are not exceeded. The new hanger has been qualified by Impell.

Evaluation

The overall safety of the plant is improved due to the improved structural quality of the Drywell Pneumatics System. Other systems important to safety are not affected since hangers are passive and have no effec on the function of any system.

Modification M-4-1-87-34

Description

The IRM/SRM dry tubes have a spring-loaded plunger on the upper end which engages in the lower portion of the upper grid. Incomplete engagement of the dry tube plunger in the upper grid has been discovered in some boiling water reactors which is caused by weakening of the spring located below the plunger. Modification M-4-1(2)-87-34 consists of installing a plunger adapter to the IRM/SRM dry tubes that have become disengaged. The plunger adapter allows for maintaining the proper length and full engagement in the upper core grid by means of a spring-loaded extension which fits over the existing plunger.

Evaluation

The addition of a plunger adapter does not cause any safety problems. The operation or characteristics of the IRM/SRM dry tubes is in no way altered. The adapter mainly improves the dry tube seating configuration in the upper core grid which actually reduces the possibility of any accident.

Modification M-4-2-87-34

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Evaluation

The addition of a plunger adapter does not cause any safety problems. The operation or characteristics of the IRM/SRM dry tubes is in no way altered. The adapter mainly improves the dry tube seating configuration in the upper core grid which actually reduces the possibility of any accident.