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RAR-88-19

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Mr. J. H. Sniezek, Deputy Dir.
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Enclosed please find a listing of those changes, tests, and experiments completed during the month of April, 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
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Services Superintendent

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Enclosure

cc: I. Johnson
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Modification M-4-1-82-17

Description

The modification is to replace the drywell H₂ monitor system. The existing system does not fully satisfy NRC requirements as listed in NUREG 0737. The existing in-containment system will be replaced with an out-of-containment system.

Evaluation

The basic function and operation of the system is not being changed, so the modification doesn't create a new accident situation.

Modification M-4-1/2-83-14

Description

This modification was initiated to provide isolation capability for the HVAC fan and the cooling water pump for the 1/2 diesel generator. This modification was initiated to bring the station into compliance with the requirements of Section III.G of 10CFR50 Appendix R, "Fire Protection Program for Operating Nuclear Power Plants". The isolation of a fire detection relay contact and a control cable which trip the HVAC fan on the detection of a fire was accomplished by the installation of an isolation switch at the 1/2 diesel generator auxiliary control panel. The isolation of the redundant power feeds for the 1/2 D.G. cooling water pump was accomplished by installing a transfer panel which automatically connects the energized power feed to the pump while isolating the alternate feed.

Evaluation

The affect of this modification was to reduce the possible consequences of a fire in various zones of the plant by increasing the availability of the auxiliary equipment associated with the 1/2 diesel generator. This increases the reliability of the on-site power system and, therefore, improves the margin of safety of the plant.

Modification M-4-1/2-83-20

Description

This modification was to install three hour fire rated doors near column 12/G and 14/G at the 611' elevation in the Turbine Building to prevent fire from propagating between Division I and II cables within a unit. This modification is required to comply with the new fire protection requirements list in the 10CFR50 Appendix R, Section III.G.

Evaluation

The safety aspects are improved by stopping a fire from spreading that could hinder safe shutdown capability.

Modification M-4-1-84-7

Description

Modification M-4-1-84-7 replaced the four mechanical Industrial Timer Corporation timers used for RHR initiation on low reactor water or high drywell pressure. The four mechanical timers were replaced with three solid state Agastat time delay relays and one contact off an existing HFA relay. This modification was initiated because the mechanical timers had a tendency to stick and fail to reset properly. The new time delay relays reset automatically when the initiation signal is removed.

Evaluation

Modification M-4-1-84-7 changed the type of time delay device, but did not modify any of the RHR logic circuitry. Consequently, no new safety concerns need to be addressed. In fact, the solid state time delay relays are more reliable than the mechanical timers. Therefore, the probability of a failure in the RHR circuitry is reduced.

Modification M-4-1-84-39

Description

The modification is to install three hour rated fire dampers in the HVAC duct penetrations and remove the old sections of duct work and install new sections of duct work. The reason for the modification is to meet the requirements of 10CFR50 Appendix R.

Evaluation

This modification provides protection from a fire spreading from one fire zone to another. The margin of safety is maintained. The modification has no mechanical or electrical interfaces or interaction with existing safety related systems or equipment.

Modification M-4-1-84-41

Description

The modification is to remove the disc from check valve 1-3999-139. The removal of this disc enables the Unit 1 Diesel Generator Cooling Water Pump to cool the 1/2 Diesel Generator Heat exchangers, to provide an alternate safe shutdown patch. This is required to meet the separation criteria for safe shutdown in the 10CFR50 Appendix R.

Evaluation

The 1/2 Diesel Generator Cooling Water Pump flow will remain unchanged. The removal does not interfere with operation of any existing safety systems or equipment. The operation of a check valve at its existing location does not contribute to the safety related functions of the Diesel Generator system.

Modification M-4-2-85-8

Description

This modification was implemented to install local control and isolation capability for the inboard RCIC Steam Supply Isolation Valve, MO 2-1301-16. This modification was necessary for the station to satisfy 10CFR50 Appendix R fire protection requirements concerning the consequences of a fire in Fire Area TB-II and the resulting path to safe shutdown. A local-remote selector switch, a local control switch, and position indicating lights were therefore installed in MCC 28-1A-1.

Evaluation

The purpose of this modification was to allow RCIC Steam Supply Isolation Valve MO 2-1301-16 to remain operable following a spurious actuation which could be caused by a fire in Fire Area TB-II. Since this modification has no effect on the intended function of the valve or the RCIC System, the margin of safety, as evaluated in the FSAR and/or any Technical Specification, is not changed.

Modification M-4-2-85-25

Description

Modification M-4-2-85-25 modified several pipe restraints on the heat traced lines of the Containment Atmospheric Monitoring (CAM) system and installed containment isolation check valves 2-2499-22A and 2-2499-22B in the return lines.

When the CAM system was upgraded, heat tracing was placed on the instrument lines. The heat tracing causes the instrument lines to expand. A reanalysis of these lines has shown that high stresses exist. A number of supports must be modified, added, or removed to solve the problem.

The containment isolation valves were to be installed during the upgrade of the CAM system, but were not due to procurement. They are being installed under this modification.

Evaluation

This modification does not change the function or limiting condition of operation for any safety system needed to mitigate the consequences of an accident. This modification will improve the integrity of the sample lines and, therefore, reduces the probability of an occurrence or the consequences of an accident.

Modification M-4-2-85-42

Description

This modification is being made to satisfy the third and final requirement of 10CFR50.62 for the reduction of risk from an ATWS. The modification consists of providing a second pump suction line from the SBLC tank to the common suction header, modifying the SBLC tank to provide a nozzle for the suction piping, and modifying the controls to provide for running both pumps simultaneously.

The existing SBLC control switch is a three position switch (SYS 1, OFF, and SYS 2). The existing control switch is being replaced by a five position switch (SYS 1 & 2, SYS 1, OFF, SYS 2, and SYS 2 & 1).

The SBLC pump discharge relief valves will be set to lift between 1455 and 1545 psig. The new SBLC pump suction line will be heat traced, will have an isolation valve, and will have a high/low temperature switch that will annunciate in the Control Room.

Evaluation

This modification simply implements an additional performance objective of providing the capability to deliver 80 g.p.m. of 14% (minimum) sodium pentaborate solution in order to control, mitigate, and terminate certain anticipated transients with a concurrent failure of the reactor to scram (ATWS events).

The suction piping has been designed to assure two pump NPSH and to eliminate concerns of mutually reinforcing pulsations associated with two pump operation. Control logic and power separation is maintained between the two injection pumps and squib valves. Pump discharge relief valve setpoints were increased to assure reliable system operation with two pumps running. Concern over sodium pentaborate crystallization due to increased concentration has been evaluated and low temperature alarm setpoint was changed to 78°F.

Modification M-4-2-85-43

Description

This modification was initiated to replace the old Unit Two 250 volt battery which was nearing the end of its service life. A new 250 volt battery, a GNB type NCX-1500, was installed along with new seismically qualified battery racks. Also included in this modification was the installation of a seismically qualified overhead x-y crane to facilitate battery installation and maintenance.

Evaluation

The new battery is sized to provide sufficient DC power for the worse case accident load profile. The racks and overhead crane are designed to be seismically qualified. Thus plant safety remains unchanged by this modification.

Modification M-4-2-85-53

Description

The existing main steam line radiation monitors (GE model #194X629), 2-1705-2A thru D, were obsolete. They were removed from their locations on the 902-10 panel and replaced with modern, technically superior monitors (GE model #304A3700G002). The new monitors are exact functional replacements and are plug compatible units.

Evaluation

The new main steam line radiation monitors are providing the same function as the old monitors. The trip points have remained the same. The safety aspects have not changed.

Modification M-4-2-86-19

Description

This modification eliminates the single failure concern addressed in IECB 86-01. Previously the 'A' and 'B' RHR minimum flow valves were controlled by either flow sensor in the 'A' or 'B' loop through auxiliary relay contacts. A failure of either of these sensors could close both minimum flow valves while other pump discharge valves were closed. This condition could result in the pumps running deadheaded with potential for pump damage. This modification results in the 'A' loop flow sensor controlling only the 'A' valve, and the 'B' loop sensor controlling the 'B' loop valve.

Evaluation

This modification assures redundancy requirements of the FSAR associated with RHR injection and containment are met. Consequences of an accident are bounded as 10CFR50 Appendix K criteria are met. This modification results in a reduced LPCI flow rate to the core. A 10CFR50 Appendix K analysis indicates that the reduced flow rate results in a small increase in post-accident core uncovery time. As a result, peak fuel clad temperature rises 32°F from the previous calculated value of 1761°F to 1793°F during the most limiting event which credits LPCI flow. Although clad temperature elevates slightly, there remains a margin in excess of 400°F to the 2200°F peak clad temperature limit set by 10CFR50.46 and to the limiting double ended recirculation suction line break with an assumed failure of the LPCI injection valve (i.e. no LPCI flow available).

Modification M-4-2-86-20

Description

This modification will provide three hour fire rated penetration seals in cable penetration openings under 4KV Switchgears 23-1 and 24-1. This item is required to meet our Appendix R Safe Shutdown Analysis.

This modification will also provide three hour fire rated penetration seals in the cable penetration openings under the MG-Sets.

Evaluation

The installation of the penetration seals and the wrapping of the duct will prevent the propagation of a fire from one fire area to another.

Modification M-4-2-86-23

Description

The purpose of this modification is to construct four new clevises for the drywell personnel airlock strongback. These new clevises will permit installation and removal of the strongback without opening the inner door.

Evaluation

The drywell personnel airlock door strongback assemblies were originally designed and built during plant construction to allow pressure testing of the drywell personnel airlock to design accident pressure. This modification will revise the tieback details of the top and bottom strongbacks so that they can be installed on the inner door while the inner door is shut. This will allow the station to meet 10CFR50 Appendix J requirements and meet primary containment integrity while the unit is in operation. Calculations were performed by Sargent and Lundy which demonstrates that the modification meets original design margins.

Modification M-4-1-86-23

Description

The purpose of this modification is to construct four new clevises for the drywell personnel airlock strongback. These new clevises will permit installation and removal of the strongback without opening the inner door.

Evaluation

The drywell personnel airlock door strongback assemblies were originally designed and built during plant construction to allow pressure testing of the drywell personnel airlock to design accident pressure. This modification will revise the tieback details of the top and bottom strongbacks so that they can be installed on the inner door while the inner door is shut. This will allow the station to meet 10CFR50 Appendix J requirements and meet primary containment integrity while the unit is in operation. Calculations were performed by Sargent and Lundy which demonstrates that the modification meets original design margins.