Commonwealth Edison Company
Quad Cities Generating Station
22710 206th Avenue North
Cordova, IL 61242-9740
Tel 309-654-2241

ComEd

LWP-95-071

July 21, 1995

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, 1995, 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

L. W. Pearce
Station Manager

LWP/dak

Enclosure

cc: H. Miller, Regional Administrator
C. Miller, Senior Resident Inspector

STMGR\07195.LWP

JE44.1

SE-95-049
QCTS 310-3, QTS 110-3 ECCS Test

DESCRIPTION:

The procedure to test the auto-initiation of the ECCS and Emergency Diesel Generator (EDG) systems in response to a LOCA concurrent with a loss of offsite power (LOOP) has been rewritten to include the writer's guide enhancements; addition of monitoring EDG parameters during the performance of the test; connection of monitoring equipment; addition of EDG testing to meet the requirements of QCAP 400-14 and NOD TS-20, Emergency Diesel Generator Reliability Program, and Reg Guide 1.9, Selection, Design, Qualification and Testing of Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants; monitoring of all connected design bases loads that are available; addition of location and clarifying information.

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 Accident (LOCA)	UFSAR SECTION: 15.6
Loss of Offsite Power (LOOP)	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 testing of the response of ECCS and EDG systems to a simulated LOOP/LOCA is performed with the reactor shutdown. No changes in the operation of these systems is being performed outside of the use of jumpers, blocks, and test switches to simulate operating conditions

NRC REPORT ROUTING CONCURRENCE FORM

REPORT: Safety Evaluation Report for June, 1995

[signature] for SES 7/24/95
ORIGINATOR DATE

[signature] 7/24/95
DEPARTMENT SUPERINTENDENT OR DESIGNEE DATE

Jeffrey A. Neal for NJC 7/26/95
REGULATORY ASSURANCE DATE

L W Pearce 7/27/95
SITE VICE PRESIDENT/STATION MANAGER DATE

RETURN FORM TO REGULATORY ASSURANCE, RON BAUMER FOR FILING

as best as reasonably possible. This does not change the systems or their functions in such a manner as to create a different type of accident not evaluated in the UFSAR.

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

SE-95-050
Work Request Q17000

DESCRIPTION:

Disconnected the U2 Vessel Shell Temperature input signal to recorder 2-263-104. Abandoned this input cable in place until the damaged thermocouple which feeds the Vessel Shell Temp signal to the recorder is replaced during Q2R14 under WR Q22921.

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:

   None

   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 elimination of the Vessel shell temperature signal to recorder 2-263-104 to prevent backfeed noise from affecting recorder 2-263-105 would improve the reliability of recorder 2-263-105. Redundancy in the vessel shell temperature monitoring system is still maintained through the usage or recorder 2-263-105 and process computer point C214. This change would not adversely impact any system described in the UFSAR.

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

SE-95-051
QGA 300

DESCRIPTION:

Increased ARM setpoint for ARM 16 (HPCI) and ARM 17 (RCIC) to 100 mr/hr.

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:

   None

   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 alarm setpoint change has been evaluated through the 50.59 process. This evaluation is not focused on the setpoint change but on the impact specifically of the change on QGA actions. QGA actions are directed when the valve exceeds the maximum normal value. This valve has no special significance other than a trigger that an abnormal situation is occurring. The only impact increasing the setpoint could have, would be to decrease the margin to the maximum safe value which would reduce the time to take action prior to exceeding personnel or equipment acceptable values. This change decreases that margin by a small fraction of the total maximum safe operating value (3000 mrem/hr) which is insignificant to the response time.

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

SE-95-052
WR Q21056, Q21027, Q21057

DESCRIPTION:

Installation of a replacement exciter breaker on the Emergency Diesel Generator (EDG) system requires a different model breaker and a different mounting detail. The breaker is a Westinghouse approved replacement for the originally installed obsolete breaker. Differences in the mounting require moving the breaker location slightly to allow drilling of new bolt holes as well as addition of a shim plate behind the mechanical interlock (keylock switch). these details have been provided under Site Engineering Service Request (SESR) 4-2725 and 4-2726 (Unit 2), 4-2854 (Unit 1), and 4-2855 (Unit 1/2). Included are seismic evaluations of the new breaker and mounting.

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 Accident (LOCA)	UFSAR SECTION 15.6
Loss of Offsite Power (LOOP)	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 replacement breaker is functionally and electrically the same as the original breaker and the mounting detail has been evaluated for seismic adequacy. There are no changes to the EDG system or any other system that creates an accident or malfunction different from those in the UFSAR.

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

SE-95-053
QCTS 360-1 Feedwater Level Control

DESCRIPTION:

This new procedure is generated based upon the Quad Cities Unit 1 Startup Test Instructions, Test No. 23 (STI, GE22A2189). Based on STI-23, the level setpoint test was performed by moving the level controller setpoint down and up about 6 inches as quickly as possible and the transient recorded until steady-state is achieved. The dynamic adjustment of the system was determined by observation of its response to level setpoint disturbances at each test point scheduled during 1 and 3 element control mode of operations. In addition to the level setpoint changes testing specified in STI-23, the following test activities were also performed in accordance with this newly generated startup test procedure:

a. To monitor feedwater control system performance in maintaining reactor level during placing first feed pump on-line, placing low flow controller in service and switching reactor level control between 1 and 3-element control modes.
b. To collect steady state feedwater level control system performance data during post refueling power ascension.
c. To evaluate the responses of newly installed feedwater regulating valve actuators using small and large flow demand steps.
d. To evaluate and adjust if necessary the steam flow and feedwater flow summers based on the results of test.

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:

Feedwater controller failure during maximum flow demand.	UFSAR SECTION: 15.1.2
Feedwater controller malfunction demanding closure of the feedwater control valve.	UFSAR SECTION: 15.2.7

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 procedure does not have any potential to create an accident or malfunction of a type different from those evaluated in the UFSAR. The performance of this procedure will not impact safe operation of the plant nor degrade the adequacy of system, structure or component of the feedwater level control system, since:

   a. Level setpoint change test were previously specified in the UFSAR Table 14.2-3 as being performed during initial startup test program. A review of the initial startup test results indicated that the feedwater level control system is adequate and stable in response to the feedwater system transients during 1 and 3 element control modes.

   b. As described in the UFSAR Section 7.7.5.2.3, the feedwater level control system is independent of the level scram function. However, to prevent an inadvertent reactor scram, size of flow demand step changes required by this procedure are determined based on the previous small step test results of scram avoidance margins in neutron flux and reactor level. Therefore, feedwater control system malfunctions that resulted in maximum or zero feedwater flow evaluated in the UFSAR Section 15.1.2 and 15.2.7 will not occur as a result of performing this test and bound this test in the event of control signal failure.

   c. Steady state system performance data are to be collected at an increment of approximately 2% of rated power in conjunction with the normal plant power ascension.

d. Steam flow and feedwater flow summer gains will be evaluated and adjusted if necessary based on the steady state data collected at high power operating conditions. The adjustment will only be made with feedwater level control system in 1 element mode and the reactor operating below 50% power.

e. All required transient signals are installed and removed in accordance with the nuclear work request package and their connections to the data acquisition system is controlled in accordance with the plant administrative procedure as appropriate.

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

E04-2-95-027
Replacement of SBLC Check Valve 2-1101-43A

DESCRIPTION:

The proposed design change replaced the 2-1101-43A lift-check valve located on the discharge of the 2A SBLC Pump with a piston-check variant. The new piston-check valve is slightly oversized for the application but is the only serviceable spare available. The new piston-check will only open 89% of full stroke under full flow conditions. However, its associated pressure drop is still less than the original valve.

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
   w/o Scram (ATWS) SAR 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 the reactivity requirements for the SBLC system are sufficient to shutdown the reactor from full power to a cold, xenon-free shutdown in the absence of any control rod motion. The resulting reactivity in the shutdown condition is $k_{eff} \leq 0.97$ ($\geq 3\%$ Δk subcritical). A margin of 25% additional boron is added to compensate for leakage and possible imperfect mixing. At an injection rate of 40 gal/min (one pump), the time required to inject sufficient boron to override the rate of reactivity insertion due to cooldown of the reactor following the xenon peak from full rated power is approximately 83 minutes. For

an ATWS event the injection rate is 80 gal/min which will inject the solution in approximately 42 minutes to meet the requirements of 10CFR50.62.

Operation of the Standby Liquid Control System (SBLC) will not be detrimentally affected by installation of the new check valve. The flow coefficient of the new valve (Cv=40) is greater than the flow coefficient for the old check valve (Cv=23) indicating that the new valve produces a smaller pressure drop than the existing valve. The new valve does not open greater the 89% under full flow conditions and although the check valve could be sized better, the system configuration is not propitious for any check valve type. Flow disturbances and 90° elbows within the recommended minimum 10 pipe diameters ensure rapid wear of check valve components. However, the new valve should equally withstand the punishment when compared to the existing valve. It should be noted that the SBLC system is not a system which is run continuously thus the new check valves' service life will be satisfactory.

There will be no new failure modes associated with the new check valve. Check valves can either fail open or closed. The addition of a spring in the new valve may add another component subject to failure but the spring is constructed of stainless steel and no path exists for the spring to be released into the piping. Failure of the check valve in the open position would still allow two pump flow. Failure of the check valve in the closed position would still permit the system to inject sodium pentaborate with one pump.

Pump operability is verified monthly using demineralized water. If wear problems with the new check valve occur they would most likely be discovered during the monthly surveillance as the problem with the existing check valve was discovered.

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

E04-2-95-036
Replacement of SBLC 2-1101-15, 16 Check Valves

DESCRIPTION:

The proposed design change replaced the 2-1101-15 and 2-1101-16 SBLC check valves located on the common injection line to the reactor. These valves are primary containment isolation valves.

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 Transient Without Scram — 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 the reactivity requirements for the SBLC system are sufficient to shutdown the reactor from full power to a cold, xenon-free shutdown in the absence of any control rod motion. The resulting reactivity in the shutdown condition is $k_{eff} \leq 0.97$ ($\geq 3\%$ Δk subcritical). A margin of 25% additional boron is added to compensate for leakage and possible imperfect mixing. At an injection rate of 40 gal/min (one pump), the time required to inject sufficient boron to override the rate of reactivity insertion due to cooldown of the reactor following the xenon peak from full rated power is approximately 83 minutes. For an ATWS event the injection rate is 80 gal/min which will inject the solution in approximately 42 minutes to meet the requirements of 10CFR50.62.

Operation of the Standby Liquid Control System (SBLC) will not be detrimentally affected by installation of the new check valves. The flow coefficient of the new valve (Cv=40) is greater than the flow coefficient for the old check valve (Cv=13) indicating that the new valve produces a smaller pressure drop than the existing valve. The new valves are properly sized and open to 100% of stroke under full flow conditions. The system piping configuration is propitious for the check valve installation, there are no flow disturbances or 90° elbows within the recommended minimum 10 pipe diameters. The new valves should be equally durable when compared to the existing valve. The SBLC system is not a system which is run continuously thus the new check valves service life should be exceptional.

There will be no new failure modes associated with the new check valves. Check valves can either fail open or closed. The addition of a spring in the new valve may add another component subject to failure but the spring would only cause the valve to fail, since no path exists for the spring to be released into the piping. Failure of the check valve in the open position would still allow two pump flow. Failure of both check valves in the open position would breach primary containment although concurrent failure of both checks valves would be unlikely. Failure of the check valve in the closed position would prevent operation of the system and SBLC would not be capable of performing its intended function. However, all these modes of failure are equally possible with the existing valves.

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

E04-0-93-180

Permanent Piping for the Hypochlorite Injection System

DESCRIPTION:

This exempt change replaced the temporary tygon tubing installed via temporary alterations 93-1-6 and 93-2-89 for biocide injection into the circulating water system. The tygon tubing was installed on a temporary basis from the Circulating Water Sodium Bromide and Sodium Hypochlorite Pump Skid to the Crib House intake bays to determine if the intake bay was the optimum injection point. This has since been determined to be true, therefore a permanent installation is justifiable.

The temporary tygon tubing was replaced by 1" socket-fused Polyvinylidene Fluroide (PVDF) piping. The piping and supports were installed from the pump skid up through a new 4" core hole to the Crib House ceiling, across the ceiling and down to each of the six intake bays on the 595 ft. elevation of the Crib House.

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:

   None

   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 itself has no safety significance, has no impact on any other systems or functions, and therefore will not create the possibility of an accident or malfunction of a type different from 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.

E04-0-93-296
Rear Exhaust Manifold Turbo Screen

DESCRIPTION:

This Exempt Change modified the Emergency Diesel Generator (EDG) engine rear exhaust manifold chamber to include an exhaust screen inspection port to view the exhaust manifold turbo screen.

The existing EDG engine rear exhaust manifold is not equipped with an exhaust screen inspection port. The modified inspection port will allow inspection of the exhaust screen without physically removing the screen from the manifold. This inspection port has a 4" diameter access opening to view the exhaust screen. Optional modifications are allowed per this Exempt Change as detailed in ECN 04-01128E "Option A" or Option B". The options are described as follows:

Option A

Option A used an inspection port kit that is field installed on the existing engine rear exhaust manifold chamber. The installation will be performed in accordance with MKW Power Systems, Inc. (MKWPS) Maintenance Instruction M.I. 9622.

Option B

Option B employs a MKWPS vendor supplied engine rear exhaust manifold chamber prefabricated with an exhaust screen inspection port kit that will replace the existing exhaust chamber.

Option A & B

Instructions for the disassembly and reassembly or the rear exhaust manifold chamber are furnished in EDG Vendor Manual Binder C0115, Volume 1. Additionally, MKWPS Maintenance Instruction M.I. 9622 includes a 7 1/4" X 6 13/16" slot that is cut in the heat shield for the inspection port.

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:

Failure of Diesel Generators
To Start SAR SECTION: 8.3.1.6.1

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 this exempt change modification of a diesel turbo exhaust screen inspection port does not create any new failure modes due to the mechanical design and installation criteria. New inspection port installations have been evaluated as satisfactory by MKWPS.

   There is no change in EDG system functions, since the operation of the EDG will be unchanged in all modes. The only failure modes identified for this Exempt Change are already addressed in the UFSAR. Therefore no accident or malfunction of a type different from those evaluated in the UFSAR are introduced.

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