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VICE PRESIDENT
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March 11, 1988

U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 and 50-318
Report of Changes, Tests and Experiments

REFERENCE: (a) 10 CFR 50, Paragraph 50.59(b)

Gentlemen:

As required by the above reference, attached is a report containing discussions of the changes, tests and experiments completed on Calvert Cliffs Units 1 and/or 2 under the provisions of 10 CFR 50.59(a), including a summary of the safety evaluation of each. This report covers the period from January 1, 1987 through December 31, 1987.

Items in the report are referred to by "Facility Change Request" (FCR) number.

Very truly yours,

JATiernan

JAT/ENM/lw

Attachment

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50.59 REPORT

74-0079 (Unit 1)

This FCR involved modifying the protective relaying for the main turbine to insure the turbine would trip for all generator trips. After this modification, generator negative phase sequence, loss of field, out of step and underfrequency relaying would also trip the turbine in addition to the generator. The safety analysis concluded that an unreviewed safety question did not exist since the modification did not affect equipment important to safety. The turbine generator is a non-safety related piece of equipment described in the FSAR. This FCR did not affect the Technical Specifications although the FSAR was revised.

74-1012 (Units 1 and 2)

This FCR added ammeters to the 480 volt motor control centers to facilitate bus ties on the motor control centers for maintenance or emergencies. The S.A. concluded that the FCR did not constitute an unreviewed safety question. The modification did not affect the Technical Specifications or the FSAR.

76-0118 (Unit 2)

The shunt resistors for the local meters on the nuclear instrumentation system were replaced to enable accurate calibration of the meters. The original equipment manufacturer concurred that the optimum value of the shunt resistor should be determined during the pre-operational test and then be installed. The installation did not affect the ability of the nuclear instrumentation system to monitor reactor power or to generate a trip condition. Only local indication was enhanced - no other aspect of the system as affected.

76-0124 (Unit 2)

This FCR added auxiliary relays and circuit breakers to electric heat tracing circuits on the boric acid system due to increased load. The safety function of the system was unchanged and there were no unreviewed safety questions.

76-0129 (Unit 1)

The mechanical overrride for the low pressure safety injection flow control valve (1-CV-306) was removed since it was no longer required for operation. This did not affect the valve operation or seismic mounting of the valve. The system continued to operate as designed. No new systems or operations were added.

76-0180 (Units 1 and 2)

Individual isolation valves were added for the jacket cooling pressure switches of the emergency diesel generators (EDG's). This enabled the switches to be calibrated without taking the diesel out of service since the switches function with two out of three coincidence logic. This change enhanced the availability of the EDG's and did not change the operation of the system.

76-1014 (Units 1 and 2)

This FCR modified the control circuit for MOV659 and MOV660 to ensure no spurious signal could result in the loss of ECCS function. A lockout switch was added to isolate control power to the MOV motor starter. The safety analysis concluded that an unreviewed safety question did not exist since after the modification a spurious closure of MOV659 and MOV660 resulting in the loss of ECCS cooling could not occur. This FCR did not affect Technical Specifications, however, the FSAR was revised to reflect required annunciation.

76-1024 (Common)

This FCR covered the installation of a new TV camera on the south wing of the intake structure. The camera was needed to provide better security coverage of the intake. Cabling was run to the control stations, and control equipment was added in both the Control Room and the Guard house. This new camera was mounted sufficiently high on the light pole to enable security to observe the area behind the mound of dirt to the southwest of the camera.

76-1026 (Units 1 and 2)

This FCR modified main generator coastdown circuitry to incorporate the addition of two switchyard breakers. The affected equipment is non-safety related and the Technical Specifications were not affected.

76-1037 (Unit 2)

This FCR provided increased fuel storage capacity to the Unit 2 spent fuel storage pool by replacing the original spent fuel storage racks with high density spent fuel racks and by adding one additional rack. This modification increased the storage capacity of the Unit 2 spent fuel pool from 190 spaces to 528. The structural characteristics of the spent fuel storage pools are not altered by this change. This modification consists of eleven storage racks in the Unit 2 half of the pool, each with forty-eight (48) storage elements in a 13 inch x 12.5 inch center-to-center spacing. Cooling of the spent fuel assemblies is achieved through natural circulation. The Technical Specifications are unaffected by this change and no unanswered safety questions exist.

77-0059 (Common)

This FCR upgraded the plant security system to meet the more stringent requirements of 10 CFR 73.55. There were two safety analyses performed for this modification. The first dated

February 24, 1978, addressed drilling of holes required for mounting non-safety related security system equipment. The S.A. concluded that the modification did not constitute an unreviewed safety question since the structural integrity of the safety related systems, to which the security system equipment was to be mounted, was not impaired. The second S.A. dated December 12, 1980, addressed the seismic mounting of non-safety related security system air conditioning equipment above safety related equipment in the Control Room (II/I). The S.A. concluded that an unreviewed safety question did not exist since the supports were seismically designed and were to be installed to safety related criteria. Both of these S.A.'s indicated that there was no Impact on Technical Specifications and no FSAR changes were required.

77-1033 (Common)

Sigma Instrument Company no longer supplied models 9222 and 9223, but did supply models 9262 and 9263 as direct replacements. The new indicators were mechanically and electrically the same. No changes were made to fit, form, or function of the indicators.

78-0025 (Units 1 and 2)

This FCR changes the setpoints of RV-409 and RV-468. The new setpoints are below the system design pressure. The relief valve manufacturer was consulted. This does not present an unreviewed safety question.

78-0124 (Unit 1)

This FCR allowed the addition of a lantern ring in the lower portion of the salt water pumps' stuffing boxes. The lantern ring provided for more even distribution of packing sealing pressure on the shaft. This modification improved the shaft sealing of the pumps without otherwise affecting their ability to perform their safety-related functions.

78-0139 (Units 1 and 2)

Longer extension cables were fabricated and installed in the wide-range nuclear instrument system. The new extension cables were fabricated using equivalent cabling and connectors. The system design criteria was maintained and system operation was unaffected. No new systems or operations were added.

78-0161 (Units 1 and 2)

This FCR involved a repair of worn radial bearing housings on salt water pumps for both Units 1 and 2. The housings were removed and their inside diameters were drilled out so as to accept a steel or cast iron sleeve. The sleeves were pinned to the cast iron housing with dowel pins of sufficient shear area to prevent sleeve rotation. This design, therefore, restored the original functionality of the radial bearing housings by eliminating the play between the housing and bearing.

78-0162 (Units 1 and 2)

This FCR allowed the use of Belzona Fluid Metal or epoxy paint on the salt water pump impellers. Belzona is similar to body putty to reconstruct small areas of the impeller which have been chewed up in service. Both the Belzona and epoxy paint function as a barrier coating to corrosion of the impeller.

78-1001 (Units 1 and 2)

This FCR installed a jib crane on elev. 69'-0" and a beam hoist at elv. 45'-0" of each containment near the hatch opening to facilitate movement of materials. The structural review of the steel capacities was done by Bechtel. Load combinations applied in the design meet the criteria shown in FSAR Chapters 5 & 5A for seismic installations. The cranes and hoists were purchased commercial quality and then reviewed for safety-related installation. Some modifications were made to dress-up the welding quality and then painted with a containment quality coating. This FCR did not affect any Technical Specifications and there are no unreviewed safety questions.

78-1020 (Units 1 and 2)

This FCR modified the safety related motor control center starters by replacing the control power transformer with a larger capacity transformer. This was done in order to insure adequate voltage was available to allow energizing the motor control center contactors. The S.A. concluded that an unreviewed safety question did not exist since the new control power transformers would insure adequate voltage levels were maintained during lowest possible system voltage conditions. This modification did not affect the Technical Specifications or the FSAR.

78-1022 (Units 1 and 2)

The digital voltmeters for the reactor protection system calibration and indicating panel (RPSCIP) were replaced with a newer model meter supplied by the original equipment manufacturer. The new model meter superceded the old model. The fit, form, and function of the meter remained the same.

78-1028 (Units 1 and 2)

This FCR initiated a series of modifications to the reactor coolant pump seal instrument sensing lines to eliminate frequent occurrences of weld cracks and flex tubing wear due to excessive vibration. Specifically, seismic restraints were added to the instrument and vent lines off the RCP seals, and the lengths of tubing between the existing flex hose and the pump were shortened to reduce the probability of fatigue failure at the pipe stub/seal body interface. These changes were considered temporary, and were continued during ensuing outages under FCR's 82-0190 and 83-0145. The safety analysis referred to vibration studies, vendor contacts and Bechtel involvement, all of which concluded that the modification would have no affect on the original design criteria for the sensing lines. A review of the

FSAR, Technical Specifications and their Bases concluded that an unreviewed safety questions did not exist.

78-1030 (Units 1 and 2)

Rosemount Model #104-1713-1 temperature sensors were approved as direct replacements for the obsolete Rosemount Model #104ABH sensors. Internal changes to the sensors improved the time response of the sensor. No changes were made to the reactor protective system or the reactor regulating system that these sensors are used in.

79-0040 (Units 1 and 2)

A separate audio count-rate system was fabricated so it could be installed and removed when necessary. Previous problems with cross-talk between nuclear instrumentation channels were eliminated. The audio count-rate system was designed such that it could only be physically connected to one channel at a time to maintain channel separation. The system is in operation only when the plant is not in Mode 1. The audio count-rate system functions similarly to the original design and as described in the FSAR. Plant Technical Specifications were not affected.

79-0065 (Units 1 and 2)

This FCR replaced the existing type 2E electrical penetration assemblies with one manufactured by Conax Corporation. The existing assemblies were leaking extensively thereby not maintaining the specified pressure boundary. The safety analysis concluded that an unreviewed safety question did not exist since the new penetration assemblies were manufactured, installed and maintained in accordance with the existing criteria to ensure containment integrity was not compromised during normal operation and design basis events. This FCR did not affect Technical Specifications or the FSAR.

79-0067 (Units 1 and 2, Common)

This FCR removed the rectifier bridge portion of the motor operated potentiometer (MOP) and increased the pressure setting of OPS (lube oil pressure switch) from 6 psig to 8 psig on emergency diesel generators 11, 12 and 21. The rectifier bridge was not required since 125 VDC was already provided for the diesel control circuits. Increasing OPS (lube oil pressure switch) pressure setting to 8 psig allowed the control circuitry to reset properly so auto start was not defected. The safety analysis concluded that an unreviewed safety question did not exist since a 125 VDC power feed already existed so the rectifier circuit was not required and increasing OPS (lube oil pressure switch) setpoint would increase the reliability of the auto start circuit. This FCR did not affect Technical Specifications or the FSAR.

79-0072 (Units 1 and 2)

This FCR was written to install manual isolation valves upstream of safety injection control valves (CV-611, 621, 631, 641, 618 and 628). This modification would allow repair of the control valves without draining the safety injection tanks. The operability of the safety injection system was not altered by this change. New valves and installation met intent of original construction code. No changes to the FSAR or Technical Specifications were required.

79-0108 (Units 1 and 2)

This FCR installed an inspection port on the main feedwater flow nozzles. The ASME Power Test Code allows the use of a lower instrument inaccuracy value if the flow nozzle is routinely inspected for accumulation of deposits or erosion. The installation was performed to the original construction code of the piping system. In addition, flow measurements before and after the modification were comparable.

79-0110 (Units 1 and 2)

This FCR is to fabricate a trolly lift rig and modify the refueling machine trolly to accept that lifting rig. This FCR does not constitute an unreviewed safety question as the refueling machine trolly lifting rig will only be utilized during refueling (Mode 6) for the sole purpose of allowing a more practical method of performing repairs on the machine.

79-1019 (Units 1 and 2)

Two radiation area monitor detector tubes were serviced by the original equipment manufacturer and given new serial numbers. This modification documented the change in serial numbers. No changes to the system were made.

79-1028 (Units 1 and 2)

The reactor coolant flow transmitters were modified to reduce the noise on the outputs of the transmitters. A resistance - capacitance network was added by the vendor to enhance the transmitter's performance. No changes were made that affected the accuracy or time response of the instruments.

79-1029 (Units 1 and 2)

Vendor drawings and the purchase specification for in-core detectors were revised under this modification. The change did not affect the pressure boundary aspect of the in-core detectors and no other interfacing system was affected.

79-1032 (Units 1 and 2)

A number of solenoid valves that operate containment isolation control valves were replaced with environmentally qualified valves. The valves were supplied by the original equipment manufacturer. The valves were seismically mounted and continue

to provide the same service function as before. No new systems or operations were added.

79-1035 (Units 1 and 2)

An automatic start feature was installed to start both Auxiliary Feedwater Pumps on a low steam generator level signal generated by the Engineering Safeguards system. This was a short-term solution to address recommendations made by the NRC regarding Auxiliary Feedwater Systems. The system was designed to take advantage of existing equipment to form the auto-start control system. No new systems were added. Redundancy between safety-related systems was maintained. This system was replaced in its entirety under FCR 79-1062.

79-1036 (Units 1 and 2)

This FCR was written to implement the requirements of NRC IE Bulletin 79-14. As a result of inspections to verify the as-built condition of safety related piping, several supports were either modified or added to ensure that piping stresses would remain within design requirements. Additionally any drawing discrepancies were corrected to bring the piping drawings into agreement with the piping stress problems.

79-1043 (Units 1 and 2)

Subcooled margin monitors were installed to meet the requirements of NUREG-0578. Inputs were provided to the SCMM's off of the temperature and pressure loogs that service the reactor protective system (RPS). The inputs were isolated from the RPS observing the requirements of 1E isolation. No changes were made to the RPS or any other safety system.

79-1045 (Units 1 and 2)

A technical support center was installed to meet various requirements of NUREG-0585, NUREG-0737, and Regulatory Guide 1.97. Electrical isolation and separation criteria were maintained to assure the system could not adversely affect other plant systems (e.g. Reactor Protective System).

79-1050 (Common)

This FCR purchased and installed 8-hour battery operated emergency lights in areas of the plant that may be occupied during safe shutdown operations. This modification was required as a result of the NRC Fire Protection Safety Evaluation Report. The safety analysis concluded that an unreviewed safety question did not exist since all new lights, although non-safety related, were mounted in accordance with the seismic class 1 requirements. This FCR did not affect Technical Specifications or the FSAR.

79-1054 (Units 1 and 2)

This FCR modified the existing reactor vessel vent and pressurizer vapor sample line to provide a vent path for non-condensible

gases from the reactor vessel and pressurizer. This modification was performed to meet compliance with NUREG 0578.

79-1056 (Units 1 and 2)

This FCR repowered two banks of backup pressurizer heaters on each unit (1B009, 1B011, 2B009 and 2B011) from safety related buses in order to provide diesel generator backup in the event of a loss of off-site power. This provided sufficient pressurizer heater capacity in order to establish and maintain natural circulation at hot standby conditions. The safety analysis concluded that an unreviewed safety question did not exist since breakers were used as proper isolation devices as required and the design criteria as stated in Chapter 8 of the FSAR was met. This FCR did not affect Technical Specifications although the FSAR was revised to reflect the new power feeds.

79-1060 (Units 1 and 2)

A safety-grade, auto-start and control system was added to the auxiliary feedwater system to meet the requirements of NUREG-0578. Two redundant safety related channels were added which were to be installed by the engineering safeguards system. Air supplies to the control valves were supplied from the saltwater air system and seismically mounted. The system has been replaced with a new system under FCR 79-1062.

79-1062 (Units 1 and 2)

This FCR installed the motor driven AFW pump, thus providing three AFW pumps per unit. This change was a result of the TMI incident. In addition, it provided for automatic initiation of AFW flow upon an actuation signal and installed automatic block valves (terminates flow during an overcooling event) in all AFW lines. The new pump and associated piping was installed to ASME Section III, while tie-ins were performed to the original construction code. Any changes outside the design basis of the FSAR and Technical Specifications were submitted to the NRC for approval.

79-1065 (Units 1 and 2)

The high pressure pump unloader valves in the main steam isolation valve hydraulic system were replaced to resolve the concern raised in NRC IE Bulletin 79-01/01A. The valves were replaced with one designed to better withstand the ambient temperature at the service location. Since there were no circuit changes and no relocation of components, there were no changes that could affect system design function or operation. Due to high failure rates of the new valves, they were removed and the old models were put back into the system. The main steam isolation valve hydraulic system has been totally replaced on both Units 1 and 2.

79-3000 (Unit 2)

This FCR provided a review of the reload core and fuel design for Unit 2 Cycle 3. The Cycle 3 design maintains all the key safety

analysis parameters and results within the bounds of the Cycle 2 design. All planned operating conditions remain the same as those for Cycle 2. The Technical Specifications as established and previously approved for the safe operation of Cycle 2 are adequate for operation of Cycle 3 and no changes or additions were required. The FSAR update reflects the Unit 2 Cycle 3 reload core and fuel design.

79-3001 (Unit 1)

This FCR allowed chemical cleaning of the reactor coolant system using hydrogen peroxide. The cleaning will be controlled by Radiation Chemistry Procedure RCP 1-1206. Hydrogen peroxide injection results in an accelerated release of activated corrosion products which would occur normally when the primary system is vented to the atmosphere. The Technical Specifications and FSAR were not affected by this FCR.

80-0006 (Common)

Problems were encountered in maintaining discharge pressure of the control room HVAC compressors. The pressure was originally controlled by "unipressure controllers". The problem was alleviated by replacing unipressure controllers with hot gas by-pass control and back pressure regulating. In addition, oil separators were also installed in these lines. The changes improved the operation of the system and hence made it more reliable. The new equipment is safety grade and the piping was reanalyzed for seismic support.

80-0010 (Units 1 and 2)

This FCR evaluated the use of nitrogen to be used for CVCS backwash and fluff instead of instrument air. The system was deemed not to interfere with the safe operation of equipment. The system, except for hanger supports, is now safety related. Installation of the N_2 piping was done in accordance with B31.1. No FSAR or Tech Specification changes were required.

80-0025 (Units 1 and 2)

The electrolytic capacitors in the isolation modules in the engineering safeguards system were replaced with mil. spec. capacitors. This upgrade was recommended by the original equipment manufacturer to enhance the reliability of the isolators. The modules and system continued to function as designed. No new systems or operations were added.

80-0027 (Units 1 and 2)

This FCR provided a trouble alarm for loss of power to the switchgear room HVAC dampers. No unresolved safety questions or changes in the Technical Specifications were created.

80-0032 (Units 1 and 2)

This FCR modified the 4KV ITE disconnect switches in order to replace failed stud welds at a mounting plate support with bolts. The safety analysis concluded that the FCR did not constitute an unreviewed safety question since the failed mounting studs were being replaced with a bolt that provided greater mechanical strength. This FCR did not affect Technical Specifications of the FSAR.

80-0046 (Units 1 and 2)

This FCR installed a push button near each of the six (6) air compressors to trip the associated load center breaker. The buttons are provided as a manual emergency stop to bypass the two-minute unloading sequence provided on each air compressor. This change was non-safety related but required a change to the P&ID in the FSAR.

80-0089 (Units 1 and 2)

The configuration for several handswitches on the main control boards were changed as a result of our Human Factors Engineering review. The changes were non-safety related, and no system or operation was added.

80-0093 (Common)

A Meteorological Information and Dose Assessment System (MIDAS) was installed to meet the requirements of NUREG-0654. The system does not interface with any safety system and is supplemental to existing radiation monitoring and meteorological systems.

80-1008 (Common)

A post-accident sampling system was installed to meet the requirements of NUREG-0578 Section 2.1.8.a and NUREG-0737 Item II.B.3. The system is non-safety related, but does interface with safety related systems. To meet containment integrity requirements, the containment isolation valves are leak tested as required by 10CFR50, Appendix J, and are administratively controlled through use of key-operated switches. The FSAR has been updated to describe system operation, and Technical Specifications were submitted, approved, and implemented.

80-1010 (Units 1 and 2)

This modification installed a Reactor Vessel Level Monitoring System. NRC approval was obtained prior to installation. The Combustion Engineering heated-junction thermocouple design was used, satisfying requirements for channel redundancy and separation, thermal and hydraulic effects of the reactor core, pressure boundary integrity, and seismic support. The existing reactor vessel head penetrations were used for probe installation. All other structural changes were made in accordance with existing plant design requirements. The FSAR will be revised to reflect the addition of the Reactor Vessel Level Monitoring System. There are currently no Technical Specifications, but Technical

Specifications have been submitted and are currently being reviewed by the NRC.

80-1013 (Units 1 and 2)

This FCR changed out six normally energized Westinghouse BFD relays, for each diesel generator start circuit, to Westinghouse NBFD relays. Also, a periodic maintenance/testing system was set-up for monitoring these relays. This FCR was in response to IE Bulletin 79-25. No unreviewed safety question or changes to the Technical Specifications was created by this FCR.

80-1015 (Units 1 and 2)

This modification expanded the existing non-safety related annunciator system to meet post-TMI requirements. This FCR did not constitute an unreviewed safety question since the new equipment was seismically designed. This FCR did not affect Technical Specifications, however, a revision to the FSAR was required.

80-1017 (Units 1 and 2)

A number of solenoid valves in harsh environment applications were replaced to meet environmental qualification requirements per 10 CFR 50.49. The valves function the same as the previous valves but they are designed to withstand the LOCA and post-LOCA environment.

80-1032 (Common)

The jacket cooling pressure switches for the emergency diesel generators were replaced with an equivalent model as recommended by the original equipment manufacturer. The switches functioned the same as the previous ones. No changes were made to the system. These switches have since been replaced again with environmentally qualified switches.

80-1040 (Unit 2)

This FCR adds hangers to 6"-KB1-2342, 4"-KB1-2311 and 4"-KB1-2312 fire protection system in containment. This FCR does not constitute an unreviewed safety question. The possibility for an accident or malfunction of a different type than any evaluated previously in the FSAR is not created.

80-1044 (Units 1 and 2)

The bill of materials for the reactor trip unit module was revised to reflect the correct part numbers. The change was made to show the "as-built" condition and did not change the design configuration or modify the system. This was a document change only.

80-1049 (Units 1 and 2)

Redundant signal isolation modules in the loops serving the subcooled margin monitor (SCMM) were removed to simplify the system and to increase the subcooled margin monitor accuracy. Single loop isolation still exist. The function of the system remains the same. The change did not affect other safety systems. This modification enhanced the capability of the SCMM to perform its design function.

80-1060 (Units 1 and 2)

This FCR covered the purchase and installation of additional electrical penetration assemblies. The safety analysis concluded that an unreviewed safety question did not exist since the new penetration assemblies have been manufactured, installed and maintained in accordance with existing criteria to ensure containment integrity is not compromised during normal operation and design basis events. This FCR did not affect the Technical Specifications or the FSAR.

80-3001 (Unit 2)

This FCR developed a new ECCS flow blockage model and evaluation based on NRC letter 11/9/79. The evaluation used the most adverse rupture conditions from the proposed NRC cladding deformation model, along with CE's improved steam cooling heat transfer model, resulted in a 75°F decrease in peak clad temperature as compared with the reference cycle calculation. This FCR does not constitute an unreviewed safety question nor does it require a change to the Technical Specifications.

81-0010 (Unit 2)

This FCR authorized the change of studs for the casing of reactor coolant pumps. The reactor coolant pump casing studs were changed from a 34 inch long stud to a 33 inch long stud. This change was initiated by Byron Jackson (OEM) and evaluated as acceptable by Byron Jackson pump division. This change does not constitute an unreviewed safety question.

81-0012 (Unit 2)

The FCR provided for installation of Series 480 NEMA flow computers at various locations, some to be mounted on safety related walls. In these cases, since the instruments are less than 50 lbs. in weight, they were installed seismically by using design criteria established in Civil Standard CS-5 (Criteria for installing concrete wedge anchors). Also, the relatively light weight is more than adequately supported for seismic events. Hence, there is no possibility of an accident, different than those described in the FSAR. It should be noted that these flow meters did not perform satisfactorily and were removed.

81-0024 (Unit 1)

The flow indicating controller for one of the feedwater regulating valves (FWRV's) failed and was replaced with a similar controller that possessed manual control capability. The auto-

closure feature of the FWRV's on a turbine trip remained intact. This was a non-safety related modification to equipment not described in the FSAR. The controller was replaced when the original model was received.

81-0056 (Units 1 and 2)

This FCR added 1" test connections to 18" service water lines to allow ASME Section XI mandated check valve testing. The safety analysis discussed the design requirements of the test connections. The FSAR was updated to show the test connection. No changes to the Technical Specifications were required.

81-0060 (Units 1 and 2)

This FCR was issued to secure the bearing fan guard on the containment spray pumps to a newly designed coupling guard. The existing design had the bearing fan guard secured directly to the bearing housing by two brackets which were easily damaged during maintenance and, hence, were inadequate. The safety analysis indicated that the new design would lessen the change of the fan guard being misaligned and causing failure of the bearing fan. It stated that a seismic analysis was performed by the Civil Engineering Unit which verified the structural adequacy of the entire design. Quality controls utilized during procurement, manufacturing and installation ensured that the original design was adhered to. The safety analysis concluded that, based on a review of applicable FSAR and Technical Specifications sections, an unreviewed safety question did not exist.

81-0072 (Units 1 and 2)

The closure circuitry for the main steam isolation valves (MSIV's) was modified to facilitate testing the MSIV's on a steam generator isolation signal generatored by the Engineering Safequards system. This test capability does not affect the MISV control system or Engineering Safeguard System since no new systems or operations were added. However, the new testing capability enables us to more thoroughly test the MSIV's under more realistic conditions assuring safer operation.

81-0080 (Units 1 and 2)

The fuseholders for the channel "B" reactor protection system calibration and indicating panel (RPSCIP) were replaced with ones equivalent to the originals. The fit, form, and function remained the same. No other changes were made.

81-0088 (Unit 1)

The auxiliary high pressure safety injection header isolation motor operated valve (1-MOV-656) actuator was replaced to reduce its stroke time to fifteen seconds or less. This was done to meet the safety injection system actuation response times per Technical Specification Table 3.3-5, Items 2a. and 2b. Since the time response of the valve was improved there was no adverse

effect on the system. No other changes were made to the safety injection system.

81-0110 (Units 1 and 2)

Flow restrictors (snubbers) were added to the sensing line of the charging pump discharge header pressure transmitter. The pressure retaining capability of the snubber is in excess of three times the maximum system pressure. The modification does not affect other safety systems or the operation of the charging system as described in FSAR section 9.0. The tubing supports are in accordance with paragraph 2 of FSAR 1.4.11.

81-0118 (Units 1 and 2)

Relief valves 1-RV-173 and 2-RV-173 were removed from the discharge side of the boric acid pumps between 1-CV-2104 and 1-CVC-241 for Unit 1 and 2-CV-2104 and 2-CVC-241 for Unit 2. These relief valves were removed to reduce the possibility of a boron dilution event from occurring should they leak by (see NSAC/INPO Significant Event Report (SER) 83-81). Relief protection for the system is provided by 1/2-RV-171. This modification does not constitute an unreviewed safety question.

81-0122 (Units 1 and 2)

The Process Radiation Monitors were replaced with a newer model system supplied by the same manufacturer. The new model meets or exceeds the original design accuracy and sensitivity and was mounted using the original mounting hardware. The new system continues to provide the capability to detect reactor coolant activity levels as described in the FSAR, and to provide an early warning alarm such that specific activity levels can be determined by grab sample analysis. Since the new system is in effect a direct replacement, the FSAR and Technical Specifications were not affected.

81-0127 (Units 1 and 2)

This FCR removed power to the space heaters located within the 4KV switchgear. Past failures of MJ switches were attributed to thermal degradation as a result of the energized space heaters. The purpose of the heaters is to minimize condensation within the compartments. The safety analysis concluded that an unreviewed safety question did not exist since the switchgear is located in rooms that are air conditioned with redundant HVAC systems, thus eliminating the need for space heaters. This FCR did not affect the Technical Specifications or the FSAR.

81-0136 (Units 1 and 2 and Common)

Many of the radiation monitoring system channels had their balance adjustment potentiometers replaced with a model that allows better calibration of the channel. The system continues to function per the original design. No new system or operation was added.

81-0137 (Units 1 and 2)

The Containment Area Radiation Monitoring channels were difficult to accurately calibrate since only limited adjustments were provided in the circuitry. The fixed 2K ohm bias resistor in the amplifier was replaced with a 5K ohm potentiometer. This has provided significantly improved channel calibration capability. Since the system continues to function as described in the FSAR and no new failure modes were introduced, the modification did not pose an unreviewed safety question or affect Technical Specifications.

81-1000 (Units 1 and 2)

This modification replaced the S/G Pressure, S/G Level, PZR Pressure and PZR Level transmitters. The new transmitters were installed to meet environmental qualification requirements per 10CFR50.49. The transmitter loop configuration and loop accuracies were maintained per the original design criteria per Chapter 7 of the FSAR.

81-1001 (Units 1 and 2)

This FCR added Conax seal assemblies to various safety related components inside the containment. IE Bulletin 79-01B required certain safety related equipment be sealed from the effects of spray. These seals prevent moisture intrusion through cables and conduits to certain safety related equipment. No unreviewed safety question or change to the Technical Specification were created by this FCR.

81-1010 (Units 1 and 2)

The hydrogen sample valves were replaced with environmentally and seismically qualified valves to meet the requirements of IE Bulletin 79-01-B. The new valves meet the original design criteria concerning isolation, leakage, and valve size per the FSAR. No new systems or operations were added. As a result, the modification did not pose an unreviewed safety question or affect plant Technical Specifications.

81-1021 (Units 1 and 2)

The purpose of this FCR was to inspect, analyze, and modify raceway supports in the cable spreading rooms. This effort was begun due to the discovery of loose and questionable supports during an engineering evaluation of the supports' structural capability. Several supports in the U1 cable spreading room were modified to improve their load carrying capabilities. In lieu of further modifications, the remaining supports in U1 and all of U2's were approved by means of analysis and comparisons to similar systems that have withstood seismic events. The conclusion of this study was that the raceway support systems of both U1 and U2 would remain functional during and after a design base earthquake.

81-1026 (Common)

This FCR installed an outdoor and indoor antenna system. This system boosted radio coverage in the auxiliary building from approximately 35% to 95%, as well as enhanced coverage in other areas of the Plant. This FCR meets the requirements of 10CFR73.46 for radio communication throughout the Plant for security purposes. No unresolved safety questions or changes in the Technical Specifications were created.

81-1030 (Units 1 and 2)

The valve position switches and pressure switches associated with the service water supply to the emergency diesel generators were upgraded to models that are environmentally and seismically qualified. The switches continue to perform their original design function. No new system or operation was added.

81-1034 (Units 1 and 2)

This FCR modified both Unit 1 and 2 generator trip circuits. Reverse power relays were tied into the trip logic to prevent generator overspeed and modifications were made to ensure turbine-coastdown. These modifications were recommended by both General Electric and Westinghouse, the generator manufacturers. No unresolved safety questions or changes in the Technical Specifications were created.

81-1060 (Units 1 and 2, Common)

This FCR replaced the local glass break start pushbuttons for each of the emergency diesel generators. The safety analysis concluded that an unreviewed safety question did not exist since the new pushbutton operators were Class IE and were installed consistent with original control circuit design. The FCR did not affect Technical Specifications or the FSAR.

81-3005 (Units 1 and 2)

This FCR verified that the fuel handling equipment can safely handle fuel assemblies enriched to 4.1 weight percent U-235. The FSAR does not address this aspect of the fuel handling equipment. The higher enrichment still yields a Keff of less than 0.95 with a margin of 0.02 to 0.04 Keff units depending on the configuration of the following equipment: refueling machine, fuel transfer tube, up-ender, spent fuel handling machine, new fuel elevator, and 2 assemblies in water to air. The Technical Specifications and FSAR are not affected by this FCR.

82-0017 (Unit 1)

Unit 1's atmospheric dump isolation valves were replaced with the design used successfully on Unit 2. The replaced valve was a Velan pressure seal gate valve that had a history of repetitive pressure seal leakage due to the sealing boundary arrangement. The gasket was a silver seal which was difficult to seat during bonnet to body torquing. The new valve, also a Velan, is a bolted-bonnet gate valve with a spiral-wound flexitallic gasket

that provides for easier and improved sealing. No changes to FSAR or Technical Specifications required.

82-0021 (Units 1 and 2)

This FCR installed a temporary load test plate on EL 69' of the U1 and EL 45' of U2's Auxiliary Building to permit load testing of contaminated rigging equipment. After installation and load testing of the test plates, it was determined to make the test plates permanent. The installation of these plates had no effect on the probability or consequence of an accident or malfunction of equipment important to safety.

82-0027 (Units 1 and 2)

This FCR accomplished a system by system walk-down of plant Operations and Maintenance drawings. These walk-downs were to bring all P&IDs up to accurate standards prior to placing these drawings on a CAD system. This FCR does not constitute an unresolved safety question. The changes made are editorial in nature and do not deviate from the original design of the system.

82-0043 (Units 1 and 2)

The containment isolation solenoid valves for the containment pressure transmitters were provided with annunciation to warn the operator that the valves are not fully open. If the valves were shut, it would defeat the reactor protective system and engineering safeguards system containment pressure functions. The annunciation circuit is another means to assure that defeating a protective action does not occur. The change did not affect the operation of any system.

82-0058 (Units 1 and 2)

Dual potentiometer/amplifier modules in the reactor protective system were replaced with a newer model provided by the original equipment manufacturer. Minor wiring changes were specified by the vendor that enabled the new modules to function identically to the old model. The new modules are the same dimensions, are mounted the same, and function the same. The new modules were considered a direct replacement and did not affect system operation.

82-0059 (Units 1 and 2)

This FCR modified the steam generator nozzles to allow for the installation of redundant nozzle dams during refueling outages. The single-failure-proof design of the nozzle dams allows the movement of fuel while work is performed on the steam generator primary side. The design met the requirements of the original construction code, ASME Section III 1965 Edition, Winter 1967 Addenda. The nozzle dams were analyzed to meet all required pressure, deadweight and seismic loads.

82-0076 (Units 1 and 2)

A differential pressure switch and flow indicator, along with its associated tubing and wiring, was deleted from the containment particulate and gaseous monitor. The system continues to provide the functions described in the FSAR Section 11.2.3.1. The modification was non-safety related. The FSAR was updated to reflect the changes.

82-0084 (Units 1 and 2)

This FCR allowed replacement of an existing level gage on the main steam isolation valve hydraulic reservior with a tubular glass level gage and additional isolation valves. The existing gages were unreliable and inaccurate. Consequently, the level in the reservior was often maintained at an inappropriate level. The safety analysis discussed seismic requirements and reliability of the glass level gage and the consequences of failure. No changes to the FSAR or Technical Specifications were required.

82-0087 (Units 1 and 2)

This FCR added a vent on the shutdown cooling return line. The vent is used to allow proper post-maintenance filling of the portion of the line between MOV-652 and the suction header of the LPSI pumps. The safety analysis addressed the appropriate design of the vent with regard to the applicable piping codes.

82-0091 (Units 1 and 2)

This FCR installed a lube oil drain on the AFW pump turbines. This allows for easier sampling of the lube oil sump. The installation met the original fabrication and design requirements.

82-0140 (Units 1 and 2)

This FCR installed spring loaded arcing contacts for all third train 4KV disconnects. This modification was made for personnel protection. The arc chutes and arcing contacts provide load break capability and will prevent a fire ball should an operator open a disconnect under load. This modification had no impact on Plant safety as there was no change in circuit design, operation or administrative control for the 4KV disconnects.

82-0143 (Unit 1)

Local pressure gages were installed on all safety-related air accumulators. This modification was done to provide a means to ensure that air accumulators are pressurized and ready to perform their design function. No changes to the FSAR or Technical Specifications were required.

82-0172 (Units 1 and 2)

New main turbine temperature and vibration recorders were installed to replace the obsolete recorders. The recorders are non-safety related but were seismically mounted. The recorders do not interface with any safety related system.

82-0190 (Units 1 and 2)

This FCR removed the reactor coolant pump lower seal pressure sensing line and instrumentation and installed a blank flange. The lower seal pressure sensing line detects the pressure on the lower face of the seal which is actually measuring the reactor coolant system pressure. Since this pressure is provided from other sources and this connection has failed several times, it was removed. The safety analysis addresses the seismic changes to the piping system and the Class 2 Construction Code piping requirements of the system. The FSAR was amended to show this change. No changes to the Technical Specification were required.

82-0202 (Units 1 and 2)

This modification added a lighting distribution panel to the polar crane in the containment. The polar crane is non-safety related however it is mounted above safety related equipment (II/I). The S.A. concluded that an unreviewed safety question did not exist since the new panel was installed to meet existing seismic design criteria. This FCR did not affect Technical Specifications or the FSAR.

82-1010 (Units 1 and 2)

The pressure manifold inlet check valve (poppet-style) on the MSIV hydraulic system was repaired after its spring worked its way out of the seating area. Repairs were agreed upon by the valve vendor and included the installation of a new spring seat, machining of the poppet head ridge, and reducing the poppet weight. No changes to FSAR or Technical Specifications were required. New MSIVs were later installed.

82-1017 (Unit 1)

This FCR added manual valves in the air supply line (to allow local control of the valves) of numerous control valves in the salt water system which are necessary for emergency diesel generator cooling. This FCR was done to meet Appendix R - Alternate Safe Shutdown Requirements. The safety analysis addressed operational requirements of the salt water system, probability of unavailability of the control valves, seismic requirements of tubing and new manual valves and the possibility of the service water heat exchanger valves remaining full open after the receipt of a recirculation signal. The FSAR was updated to show the addition of the manual valves. No changes to the Technical Specifications were required.

82-1027 (Units 1 and 2)

The valve position indication switches for the service water cooling system valves to the containment coolers were replaced with environmentally qualified switches. The switches continue to provide the same design function and were seismically mounted.

82-1036 (Units 1 and 2)

This FCR replaced control relays and revised the control wiring scheme on the containment air cooler fans. Gould type FE relays were replaced by Struthers Dunn 219 series relays. The safety analysis concluded that an unreviewed safety question did not exist since the new relays were qualified for the application and the control wiring change eliminated repetitive contact operation thereby improving performance. This FCR did not affect Technical Specifications of the FSAR.

82-1040 (Common)

This FCR installed eight-hour emergency lights along walkways to, and at various control stations throughout the Plant where operator action is required to shutdown the Plant upon Control Room fire evacuation. This was required to meet 10CFR50 Appendix R and was safety related for seismic II/I considerations.

82-1042 (Unit 2)

Local gages were installed to monitor boric acid storage tank levels and refueling water tank level. These gages were installed to satisfy the requirements set forth in 10CFR50, Appendix R. The installation does not interface with any protective system and meets original design criteria per FSAR Section 6.3.2.

82-1043 (Unit 2)

Local gages were installed to monitor boric acid storage tank levels and refueling water tank level. These gages were installed to satisfy the requirements set forth in 10CFR50, Appendix R. The installation does not interface with any protective system and meets original design criteria per FSAR Section 6.3.2.

82-1044 (Unit 1)

Local gages were installed to monitor boric acid storage tank levels and refueling water tank level. These gages were installed to satisfy the requirements set forth in 10CFR50, Appendix R. The installation does not interface with any protective system and meets original design criteria per FSAR Section 6.3.2.

82-1048 (Units 1 and 2)

This FCR provided engineering to seal 16 existing unsealed thru wall penetrations in the east wall of the Intake Structure between elevations 12'-0" to 17'-0". The FCR was initiated to resolve a concern expressed by an NRC Resident Inspector, regarding the watertight integrity of the Intake Structure. There was no effect on Technical Specifications and no unreviewed safety question existed.

82-1053 (Units 1 and 2)

This FCR allows for continued operation of the component cooling system as a radioactive system. This was performed in response to IE Bulletin 80-10 which states that the operation of a non-radioactive system as a radioactive system following contamination

is acceptable as long as such operation does not involve an unreviewed safety question or change the Technical Specifications. The safety analysis addresses the safety question and provides contamination limits to ensure the release limits of 10 CFR 20, 10 CFR 50, and 10 CFR 190 are not exceeded. No changes to the FSAR or Technical Specifications were required.

82-1056 (Units 1 and 2)

Documents were revised to reflect the new in-core dector design supplied by the original equipment manufacturer. The in-core detector's function and operation remained the same. No new system or operation was added.

82-1066 (Units 1 and 2)

This FCR extended the current chemical addition line from the steam driven AFW pump suction line to include the discharge. All original construction code criteria was fully complied with. A separation check valve was provided between the suction and discharge lines.

82-3004 (Unit 1)

This FCR allowed the performance of the 50% power Isothermal Temperature Coefficient and Power Coefficient measurements at about 85% power. NSSS stability and the small Moderator Temperature Coefficient have precluded making a meaningful measurement at 50% power. All lower power tests and other 50% power test results are within acceptance criteria. The preliminary Power Coefficient result from the plant computer data did not meet the acceptance criteria. The more negative Moderator Temperature Coefficient at 85% power will provide the stability to make a better measurement. This FCR does not affect the FSAR and there and no Technical Specification limits on Power Coefficient.

82-3005-2 (Unit 2)

This FCR supplement is a safety evaluation of operation of Unit 2 Cycle 5 in modes up to and including Mode 3 without NRC approval of Cycle 5 reload/safety analysis. The safety evaluation revealed that the Cycle 4 safety analysis bounds Cycle 5 operation in/up to and including Mode 3. The review focused on the modified Technical Specification changes in going from Cycle 4 to Cycle 5. There are no FSAR or Technical Specification changes associated with the FCR supplement.

83-0014 (Units 1 and 2)

The Emergency Diesel Generator jacket cooling pressure switches were replaced since the previous model switch is no longer made, and to upgrade the switch to one that is seismically and environmentally qualified. The design function of the switches remained unchanged and did not adversely affect the availability or operation of the Emergency Diesel Generators.

83-0017 (Unit 2)

This FCR added a chain operator to 2-CC-458, waste evaporator component cooling outlet manual isolation valve. This valve is approximately 30' above the floor and the chain operator allows for easier operation. The safety analysis discusses the seismic design of the piping system. No charges to the FSAR or Technical Specifications were required.

83-0047 (Units 1 and 2)

The boronometer was replaced with new systems of similar design and supplied by the same manufacturer. This was done to improve the accuracy and reliability of the system. The system is non-safety related. The new system was seismically mounted per the criteria of FSAR Section 7.6.2. The boronometer is for trending only and is not taken credit for in the Technical Specifications. Chemical analysis is the basis for Technical Specifications and, therefore, changing the boronometer did not affect the Technical Specifications or the FSAR.

83-0048 (Unit 1)

This FCR modified pipe supports and added a new pipe support on the discharge piping for #11 and #13 charging pumps. The charging pump discharge drain line welds have failed due to pipe vibration. The support modifications were installed to reduce the system vibrations. These supports were installed while maintaining the original seismic design of the system. No piping modifications were performed. This FCR does not constitute an unreviewed safety question.

83-0056 (Units 1 and 2)

This FCR allowed the use of coal tar epoxy to coat salt water system check valve internals. The seating area of the check valves was not coated, therefore, the proper safety-related functioning of these valves was preserved.

83-0060 (Units 1 and 2)

This FCR was issued to relocate the air supply line for the instrument air header isolation valve 1/2-CV-2085 to a point upstream of the valve, outside the containment. Formerly, when this valve was shut, it required a containment entry to manually open the valve. This would be particularly disadvantageous during an accident situation when it may be desirable to restore instrument air. Part of this modification also relocated and modified the instrument stand for 1-P5-2085 to meet seismic Class I mounting requirements. The solenoid valve (SV-2085) which energized CV-2085 was also changed to include environmentally qualified material. The safety analysis discussed maintenance of the integrity of the seismic portion of the air header as a result of the modification and concluded, after examining the relevant FSAR chapters dealing with the IA, PA, electrical systems and containment isolation, that an unreviewed safety question did not exist.

83-0063 (Units 1 and 2)

The acoustic monitor analog output to the plant computer was deleted and replaced by a digital (contact closure) output to the plant computer. Since the scan rate of the computer for this point was thirty seconds, it was possible for the computer to miss logging the cycling of a power operated relief valve (PORV). The digital input to the computer is scanned every second providing better assurance that a PORV actuation is recorded. This modification did not affect the PORV control circuitry.

83-0073 (Units 1 and 2)

This FCR allowed the use of coal tar epoxy as a barrier coating to protect against corrosion of various piping components in the salt water system. Properly applied, the coal tar epoxy used exhibits adhesion of the same order of magnitude as its cohesion; therefore the danger of coating detachment is limited.

83-0078 (Unit 2)

This FCR provided for installation of a removable mechanical stop, and an electrical overload limit device on the existing spent fuel inspection system/elevator. The stop provides positive back-up to the electrical travel and overload limiters which prevent a fuel assembly under inspection to be inadvertently raised above the minimum required water shielding level. Design of the mechanical stop and electrical limiters meet safety-related design criteria of the FSAR and their installation will maintain the specified radiation levels ALARA. The margin of safety as defined in the Bases for Technical Specification 3/4.9.11 is not reduced. Technical Specifications 3/4.9.11 is not applicable.

83-0080 (Units 1 and 2)

Periodic testing of reactor trip breakers is performed to verify operability of shunt trip and undervoltage devices. This had been performed on the breaker outside the cubicle. Due to problems with the undervoltage devices, the NRC required testing be performed with breaker in cubicle. This FCR added the necessary test points and push buttons to allow functional testing in the connected position. The probability of a malfunction that would delay reactor trip was not created. No new type of accident or malfunction was created and margins of safety were not reduced.

83-0092 (Units 1 and 2)

A redundant power supply was added to the control element drive system to enhance the reliability of the rod position indication. The control element drive system continues to function per original design but only with more reliable rod position indication.

83-0101 (Units 1 and 2)

The original Fischer and Porter containment pressure transmitters were replaced with Rosemount transmitters due to repeated

problems with parts and absolute pressure transmitters performance. The Rosemount transmitters required minor wiring and tubing modifications. The transmitters were installed in accordance with current safety-related, seismic design standards. The new transmitters have equal or better accuracy and meet environmental qualification requirements.

83-0112 (Units 1 and 2)

This FCR involved increasing the fan motor size from 10 hp to 15 hp in the switchgear room HVAC units 11 and 21. This modification was necessary to achieve design air flow and ultimately cooling of the space. Wiring, circuit breakers and all other necessary modifications were made to accommodate bigger motors. The new equipment met the same qualification standards as the existing one. Cooling capacity of the equipment was enhanced by this modification.

83-0123 (Units 1 and 2)

This FCR provided engineering to install a swinging gate in the concrete dividing wall (3'-0" high) of the Intake Structure. The gate has a closing and latching mechanism and will facilitate egress for personnel, tools and equipment between Units 1 & 2. The gate is designed to prevent catastrophic flooding of the Intake Structure. This change did not present an unreviewed safety question and did not have any impact on the Technical Specifications.

83-0145 (Units 1 and 2)

This FCR added further modifications to the reactor coolant pump seal pressure sensing and vent lines as a result of observations made since the changes initiated under FCR 78-1028. Instrument line failures had caused several forced shutdowns in the interim. The scope of these changes differed for each unit. Unit 1 installed an instrument valve upstream of the flex hoses. Unit 2 modifications included replacement of existing sensing line assemblies and relocation of vent lines. As a result, Unit 1 and Unit 2 seal assemblies were interchangeable. The new configurations met thermal, deadweight and seismic criteria and ASME Section III code requirements for component selection. The safety analysis indicated that the ability to monitor seal pressure, as well as reactor coolant system leakage limitations were not affected by this modification and concluded that an unreviewed safety question did not exist.

83-1002 (Unit 2)

The containment isolation valves for the Hydrogen/Oxygen analyzing system were replaced with solenoid valves that are seismically and environmentally qualified. The design function of these valves has not changed. The system continues to function per the original design. The valves were procured and installed as safety-related, seismically and environmentally qualified valves. These valves are also subject to leakage testing per 10 CFR 50, Appendix J.

83-1009 (Unit 1)

The solenoid valve for #12 ECCS Pump Room cooler outlet valve was replaced with an environmentally qualified solenoid valve. The new valve is made by the same manufacturer and is functionally the same. The new valve was evaluated for its affect on control valve response, electrical load, and rated pressure, and was deemed acceptable. The valve was seismically mounted.

83-1013 (Units 1 and 2)

This modification covered the replacement of the motor operators on MOV403 and MOV405 because the existing motor operators were not environmentally qualified for in containment use. The safety analysis concluded that an unreviewed safety question did not exist since the new motor operators were designed, fabricated and tested to ensure isolation of the PORV's in case of failure or excessive leakage during any design basis events. This FCR did not affect the Technical Specifications or the FSAR.

83-1014 (Units 1 and 2)

This FCR replaced subcomponents inside motor operator assemblies for safety related motor operated valves (MOV's). Torque switches, limit switches, internal wiring, etc. were changed out with environmentally qualified replacements. The safety analysis concluded that an unreviewed safety question did not exist since all replacement parts were designed, manufactured and tested to ensure proper performance during normal operation and design basis events. This FCR did not affect Technical Specifications or the FSAR.

83-1017 (Unit 1)

A number of solenoid valves were replaced to meet environmental qualifications. Each installation was evaluated for its affect on control valve operability, electrical loading, and rated pressure, and each case was considered acceptable. The valves were made by the original equipment manufacturer and function the same as the original valves. The installation of the new valves did not change the operation of any system and enhance the reliability of each system.

83-1021 (Unit 1)

A separate channel of wide range nuclear instrumentation was added to satisfy the requirements of 10CFR50, Appendix R. The system is completely independent of other safety systems. The FSAR was updated to include the additional channel, and Technical Specifications are in effect.

83-1022 (Units 1)

This FCR was initially written to provide for the permanent lead shielding of four (4) major components, normally done temporarily to do maintenance work in the proximal area. Several changes in scope resulted in reducing the number of components to the

regenerative heat exchanger (RHX) and providing lead plugs in the ICI flanges. Both shielding mechanisms are now temporary. The permanent changes only consist of welded hooks on the underside of existing structural steel. The safety analysis addresses appropriate seismic reviews to substantiate the work during cold shutdown. The Technical Specifications are not affected.

83-1023 (Common)

This FCR replaced the calcium block insulation on the emergency diesel generator exhaust header with a layer of fiberglass and oil resistant cloth. Oil leaks are soaking the calcium block and it smokes during diesel tests. Even though insulation is not considered safety related, a safety analysis was written because of the impact on the diesels. The safety analysis discussed ways to eliminate the oil leaks and the properties of the new insulation. No changes to the FSAR or Technical Specifications were required.

83-1025 (Units 1 and 2)

This modification installed a trip function on the Main Feed Pumps, Condensate Booster Pumps and Heater Drain Pumps actuated by either the S/G Isolation Signal or the Containment Spray Actuation Signal of the Engineering Safeguards Actuation System. This was necessary to prevent exceeding the design containment pressure in the event of a Main Steam Line Break. I&E Bulletin 80-04 prompted the analyses that led to this modification. A review of the design base events indicated that inadvertant actuations would not impact any of the presently analyzed accidents. There were no Technical Specification changes. Changes to the FSAR were completed.

83-1027 (Unit 2)

Instrument trays were provided with fire barriers under this modification. This was required to meet the requirements setforth in 10CFR50, Appendix R. The addition of marinite board as a fire barrier has the effect of having twenty-feet of clear air space which satisfies the existing Technical Specification requirement. Seismic analysis and actual plant experience indicates that the weight of the marinite board on the trays is sufficiently supported by the existing tray mountings. Should a piece of marinite board become dislodged, however, the weight and velocity of the board would not damage other safety-related equipment.

83-1028 (Unit 2)

An additional channel of wide-range nuclear instrumentation was installed to meet the requirements of 10CFR50, Appendix R. The channel is non-safety related, and completely independent of the Nuclear Instrument and Reactor Protection systems. The FSAR has been changed to describe this system, and Technical Specifications were submitted, approved, and implemented.

83-1033 (Unit 2)

A number of solenoid valves located in harsh environments were either replaced or had their elastomers replaced to meet environmental qualifications per 10 CFR 50.49. Since the valves are functionally identical the modification had no impact upon the FSAR or Technical Specifications.

83-1043 (Unit 2)

A number of solenoid valves in the chemical volume control system, containment spray system, and reactor coolant system were replaced with environmentally qualified valves. The valves were seismically mounted and perform the same design function as before. No new system or operations were added.

83-1050 (Common)

This FCR primarily added additional relief protection for the non-safety related nitrogen system. A design pressure increase required installation of relief valves on four AFW air accumulator tanks. The design and installation criteria of the relief valves and pressure changes met compliance with the original construction code.

83-1059 (Common)

This FCR added accumulators, check valves and tubing, and environmental qualified solenoid valves to instrument air supply to spent fuel exhaust fan discharge damper piston operators. All equipment was installed safety related. This change ensured operability of the safety-related ventilation system by providing it a back up instrument air source.

83-1064 (Units 1 and 2)

This FCR replaced the existing load shedding verification relays with new relays having a two-second time delay to pick-up. This change will ensure residual voltage on the bus has decayed sufficiently to prevent a non-syncronous closure with potential equipment damage. No unresolved safety question or changes in the Technical Specifications were created.

83-1077 (Unit 1)

This FCR removed the current limiting feature from the 120 volt vital inverter #13 and #14 and repowered the Plant effluent wide range radiation monitoring system to MCC 114R. These changes ensure proper coordination of the AC load fuses and that the inverter and the remainder of its loads remain on line while the fault is isolated. No unresolved safety question or changes in the Technical Specifications were created.

83-1078 (Unit 2)

This FCR removed the current limiting feature from the 120 volt vital inverter #23 and #24 and repowered the Plant effluent wide range radiation monitoring system to MCC 204R. These changes ensure proper coordination of the AC load fuses and that the inverter and the remainder of its loads remain on line while the

fault is isolated. No unresolved safety question or changes in the Technical Specifications were created.

83-1079 (Unit 1)

Some solenoid valves in the charging and letdown system and reactor coolant system were replaced with environmentally qualified valves. The new valves function the same as the old ones and were supplied by the original equipment manufacturer. No changes were made to system operation.

83-1080 (Unit 2)

Several solenoid valves in the heating ventilation air conditioning system and the chemical volume control system were replaced with environmentally qualified valves. The valves were seismically mounted. The systems continue to operate per the original design.

83-1081 (Common)

Some solenoid valves in the heating ventilation and air conditioning systems were replaced to meet environmental qualification. The new valves function the same as the old ones and were supplied by the original equipment manufacturer. No changes were made to system operation.

83-3000-1 (Unit 1)

This FCR added shims to Batch 6 fuel assemblies as required. The installation of shims will accommodate the additional fuel pin growth predicted at higher burnups. The modification does not change the original design criteria of the fuel assembly. The modification will result in no significant changes in the thermal/hydraulic characteristics of the fuel assemblies and will not change the seismic and LOCA response characteristics. There is also no affect on the Technical Specifications.

83-3001 (Units 1 and 2)

This FCR changed the setpoint of the pressurizer level control program to raise the lower end of nominal operation from 144 to 160 inches. This FCR changes only the nominal operating level and remains within the bounds of the safety analysis and Technical Specification 3.4.4. The change will reduce or eliminate pressurizer related LERs during turbine parallel operations and will have minimal incidental operational impact. There is no Technical Specification change. Figure 4-10 of the FSAR was updated.

84-0008 (Units 1 and 2)

This modification was performed on third train 4KV disconnect switches. A set of contacts on the kirk key switches on the disconnects was used to trip the circuit breaker upstream of the disconnect. This was to prevent an operator from opening a disconnect under load. It also assures a dead bus transfer of

third train equipment. The kirk key switch is a sliding dead bolt lock with no snap action. At one time an operator was able to unlock the disconnect blade arm lock without tripping the upstream circuit breaker. When the operator opened the disconnect under load, the ensuing fire ball nearly destroyed the disconnect switch. The circuit breaker trip function provided by the kirk key system was moved to a set of auxiliary contacts on the operating mechanism of the third train 4KV disconnects. This change enhanced Plant safety by placing the circuit breaker control on a more reliable device which is controlled by disconnect blade position.

84-0012 (Units 1 and 2)

This FCR addressed the repair of small holes and other damaged areas of the suction bell of some of the Salt Water Pumps. The safety analysis discussed the pressure-retaining ability of the repaired pump casings.

84-0014 (Units 1 and 2)

This FCR allowed the change of the pressure seals and back-up rings on the main steam isolation valve actuator from EPR poly seals and Teflon back-up rings to Parker Viton polypac seals and Ryton back-up rings. The existing seals had failed several times causing plant shutdown. The safety analysis discussed the suitability of Viton for the pressure, temperature, radiation and hydraulic fluid contact for this application. No changes to the FSAR or Technical Specifications were required.

84-0021 (Units 1 and 2)

This FCR replaced the existing General Electric HFA51 auxiliary relays with a newer General Electric Century series HFA151 auxiliary relay. The S.A. concluded that the new HFA151 relay would meet the environmental and seismic service requirements more reliably than the existing HFA51 relays. There was no impact on Technical Specifications and no FSAR changes were required.

84-0026 (Common)

This FCR was issued to provide for a protective debris strainer over the emergency suction in No. 21 diesel fuel oil storage tank enclosure. Appropriate sections of the FSAR were addressed, including plant design and seismic criteria in Chapters 5 and 5A. The strainer is fabricated from industrial Type 2 grating and secured with four (4) 1/4" diameter concrete wedge anchors. This installation enhances the operability of the AC/DC power sources, and increases the ability to maintain the limiting condition for operation.

84-0032 (Unit 1)

This modification was performed to repair a conduit support. Interferences precluded restoring the support to its original

configuration. This modification did not pose an unreviewed safety question. No Technical Specifications were affected.

84-0036 (Units 1 and 2)

All non-captive-key-operated handswitches in the hydrogen and oxygen post-accident sampling system were changed to captive-key-operated switches. The captive-key handswitches improve the administrative controls over keys. The wiring of the switches was not affected, resulting in no changes to system operation.

84-0048 (Units 1 and 2)

This FCR installed sacrificial anodes for corrosion protection in the channel head of the service water and component cooling water heat exchangers. The installation of the anodes was checked for structural adequacy in terms of the flow forces to which they are subjected.

84-0052 (Unit 2)

This FCR installed corrosion-monitoring probes in the discharge lines of the component cooling pumps and the component cooling water exit lines of the component cooling heat exchangers. The safety analysis addressed the maintenance of pressure boundaries where the probes were installed and also how the design precluded the probes from breaking loose inside the piping.

84-0057 (Units 1 and 2)

The pressurizer level control program was modified to reduce the operating band for pressurizer level. Occasionally the pressurizer level fell below the required minimum program level when loading the main turbine. This resulted in Licensee Event Reports to the NRC even though the transient was only momentary. Raising the minimum program level by modifying the control circuit program eliminated the momentary violation of the minimum pressurizer level. Reducing the program band for pressurizer level was more conservative and well within the bounds of technical specification 3.4.4. Since the pressurizer level program is more restrictive than previous, all of the rationale for the original design basis still apply. No changes to the Technical Specifications are required.

84-0066 (Units 1 and 2)

This FCR evaluated the use of CE designed steam generator tube plugs. The plugs were deemed adequate based on code adherence, material compatibility and weldability. No changes to the FSAR or Technical Specifications were required.

84-0071 (Units 1 and 2)

This FCR allowed the use of oversize (longer) bolts at the reactor coolant pump coupling so as to allow addition of up to 10 lbs. of additional weights (washers) for RCP balancing. The RCP vendor was contacted prior to allowing this modification.

84-0074 (Common)

This FCR installed a flanged spool piece on #11 spent fuel pool cooling pump discharge line in order to encompass a 3/4" vent line. (A crack in the line in the vicinity of the 3/4" vent line could not be weld repaired, consequently, the spool piece was used to replace the section of cracked pipe.) The pipe and flanges used were in accordance with ASME Section III Class II and supported in accordance with seismic Class I criteria. No changes to the FSAR or Technical Specifications were required.

84-0086 (Unit 2)

This FCR changed the valve bonnet material for #21B safety injection tank check valve 2-CV-618 from ASTM A-276, 316SS to A-182, 304SS. Type 316 material was not available for replacement bonnet, nor was a spare bonnet available. The vendor of the valve, Hammel Dahl Inc. evaluated the use of Type 304 material for hoop stress and seismic loads and found the material acceptable. The safety analysis confirmed that the replacement material and bonnet manufacture conformed to ASME Section III, Appendix XI requirements. It further concluded that since leakage criteria, code classification and pressure retaining requirements of the valve could be maintained, no unreviewed safety question existed, after reviewing pertinent FSAR and Technical Specification chapters.

84-0087 (Common)

This FCR provided for construction of a new sewage treatment plant. This plant is non-safety related. The safety analysis was issued to identify that the 480 volt, 3 phase power would be supplied from MCC 113S, tapped off the main bus. No new systems important to safety were created, and no Technical Specifications or Bases are applicable.

84-0091 (Unit 2)

A failed rod position sensor (reedswitch) caused the CEA motion inhibit function to be inoperable. The rod height was simulated and a relay system was added to sense when the rod with the failed sensor left its upper electrical limit. This relay arrangement became an input to the circuit that develops the CEA motion inhibit (CMI) signal which allowed CMI to be operable as described in FSAR Section 7.4.2.1. The rod position sensor was replaced during the subsequent refueling and the relay system was removed.

84-0093 (Units 1 and 2)

This modification eliminated the annunciator that warned operators that the high pressure safety injection system cross-connect valve was shut. Since the plant now operates with the cross-connect shut to enhance subsystem reliability, the alarm was no longer required and a distraction to the operators. The alarm was not part of any control system and did not affect the system's ability to perform its function. No new system or

operation was added. The deletion of the alarm required a revision to the FSAR sections 7.7.1.7.B.3.E, 7.7.2.6.B.1.E, and 6.3.5, which has been completed.

84-0095 (Units 1 and 2)

The following changes were made under this modification: 1) The HPSI flow control valves were changed to allow them to fully open instead of throttle open during an accident 2) The HPSI flow control valves were placed on LOCA sequencer step 1 instead of opening immediately. 3) The HPSI flow orifices were changed and flow transmitters recalibrated. 4) The HPSI flow check valves for Unit Two were counter-weighted shut. Detailed analyses and in-plant testing demonstrated that there is adequate system resistance to prevent HPSI pump runout, and that adequate system balance is maintained with this configuration.

84-0097 (Units 1 and 2)

This FCR was originally written to supplement the refueling machine, area radiation monitor audible alarm with a visual alarm. While investigating the reason for the change request, it was discovered that the audible alarm was frequently bypassed because of spurious alarms. Whenever a large motor would start in the vicinity of the radiation monitor, the radio frequency interference would set off the alarm. The problem was the exposed, festooned cable which serviced the radiation monitor on the refueling machine. The radiation monitor was replaced with a stand alone portable unit with an audio/visual alarm. The steel enclosure of this unit provided adequate noise shielding. The Plant safety aspect of this change was the loss of Control Room indication for this monitor. The design basis for this monitor is to alert refueling machine operators of a fuel handling incident. The loss of Control Room indication is an acceptable trade-off for providing an instrument that the RFM operators will use. Technical Specifications require that communications be established between refueling machine operators and Control Room personnel while fuel is being moved.

84-0109 (Units 1 and 2)

This FCR modified the Reactor Vessel lift rig capscrews so as to eliminate the need for changeout at each refueling outage. A thermal stress analysis was done to confirm that the new design was not subjected to a reduction in allowable loading due to thermal cycling, as was the old hardware.

84-0113 (Units 1 and 2)

This modification was in response to excessive movement of halon piping in the Unit 1 and 2 Switchgear and Cable Spreading Rooms during actuation of the halon system. The modification consisted of applying joint compound to threaded nozzle joints and installation of one hanger in the Unit 2 Switchgear Room. A flow test was performed satisfactorily following the modification. The modification did not pose an unreviewed safety question. The

system was flow tested following the modification to satisfy Technical Specification requirements.

84-0118 (Units 1 and 2)

This FCR provided engineering to modify the upper end of inspection carriage of the spent fuel inspection machine. The top sprocket made of 11 gauge - 304 stainless steel was cut 1" at the bottom corners and flared out approximately 45°. This modification was acknowledged by the equipment vendor as being a proven method of eliminating the interference which occurred upon removal of fuel assemblies from the inspection carriage. No changes were made to routine fuel inspection operations as a result of this modification. The Technical Specifications were unaffected and no unreviewed safety questions existed.

84-0127 (Unit 2)

This FCR installed casing vents on 21 and 22 Auxiliary Feed Water Pumps, similar to those already installed on 11 and 12 pumps. The safety analysis addressed the design of these vents in accordance with the appropriate piping code.

84-0131 (Unit 1)

This modification addressed only the electrical aspect of regrouping the CEA's. CEA position indication, CEA motion inhibit, and CEA drop time were unaffected by the change. The system continues to meet the original design requirements. The effects of the reconfigured CEA's on CEA reactivity and core reactivity were analyzed and documented under FCR 85-3001.

84-0132 (Units 1 and 2)

This FCR installed sacrificial anodes for corrosion protection in the channel head of the ECCS Room Coolers. The installation of the anodes was checked for structural adequacy in terms of the flow forces to which they are subjected.

84-0134 (Units 1 and 2)

This FCR restored the reactor vessel vent, pressurizer vent and containment hydrogen sampling valves to the test configuration which qualified the valves to 10 CFR 50.49. This required the installation of a qualified seal assembly at the conduit entrance to the solenoid valves. Plant safety was increased by eliminating a common cause failure.

84-0136 (Units 1 and 2)

The AFW air amplifier provides a higher pressure air supply for the AFW air accumulators. During replacement of the amplifiers piping modifications were required for installation. All piping changes met the deadweight, thermal and seismic criteria of the original construction code. The new air amplifier incorporated reliability improvements to its design.

84-0140 (Units 1 and 2)

The suction pressure switches for the low pressure safety injection pumps were replaced with similar switches. The switches are functionally the same. The diaphram of the switch is now stainless steel instead of beryllium-copper. This is a preferred material in a boric acid application and also simplifies spare parts requirements. The switches do not affect the system operation since they go to an annunciator circuit only.

84-0142 (Common)

Thermometers were installed at existing connections on the inlet and outlet of the Emergency Diesel Generator Blowers to monitor differential temperature. The low mass and high strength of the industrial thermometers assures that the deadweight, vibration, and seismic aspects of the installation will not adversely affect the blower operation and therefore will not affect the Emergency Diesel Generator. The structural integrity of the blower is unaffected and the system continues to function as originally designed.

84-0143 (Units 1 and 2)

This FCR permitted the injection of Omega 50/50 sealant into packing glands of various pressurizer valves in the reactor coolant system whose packing was leaking and in which attempts at valve adjustment proved unsuccessful in stopping the leak. These valves (5 total) included 2 instrument root valves for pressure and level transmitters, pressurizer vapor and liquid sample isolation valves (2) and a pressurizer PORV block valve. The work was performed in accordance with a BG&E approved procedure written be Leak Repairs, Inc. Three separate safety analyses were written to cover these packing leak repairs and in general they covered the effect of sealant injection on 1) structural integrity of the valve; 2) the functioning of associated components; and 3) chemistry of the reactor coolant system. The conclusion was reached, after review of applicable FSAR and Technical Specification sections, that an unreviewed safety question did not exist.

84-0145 (Unit 2)

Chronic performance problems with the electro-hydraulic speed controls for the steam generator feed pumps (SGFP's) led to a complete replacement of the controls under this modification. Lovejoy's electropneumatic system was installed on both SGFP's which resulted in improved performance. The modification of the SGFP speed controls did not affect their function as described in the FSAR. Panel modifications were performed in accordance with the requirements for panel structures and separation criteria as described in the FSAR. The safety analyses for loss of Feedwater Flow, Excess Feedwater Heat Removal Event, and Feedline Break Event were unaffected by the modification. Neither the integrity of steam generator tubes nor the automatic operation of auxiliary feedwater system were adversely affected. As a result the

modification did not pose an unreviewed safety question or adversely affect Technical Specifications.

84-0155 (Unit 1)

This FCR was written to permit the use of a 150# raised face, welded-neck flange with the raised face machined off to replace a 125# flat-face, slip-on flange in the discharge line of #12 salt water pump. The latter flange was ordered, but the former shipped to the site. The safety analysis reviewed the FSAR sections dealing with the salt water system and concluded that the additional weight of the heavier flange would not affect the seismic analysis of the piping. Applicable codes (ANSI B16.5, B31.1) was reviewed and found not to be violated by this modification to the flange.

84-1003 (Unit 2)

Valve position indication switches for component cooling supply and return valves serving containment were replaced with environmentally qualified switches. Switches for the service water valves associated with the containment coolers were similarly replaced. System operation and configuration was unaffected with the exception of switch mountings which were installed in accordance with the design criteria in FSAR 5A.3.2. Class I System and Equipment Design. No other system operation or configuration changes were made. The system continues to operate as described in the FSAR.

84-1004 (Unit 2)

Valve position switches for the steam generator blowdown valves and containment purge sample valves were replaced with environmentally qualified switches. The switches function the same as before and no other changes were made to the system. The new switches were seismically mounted per existing design criteria.

84-1005 (Unit 2)

Position indication switches were replaced on nine safety injection system valves, and on the auxiliary spray valve to meet environmental qualification per 10 CFR 50.49. The modification did not impact the design function or operation of the systems since the switches were direct replacements of similar type but of better design for a harsh environment. The existing system description in the FSAR and existing Technical Specifications are not affected by the change.

84-1007 (Unit 2)

The containment penetration room ventilation motor operated dampers position switches were replaced with similar switches that meet environmental qualifications. Additionally, the position switches for the main steam isolation valves were also replaced with environmentally qualified switches. The new switches function identically to the old ones and are seismically

mounted per FSAR 5A.3.2 Class I design. No changes were made that could affect system operation.

84-1009 (Unit 2)

The position indication switches for the component cooling outlet valves for the shutdown cooling heat exchangers were replaced with environmentally qualified switches to meet the requirements of 10 CFR 50.49. The switches function per the original design. They are seismically mounted per FSAR design criteria. No new system or operation was added, resulting in no change to the previous safety evaluation.

84-1011 (Unit 2)

The containment instrument air header pressure switch was replaced with an environmentally qualified switch to meet the requirements of 10 CRF 50.49. The new switch is functionally equivalent to the previous switch and is designed to withstand a harsh LOCA environment. No new system or operation was added resulting in no change to the previous safety evaluation.

84-1014 (Unit 1)

Conduit openings associated with safety related equipment in locations where sprinkler systems exist were sealed to prevent moisture intrusion. Consideration was given to the possibility of overheating of cabling and switchgear, and to seismic loading. Both were considered acceptable with no adverse affect to the systems involved. No new systems or operation were added.

84-1013 (Units 1 and 2)

Documentation was revised to reflect the new specification for procuring in-core detectors. No changes were made to the system. The in-core detectors continue to meet the original design criteria.

84-1020 (Common)

The elastomers were replaced in the solenoid valves for the gas analyzing system. This was necessary for the valves to meet environmental qualification requirements. No new system or operation was added.

84-1024 (Unit 1)

This FCR covered a minor change to the drain piping for RV-200 to allow proper fit-up following a small change in valve design due to a replacement valve being installed. The proper design of the modified piping in accordance with the appropriate piping codes was discussed in the safety analysis.

84-1031 (Units 1 and 2)

The runback circuitry for the steam generator feed pumps (SGFP's) was removed since it was no longer necessary. The installation

of the SGFP trip function (FCR 83-1025) generated by the steam generator isolation signal eliminated the need for the runback. The removal of the runback circuitry was an operational consideration not a safety concern. No new systems were added and no safety systems were affected.

84-1033 (Unit 2)

This FCR allowed drilling of an additional leak repair fitting into the valve body of the main steam isolation valve to stop an existing steam leak. The safety analysis discussed structural effects of the valve, seismic concerns and ASME Section III Class II requirements. No changes to the FSAR or Technical Specifications were required.

84-1037 (Units 1 and 2)

A number of valve position switches were replaced with environmentally qualified switches. The switches were seismically mounted and continue to provide the original design function. No new system or operation was added.

84-1041 (Units 1 and 2)

This FCR replaced corroded cast iron channel heads of the component cooling and service water heat exchangers with coated or rubber-lined carbon steel heads. The safety analysis addressed the maintenance of the pressure boundary and compatibility of the new materials with the original design.

84-1044 (Units 1 and 2)

This FCR addressed the repair to connect the minimum wall and through wall defects on the component cooling water heat exchangers. The repair included an encapsulation that was rolled from carbon steel plate and bolted together as halves around the cast iron channels. The repair was necessary to ensure that the requirements of the Construction Code (ASME Section VIII, 1968) were maintained. The FSAR Chapter 14 accident analyses and the Technical Specifications were not affected by the modifications.

84-1049 (Unit 1)

The solenoid valve for the component cooling system outlet valve for the shutdown heat exchanger was replaced with an environmentally qualified valve. The valve functions the same as the old one and was supplied by the original equipment manufacturer. There were no changes to system operation.

84-1050 (Unit 1)

Several Fischer and Porter brand transmitters in the safety injection system and component cooling system contained oscillator amplifiers that met environmental qualification requirements per 10CFR50.49, but could be improved by replacing the oscillator amplifier with a different model of better qualification. The different model oscillator amplifiers were installed under this

modification. The accuracy and response time of the transmitters were unaffected. The systems continue to function as described in the FSAR and no Technical Specifications were adversely affected.

84-1051 (Unit 2)

Several Fischer and Porter brand transmitters in the safety injection system and component cooling system contained oscillator amplifiers that met environmental qualification requirements per 10CFR50.49, but could be improved by replacing the oscillator amplifier with a different model of better qualification. The different model oscillator amplifiers were installed under this modification. The accuracy and response time of the transmitters were unaffected. The systems continue to function as described in the FSAR and no Technical Specifications were adversely affected.

84-1054 (Common)

The Meteorological tower differential temperature recorder was replaced as a result of equipment failure. The instrument is not mentioned in the FSAR or Technical Specifications, and is non-safety related. The instrument was seismically mounted, and continues to function per original system design.

84-1058 (Unit 1)

The main steam isolation valve high pressure hydraulic pumps control pressure switches were replaced with switches that meet environmental qualifications. The new pressure switches were functionally equivalent. The system functions per the original design. The system was replaced in its entirety under FCR 85-1048. As a result, these switches no longer exist.

84-1059 (Unit 1)

The instrument air header pressure switch for the control of the containment isolation valve was replaced with an environmentally qualified switch. The switch is functionally equivalent to the previous one except it is both seismically and environmentally qualified. The design function of the system remained the same. No new system or operation was added.

84-1075 (Units 1 and 2)

This FCR replaced the terminal block connections of instrument circuits exposed to LOCA and MSLB environments with connections covered with Raychem shrink tubing. Plant safety was increased by eliminating a common cause failure.

84-1079 (Common)

This FCR replaced 125 volt vital batteries 12, 21, and 22 with larger capacity batteries due to the existing batteries approaching end of life. The entire 125 volt DC system was reviewed to verify compatibility with the new batteries. Areas reviewed included short circuit protection and coordination, ventilation

for hydrogen removal, charger capacity, cabling ampacity, equipment fault current withstand, battery room floor loading, and battery capacity. The S.A. concluded that an unreviewed safety question did not exist since all design requirements were being met and the new batteries were being purchased and installed Class IE. This modification did not affect Technical Specifications, however, the FSAR was revised to reflect the larger amp hour capacity of the batteries.

84-1080 (Units 1 and 2)

Control valves, 1/2-CV-4070/4071 provide the safety related steam supply for the AFW pump turbines. This FCR provided engineering to improve the reliability of the valve's diaphragm and eliminate seat leakage problems. All changes were recommended by or evaluated as acceptable by the original equipment vendor.

84-1091 (Units 1 and 2)

This modification involved the upgrading of the cabling from non-safety related to safety related for the instrumentation associated with diesel generators 11 and 21. The S.A. concluded that the FCR did not constitute an unreviewed safety question since the diesel generator cabling was upgraded to safety related as was intended by the original design. This modification did not affect Technical Specifications or the FSAR.

84-1092 (Unit 1 and 2)

This FCR upgraded the cabling from non-safety related to safety related for the instrumentation associated with the safety related 4kV and 480 volt switchgear. The S.A. concluded that an unreviewed safety question did not exist since this FCR upgraded the instrumentation cables to safety related as was intended by the original design. This modification did not affect Technical Specifications or the FSAR.

84-1093 (Units 1 and 2)

This FCR replaced the existing oil level gauges in the bearing oil reservoirs on the auxiliary feedwater pump turbines on both Units 1 and 2. The vendor, Terry Corporation, had discontinued the use of the 5-inch gauge and now supplied the same gauge in a 6-inch length. The safety analysis concluded that since the taller gauge did not change the operation of the AFW pump turbine, or alter its seismic qualification, an unreviewed safety question did not exist. Applicable FSAR and Technical Specification sections were reviewed for this determination.

84-3001 (Unit 2)

This FCR provided review of the reload core and fuel design for Unit 2 Cycle 6. The Cycle 6 design maintains all the key safety analysis parameters or results within the bounds of previous analyses. The Technical Specifications as established and previously approved are adequate for the operation of Cycle 6 and

no changes or additions are required of this FCR. The FSAR update reflects Unit 2 Cycle 6 reload core and fuel design.

84-3001-1 (Unit 2)

This FCR supplement accounted for the replacement of four failed fuel pins with stainless steel pins for operation in Unit 2 Cycle 6. In previous submittals stainless steel pins were used to substitute for removed test rods and thus have been evaluated. Combustion Engineering performed an analysis and determined this replacement has "no effect on the operability or licensing condition of the plant". No Technical Specification changes are required and the FSAR will be updated accordingly.

85-0001 (Units 1 and 2)

This FCR authorized leak repairs to various main steam valves. The safety analyses addressed valve operability, structural integrity, method of leak repair, failure of the valves and seismic considerations. The repairs were all temporary. The FSAR and Technical Specifications were unaffected.

85-0002 (Units 1 and 2)

This FCR relocated the chemical addition tie-in on the motor driven AFW pump to the discharge side in place of the suction. The reworked piping lines met all deadweight, thermal and seismic criteria of the original construction code.

85-0009 (Units 1 and 2)

This FCR modified the PORV pilot valve seating surfaces. These changes, as proposed by the original valve vendor resulted in a better designed valve. The changes would decrease the probability of the valve sticking open.

85-0012 (Unit 1)

This FCR covered the installation of a 1 1/2" thick ASTM A-36 carbon steel spacer with a 1/8" rubber gasket downstream of #12 salt water pump discharge expansion joint. This spacer was required following replacement of the salt water pump's discharge elbow which left a gap between the new elbow and expansion joint. The safety analysis discussed the spacer material and the effect of the weight increase on stress and seismic analyses, and concluded there were none. The spacer was also investigated in relation to ANSI B16.1 requirements, and found to be satisfactory. No unreviewed safety question was found to exist.

85-0014 (Units 1 and 2)

During operation of the containment air-lock door, a large stress is imposed on the hinge-pin, particularly at the transition of the pin diameter. This FCR provided for fabrication of this pin on an as-needed basis, as well as a minor modification to change the taper of the transition area which increased the diameter slightly, and hence reduced the shear stress. This change

enhances reliability. Except for the taper modification, all manufacturers' design requirements are maintained and there is no possibility for a different accident not already addressed.

85-0028 (Units 1 and 2)

This FCR authorized the use of SA-193 Grade B7 studs. The SA-193 Grade B7 studs were only meant to be an interim replacement stud material. Combustion Engineering approved the use of SA-193 Grade B7 as an interim repair. This modification does not constitute an unreviewed safety question.

85-0038 (Units 1 and 2)

The Containment High Range Radiation monitors were supplied by the vendor with an alarm inhibit which prevents a remote alarm from actuating when the system is in a test mode. Since our plant test procedures and standard practices require us to test the remote alarm,it became necessary to remove the alarm inhibit. This was accomplished by removing a jumper within each module containing the alarm relays. The alarms are now enabled during the test mode and are verified operational during testing. Since the system operation was affected only in the test mode, the system continues to function as described in the FSAR while in the operate mode. As a result, the existing safety analysis and Technical Specifications are applicable and unaffected.

85-0042 (Common)

This FCR replaced an ITE time delay relay in the diesel generator auxiliaries transfer contactor with an Agastat time delay relay. The electrical ratings of the Agastat relay exceed those of the ITE relay. This change had no affect on Plant safety.

85-0043 (Units 1 and 2)

CE-PASS, a remote, automatic sampler of the post-accident environment, was retired in place and the existing NSSS sample sink was modified to allow for post-accident samples. Modifications to the NSSS sample system included reroute and installation of tubing in order that tested, post-accident, samples could be sent to the RCDT as opposed to the normal return to the VCT. The FSAR was updated to reflect new sampling method. This modification did not result in an unreviewed safety question.

85-0059 (Units 1 and 2)

This FCR allowed a model change on the suction strainer of the high and low pressure hydraulic pumps of main steam isolation valve pump module. These pumps maintain hydraulic fluid pressure in the cylinder module. The safety analysis discusses the differences in the strainers and their interchangeability. No changes to the FSAR or Technical Specifications were required.

85-0070 (Units 1 and 2)

Babcock and Wilcox's mechanical tube plugs were approved for use in the CCNPP steam generator tubes. Plug material, design and code adherence were reviewed to ensure plug's adequacy. Modification did not affect FSAR or Technical Specifications.

85-0071 (Units 1 and 2)

The partial removal of steam generator tubes and the subsequent plugging of the tube sheet holes were approved in CCNPP steam generators. Tube removal was done to a small number of thinned tubes in order to inspect the tubes and determine the cause of degradation. The condition of the as-left tube was analyzed to ensure its inability to damage neighboring tubes. Modification did not result in an unreviewed safety question.

85-0079 (Common)

Due to an inordinate number of incore detector failures during Cycle-8 of Unit 1, it became necessary to modify the Azimuthal Power Tilt calculation to more accurately determine tilt. Vector averaging of incore detector inputs was employed as opposed to straight arithmetical averaging. This change affected the plant computer which is non-safety related. The system continued to operate as described in the FSAR and within the basis of Technical Specifications. During the next refueling, a number of incore detectors were replaced that substantially reduced the number of failed detectors.

85-0088 (Unit 2)

This FCR changed out fan motor space heaters in containment filter Unit #22. The safety function of the filter was not affected and there were no unreviewed safety questions.

85-0090 (Unit 2)

This FCR replaced 22 CEDM cooling fan motor with a different make/model. The safety consideration for this modification was seismic mounting for II/I and missile hazzard concerns. No hazzards were created by this change.

85-0091 (Unit 2)

This FCR modified the actuator of No. 22 service water heat exchanger salt water outlet valve to accommodate a new Pratt Triton Model XR70 butterfly valve. The safety analysis discussed the modification to the actuator, seismic requirement and the design specifications of the new valve. No changes to the FSAR or Technical Specifications were required.

85-0092 (Units 1 and 2)

This FCR incorporates a vendor recommendation to increase the inside diameter of the disk holder of the main steam safety valves. This change is to eliminate scoring of the disc due to thermal expansion of the disc holder. The safety analysis addresses the design function of the valve and how it is not

affected by this modification. No changes to the FSAR or Technical Specifications were required.

85-0093 (Units 1 and 2)

This FCR was written to allow the installation of lifting lugs on U1 and U2's personnel air locks. These lugs were installed to assist on handling the exterior doors when repairs to the doors were required. An analysis of the air lock vessel was performed to assure that the integrity of the vessel was not affected.

85-1000 (Units 1 and 2)

This FCR was a documentation change to indicate that the Q-List Committee had downgraded the safety injection tank nitrogen fill control valves to non-safety related.

85-1010 (Units 1 and 2, Common)

The FCR modified the existing Westinghouse type SA-1 differential relays that are used for electrical protection on the diesel generators. The S.A. concluded that an unreviewed safety question did not exist because the Westinghouse recommended modification would improve the reliability of the relays and as a result would increase the availability of the diesel generators. This modification did not affect the Technical Specifications or the FSAR.

85-1024 (Common)

This modification added a 60th battery cell to the vital 125 volt Reserve Battery. The long cabling between the Reserve Battery and each 125 VDC bus caused a voltage drop at the bus that, although was acceptable, did not leave much margin above the 105 volt design basis limitation. The S.A. concluded that an unreviewed safety question did not exist since the additional cell will only improve the 125 VDC system's capability to furnish continuous DC power as is required by the design basis. In addition, the 125 VDC system was designed with flexibility to handle up to 60 cells in each battery. This FCR did not affect Technical Specifications or the FSAR.

85-1030 (Common)

Several valve position indication switches in the auxiliary feedwater system had environmentally qualified cable seals added to prevent moisture intrusion. This modification did not affect the system design or operation. No new systems were added.

85-1034 (Units 1 and 2)

The valve positioner pilot valves for the saltwater outlet valves of the service water heat exchangers were replaced with a different model to reduce air leakage. The original equipment manufacturer recommended the change and supplied the parts. The valves continue to function per the original design. No new system or operation was added.

85-1043 (Unit 1)

During repair work on 1-MOV-6615, a main steam line drain valve, the body to bonnet joint was double gasketed to decrease the possibility of leakage. This change was evaluated in light of bolt loading and ability to prevent leakage. The actual torque value on the body to bonnet bolts was checked to ensure that the studs were not overloaded. This FCR only approved this change on a temporary basis.

85-1044 (Units 1 and 2)

This FCR addressed the change in inside diameter of the steam generator manway gaskets from 16 1/16" to 16 1/8". The vendor, Combustion Engineering, had changed the size of the primary manway gaskets they supply as part of a standardization program. The vendor certified that the replacement gasket maintains the same level of stiffness and sealing capacity and that bolt torquing requirements are not changed. The safety analysis noted this, and that no change in the pressure boundary retention was created. It concluded that no unreviewed safety question existed after reviewing the pertinent FSAR and Technical Specification chapters.

85-1045 (Units 1 and 2)

A trap in the refrigerant hot gas lines just downstream of a compressor outlet in the switchgear room HVAC room was removed. Revised piping was seismically analyzed and supports modified, if needed. Trap was collecting oil and causing a slug of oil to be discarded through the hot gas line as the back pressure increased. This large quantity of oil, overloading the new oil separator, defeated its purpose of returning oil to the compressor crank case. Eventually, the oil separator would fail and the compressor would shut down on low oil level in the crank case.

85-1047 (Units 1 and 2)

This FCR was issued to permit the use of new materials in specifically sized Velan gate valves. The vendor had changed the material of two replacement parts; yoke nuts (ASTM B-138 to replace B-147, an inactive and no longer available alloy) and valve stems (ASTM A-564, Type SS630 to replace A-276, Type SS316). The safety analysis referred to the ASTM Standards which showed that in both cases the replacement alloy had higher tensile strength, corrosion and heat resistant properties. It concluded that the improved characteristics of the alloys did not create the possibility of an accident or malfunction and that an unreviewed safety question did not exist.

85-1051 (Units 1 and 2)

This FCR upgraded the electric service to the auxiliary spray, and charging line control valves and also the PORV block MOVs. Prior to upgrading the existing equipment, walkdowns were performed to determine the accuracy of drawings and adequacy of raceway supports. Purchasing, installation, maintenance and

modification records were reviewed to verify that the design had not been compromised.

85-3001-1 (Unit 1)

This FCR supplement replaced a fuel pin in 16003 with a stainless steel pin and incorporates minor changes to reload values for stuck CEA allowance, excess load analysis, ejected CEA analysis and large break LOCA analysis. The use of a stainless steel pin is neutronically inert and has no effect on the operability or licensing condition of the plant. During the QA process at Combustion Engineering, they discovered minor input errors. A re-analysis was performed. None of the items negatively affected the results reported in the original submittal.

86-0007 (Common)

This FCR modifies rooms 209 and 210 at elevation 5'-0" in the Auxiliary Building to accommodate the reactor coolant pump seal rebuild facility. The modifications include construction of two masonry block walls enclosing room 210, air conditioning and ventilation duct changes, additional power supply and changes to existing small tubing, pipes and floor drains. This modification did not involve an unreviewed safety question and did not affect the Technical Specifications.

86-0010 (Units 1 and 2)

The need for this FCR was prompted by the fact that opening of the containment equipment hatch locks ("dogs") can be a safety problem for workers trying to reach them. To provide a safe procedure, safety-belt attachment lugs were welded around the hatch. The design incorporated plant criteria, and fabrication utilized current AISC code requirements and CCNPP Welding Program No. 6. Other than attachment to safety-related structure, no Technical Specifications are affected.

86-0011 (Units 1 and 2)

This FCR provided for permanent storage of a one-man personnel lift in each containment, made desirable since equipment brought into this area must be decontaminated upon removal and stored. An area was found that could safely store these lifts and not interfere with, nor damage any safety-related systems. The safety analysis addressed use of rated capacity steel chain, which when strategically placed, would prevent any movement of the lifts during a seismic event. The location chosen was on elevation 10'-0" level at the base of one of the stairways. The structural steel framing is more than adequate to restrain this equipment and, therefore, damage to critical systems/equipment different than that described in the FSAR is not probable.

86-0019 (Units 1 and 2)

Under this FCR, existing hot gas by-pass valves in the switchgear rooms HVAC refrigerant piping were replaced with new valves. Hot gas by-pass valves are needed to maintain proper head pressure in

the refrigeration system at low ambient condensing temperatures. The original valves were angle type. By the time some of them developed defects, their design was obsolete. New valves are in-line type and are identical in all characteristics except for body configuration. They have the same pressure retention capabilities, flow characteristics, operating mechanism and reliability as the original valve. The valve is made by the same vendor as the original valve.

86-0026 (Unit 1)

This FCR allowed the injection of leak repair compound into 1-CA-411. The safety analysis addressed the effect of the repair on the valve itself and on the seismic design of the piping in which the valve was installed. It also addressed the compatibility of the sealant with the chemistry of the piping system and the probability and effect of sealant extruding into the piping system.

86-0040 (Units 1 and 2)

This modification deleted local valve position indication from the main feedwater isolation valves. This was a non-safety related modification that did not affect the FSAR or Technical Specifications.

86-0106 (Unit 2)

The boric acid heat tracing controllers had a history of control relay failure. The manufacturer has identified a new relay make and model that they supply the controllers with now. We purchased these new relays and upgraded the boric acid controllers in the plant. There was no change to the fit, form or function of the relays. The system continues to function as per original design. No changes were necessary to the FSAR or Technical Specifications.

86-0108 (Unit 1)

This FCR replaced a beam on the U1 MSIV platform with a beam containing a splice plate. The original beam was cut to permit access to repair a steam leak on No. 11 MSIV. Existing interferences would not permit installing a new beam in a single section. The spliced beam was designed to withstand all of the original design loads.

86-0115 (Common)

Blade brackets on the outside air supply dampers, 0-HVAC-5360 and 0-HVAC-5363 for the Control Room HVAC system were replaced with more rigid and stronger material. Operating characteristics of the brackets were not altered in any way. The old brackets kept failing because of weaker material.

86-0128 (Units 1 and 2)

The compressor load/unload pressure switches were replaced on #11, 12, 21 and 22 on switchgear room HVAC units. The old pressure switches had a narrow adjustment range and were causing excessive cycling. New pressure switches were of the same design as existing with a desirable adjustment range.

86-0129 (Units 1 and 2)

This FCR installed enclosures around several CVCIS pressure transmitters. These enclosures were required to prevent personnel from jarring the transmitters and causing the ESFAS sensor channels to trip. The enclosures were designed to withstand all normal dead, live and seismic loads. The installation of the enclosures had no adverse affect on the Auxiliary Building structure or any equipment located in the area.

86-0136 (Unit 1)

This FCR provided engineering details to weld repair one support leg of the cast steel frame of No. 13 component cooling water pump motor. The leg of the frame was broken when the frame was dropped during removal for routine maintenance. The motor was reinstalled and returned to service following the repair and testing. The Technical Specifications were unaffected and no unreviewed safety question existed.

86-0144 (Units 1 and 2)

All Parker-Hannifin instrument air check valves, model number C-600-B-10 were replaced with another Parker-Hannifin design (8F-C8L-10-B). This replacement was made because of a high failure rate among the C-600-B-10 valves as reported by the Byron Nuclear Power Plant. When four of the C-600-B-10 valves were tested at CCNPP, two failed to reseat. The new valves did not negatively affect system operability, but improved its reliability. No FSAR or Technical Specification changes required.

86-0157 (Units 1 and 2)

Additional vibration monitoring equipment was installed on each Reactor Coolant Pump to improve vibration analysis. The non-safety related instruments were installed per the seismic and separation criteria given in the FSAR Sections 5A and 8 respectively. The vibration analysis equipment is not described in the FSAR and no new system or operation was added.

86-0160 (Unit 2)

This FCR allowed the use of additional sealant to repair a leak on 2-FE-1111. This safety analysis addressed the affect of the repair on the flow nozzle itself and on the seismic design of the piping in which the nozzle was installed. It also addressed the compatibility of the sealant with the chemistry of the piping system and the probability and effect of sealant extruding into the piping system.

86-0179 (Unit 1)

This FCR approved the repair to a Low Pressure Safety Injection line support. The root cause of support damage was found to be water hammer due to incomplete venting of the system. The change was evaluated in light of the original design criteria of the support.

86-0182 (Units 1 and 2)

This FCR involved allowing the use of different grade and/or material specification of various components of different valves used in safety related systems. In all cases, the new material was analyzed and/or certified by the vendor to be equal or better than the existing. This FCR gave versatility in procurement from different vendors since one of our major suppliers could not meet the original specification.

86-0190 (Units 1 and 2)

This change installed an in-vessel neutron fluence monitor in place of one removed in a previous outage as per the original FSAR schedule. Several ex-vessel monitors were also added. This additional monitor will provide a better certainty level to neutron flux levels. The evaluation found that their installation had no impact on currently installed safety related equipment.

86-0195 (Units 1 and 2)

This FCR allows material changes on several main steam and safety injection valves. The alternate material was provided by the original valve vendor. The safety analysis discusses the differences in the thermal and mechanical properties of the material along with the interchangeability of the materials. No changes to the FSAR or Technical Specifications were required.

86-0200 (Units 1 and 2)

This FCR was written to allow the installation of temporary shielding in various locations of the Containment and Auxiliary Building. Each application was analyzed to ensure that the additional weight of the shielding would not have an adverse affect on the structure or system that it was attached to.

86-0204 (Unit 1)

This modification seal welded the 1/2" x 2 3/4" hex head bolts which connect the flow distribution box to the thermal sleeve of the steam generator feedwater line. Prior to the modification, the bolts were tack welded on two sides to the box. Leakage past the bolt was evident and the modification was necessary to prevent drainage of the feedwater ring upon a loss of feedwater. The safety analysis did not result in an unreviewed safety question and no FSAR or Technical Specification changes were required.

86-0209 (Units 1 and 2)

This FCR addresses temporary replacement of the emergency diesel generator air inlet silencer with a spool piece and installation of pressure taps across the silencer. It was believed that the silencer was partially clogged thus contributing to high differential pressure across the diesel generator blower. This safety analysis discussed the thermal, seismic and deadweight design of the piping system spool piece and pressure taps along with the affect on diesel generator operation. No changes to the FSAR or Technical Specifications were required.

86-0215 (Units 1 and 2)

The plug on the pressurizer spray control valves is internally threaded and screws on the external threads on the valve stem. A 1/8" hole exists in the plug and stem for insertion of a pin to act as a locking device. The hole in the stem was drilled in the past and the pin no longer fits snugly in the hole. The modification allowed the drilling of an entirely new hole or the drilling of the plug and stem hole to accommodate a larger pin. Repair methods were discussed and approved by the valve vendor. The operability of the PCV was not affected. No FSAR or Technical Specification changes were required.

86-0217 (Units 1 and 2)

This FCR allows for a model change on the emergency diesel generator booster servomotor. This component assists in the quick start function of the diesel generator by driving the fuel racks to the full open position. The safety analysis discusses the design parameters of the booster, reason for the model change and the affect on diesel generator quick start features. No changes to the FSAR or Technical Specifications were required.

86-3004 (Unit 1)

This FCR provided review of the reload core and fuel design for Unit 1 Cycle 9. The Cycle 9 design maintains all the key safety analysis parameters and results to within the bounds of the Unit 2 Cycle 7 design. The Technical Specifications as established and previously approved are adequate for operation of Cycle 9, and no changes or additions are required. The FSAR update reflects the Unit 1 Cycle 9 reload core and fuel design.

86-3004-1 (Unit 1)

This change eliminated the dynamic compensation capability of the RPS Delta-T calculator by setting the point four alpha and the tau over point zero eight setpoints equal to zero. The dynamic compensation module to the Delta-T power calculation affects only preventative hardware, not active hardware involving plant operation. The safety analyses performed by Combustion Engineering demonstrated that the same degree of protection is available without dynamic compensation of the Delta-T power calculation as long as the TM/LP setpoints are appropriately set and operation is constrained within the DNB LCO. No changes to the FSAR or Technical Specifications were required.

87-0001 (Unit 1)

This FCR covered the repair of a body-to-bonnet leak in motor-operated block valve 1-MOV-405 which provides isolation for pressurizer no. 11 PORV, 1-ERV-404. The work was performed with a repair clamp provided with valved ports through which sealant was injected. Both clamp and sealant was provided by Leak Repair, Inc. The safety analysis discussed the design and configuration of the repair device with respect to conformity to Section VIII Code requirements. The effect of the repair clamp on the valve pressure boundary and piping system was discussed, and it was concluded that the increased bolt loading and addition of clamp and sealant weight would have no detrimental effect on seismic, deadweight or thermal design of the piping, nor on the pressure loading on the flange. The applicable FSAR and Technical Specification sections were reviewed, and it was concluded that no unreviewed safety question existed.

87-0008 (Unit 1)

This FCR was written to establish review as to whether a small pipe seismic support that previously carried retired demineralized water inlet piping for the packing forced flow cooling system, could be modified to facilitate maintenance on heavy valve components of charging pump 13. The only piping to remain is supported in the 1/2" HC-47 thermal siphon piping. This modification will also reduce radiation exposure time. BG&E Civil Engineering Design Unit calculation C-87-10 was done to show that the seismic design criteria for small pipe hangers, limits pipe deflection to 1/16" or less. Since there is no adverse consequences to the design criteria, the FCR does not constitute an unresolved safety question and the probability of the occurrence of an accident not previously addressed in the FSAR is not increased.

87-0010 (Unit 2)

This FCR allowed the machining of 21 salt water pump shaft and spacer ring. This Safety Analysis addressed the effect of machining a Salt Water Pump shaft so as to produce a slightly longer portion with reduced diameter. The effect of this repair was found to be negligible on the proper functioning of the shaft.

87-0014 (Unit 2)

This FCR covered the installation of encapsulation for leak repair and the injection of sealant to stop a flange leak in the auxiliary feedwater motor discharge to #22 steam generator (line 4"-EB-13-2010). Since the steam cut across the raised flange face was reported to be 1/16"-1/8" deep, it also permitted the use of Gortex material as a "sandwich" to aid the Flexitallic gasket in its sealing capacity. The safety analysis addressed the effect of the cut on the structural integrity of the flange, torquing of the flange studs, the added weight of the crunch torque clamp and sealant, and concluded that the installation and injection was discussed in relation to its chemistry, pressure

and temperature restrictions, and it was concluded that its use was permissible. The safety analysis also noted that the leak repair fitting was in accordance with ASME Section VIII requirements. It concluded that the repair would not affect the design basis of the AFW system or its operability, and that an unreviewed safety question did not exist.

87-0029 (Unit 2)

This FCR modifies the inlet piping to 2-RV-439, low pressure safety injection and shutdown cooling header thermal relief valve. The branch connection weld has failed several times. The modification was performed to prevent the failure from occurring again. This safety analysis discusses the strengthening of the connection and redesign of the inlet piping system. No changes to the FSAR or Technical Specifications were required.

87-0030 (Units 1 and 2)

This modification reworked cable terminations on safety related motors located in harsh environments as indicated on the 10CFR50.49 list. Raychem seal kits were used to replace electrical tape on the cable terminations. The safety analyses concluded that an unreviewed safety question did not exist since the cable terminations were resealed with environmentally qualified Raychem seal kits and mounted inside seismically mounted junction boxes. This modification did not affect Technical Specifications or the FSAR.

87-0031 (Unit 1)

This FCR replaced a damaged section of cable to a cold leg temperature transmitter. Environmentally qualified cable and splices were used such that the safety function of the circuit was not degraded. The Technical Specifications were not affected.

87-0033 (Unit 2)

This FCR provided engineering for the installation of a 1/4" diameter screw in the piston rods of snubbers 2-83-16 and 2-83-16A to prevent rotation of the piston rod and separation from the rod eye under operating conditions. Snubber inspections during the Unit 2 - 1987 refueling outage revealed piston rod separation from the rod eye on both snubbers. Both snubbers are the hydraulic type and are located in the Auxiliary Building on the main steam line at Elev. 27'. Snubber 2-83-16 has a 4" bore and 10" stroke; snubber 2-83-16A has a 4" bore and 5" stroke. Each function to restrict motion of the main steam line due to seismic and rapid valve closure loads. Both snubbers were returned to service. This FCR did not involve an unreviewed safety question and caused no impact on Technical Specifications.

87-0034 (Units 1 and 2)

This FCR replaced terminal blocks that were determined to be unqualified. Replacement qualified terminal blocks were used

such that safety margins were not reduced. There were no unreviewed safety questions or affected Technical Specifications.

87-0035 (Units 1 and 2)

The reactor coolant system hot-leg and cold-leg temperature sensors were modified to meet environmental qualifications per 10CFR50.49. Patel Engineering conduit seals were added to prevent moisture intrusion through the conduit connection. An O-ring seal was added at the mating surface of the body and cap of the connection head assembly. A seismic evaluation was performed to analyze the addition of the Patel Engineering seal and it was determined that the installation meets seismic requirements. The reactor protective system functions and operation were not affected by the change since it only enhanced the protection of the system's temperature sensors. The system continues to function as described in the FSAR.

87-0036 (Unit 2)

This FCR replaced an ECCS pump room cooler fan motor with a different make and model motor. Due to a slightly higher full load current, overload heaters were also changed. The replacement motor was evaluated for environmental and seismic qualification. The margin of safety was not reduced and there were no unreviewed safety questions.

87-0038 (Unit 2)

This FCR upgraded two stock motors for use in a harsh environment. One motor was used to replace No. 22 ECCS exhaust fan motor and the other placed back in stock. Materials were analyzed and the motor leads were replaced to meet environmental qualification requirements. Other motor characteristics were evaluated to ensure safety margins were maintained. The Technical Specifications were not affected.

87-0039 (Unit 1)

This FCR changed out number 11 and 12 ECCS vent fan motors. Motor materials and characteristics were evaluated to ensure performance of safety function during design basis accidents. The Technical Specifications were not affected.

87-0040 (Units 1 and 2)

This FCR authorized a material change to the ICI flange bolts. This safety analysis changed the ICI flange bolting, which had been nickel-plated SA-193 Grade B6, to unplated B7 material. The safety analysis pointed out that the B6 material did not meet the impact testing requirements of the ASME Section III Code, while the B7 did. Also, the corrosion resistance of nickel-plated B6 material was compared to the unplated B7, and the new material determined satisfactory for the application.

87-0042 (Unit 2)

The bottom yoke assembly on pressurizer spray valve 2CV100E corroded. The yoke bottom was machined and a shim plate was inserted to make up for that portion of the yoke machined away. Calculations were done to ensure that the addition of the shim plate would not alter the seismic qualification of the valve. This shim was needed to ensure proper securing of the actuator to valve bonnet. Valve operability was not affected and no changes to the FSAR or Technical Specifications were required.

87-0043 (Units 1 and 2)

During routine engineering it was found that the welds on the Reactor Coolant System spray valve bonnet extension were undersized. A detailed stress analysis was performed in accordance with ASME Section III, Class I criteria, to determine the required size of weld reinforcement in order to meet all primary and secondary stresses for deadweight, pressure, thermal and seismic loads.

87-0044 (Units 1 and 2)

The control valves associated with the ECCS pump room coolers were upgraded to meet environmental qualification requirements set forth in 10CFR50.49. Though the solenoid valves were replaced with qualified valves that are considered direct replacements, the valve installations were evaluated for their potential impact on electrical load, seismic mounting, control valve stroke time, system operation, and reliability. The system upgrade meets environmental qualification requirements and continues to operate as described in the FSAR with no new failure modes introduced.

87-0047 (Unit 1)

Radiation shielding was installed near two undervoltage relays after analysis of accident radiation streams determined the need. Since the relay function was unchanged, there were no unreviewed safety questions.

87-0049 (Unit 2)

A lock pin for the shim for the core stabilizing lug of the core support barrel (120' location) was found loose during the Spring 1987 refueling outage. Evaluation of the lock pin indicated that the lock pin cannot become a loose part in the core because of clearances in the area and also that only three of the four bolts are needed to keep the shim secure should the lock pin backout and the bolt become loose. This change does not constitute any unreviewed safety question nor require a change to the Technical Specifications.

87-0052 (Units 1 and 2)

This modification allows use of non-parkerized bolting as replacement parts for Velan valves for which the corresponding Velan drawing notes that the original part was parkerized. Parkerization is a commercial process which deposits a coating of

ferrous phosphate onto a steel item. Velan Valve Company offers parkerized bolts, nuts, and studs for many of its valves. This treatment is to provide some protection against rusting of parts in storage. Velan does not credit parkerization for corrosion protection during the service life of the component. This change does not constitute an unreviewed safety question.

87-0055 (Unit 2)

This FCR reterminated the instrumentation cable for #22 loop hot leg temperature at electrical penetration 2ZWD4 as a result of unacceptable high resistance values on existing penetration terminations. The S.A. concluded that an unreviewed safety question did not exist since electrical penetration 2ZWD4 is safety related for pressure boundary only, and this pressure boundary was not affected by this modification. The Technical Specifications and FSAR were not affected by this FCR.

87-3000-1 (Unit 2)

This supplement found that each of these items do not constitute an unreviewed safety question: 1) Elevel fuel rods in the Cycle 8 core were replaced with stainless steel pins. Stainless steel pins have been used and analyzed previously. They are neutronically inert and do not alter the results of any Unit 2 Cycle 8 safety analyses as originally presented in the reload design report. 2) Both discrete neutron sources were removed from the Cycle 8 core. Operating the Unit 2 Cycle 8 core without discrete neutron sources does not affect safe plant operation as evidenced by previous startup experience of Unit 1 without discrete sources. 3) Bank 5 radial peaking factors used in safety analyses were changed from 1.87 to 1.904. The results of the Unit 2 Cycle 8 safety analysis are not affected by the reporting of 1.87 as the rodded radial peaking factor for input to the safety analyses since the correct value of 1.904 was actually used in the analyses.

87-3000-2 (Unit 2)

This change eliminated the dynamic compensation capability of the RPS Delta-T calculator by setting the point four alpha and the tau over point zero eight setpoints equal to zero for Unit 2. The dynamic compensation module to the Delta-T power calculation affects only preventative hardward, not active hardware involving plant operation. The safety analyses performed by Combustion Engineering demonstrated that the same degree of protection is available without dynamic compensation of the Delta-T power calculation as long as the TM/LP setpoints are appropriately set and operation is constrained within the DNB LCO. No changes to the FSAR or Technical Specifications are required.