CONSOLIDATED EDISON COMPANY OF N.Y., INC.

INDIAN POINT UNIT #2

CHANGES, TESTS AND EXPERIMENTS - 1981

1. Modification to the Saturation Meter in the Central Control Room (CCR)

Installation of a saturation meter in the CCR allowed the state of the reactor coolant system to be monitored for impending saturation values of the water in the reactor coolant system.

The modification involved replacing temperature signals from the original in-core thermocouples with Hot Leg Resistance Temperature Detectors (RTDs).

An analysis of the modification showed:

(1) That it enhanced plant safety by providing further monitoring of the state of the reactor coolant system and by warning the CCR operator of changes thereto;

(2) That it addressed a possible malfunction - reactor-liquid-coolant-flashing - which had been analyzed previously in the SAR; and

(3) That it enhanced safety by providing an additional means of determining the state of the coolant system.

2. Containment Sump/High Range Water-Level Indication

Installation of redundant level transmitters, having read-outs in the CCR provided a more accurate method for measuring the containment-sump water level.

The new system has been protected against single-failures and is capable of operation in a post-accident containment environment.

The FSAR (Section 6.2) discusses indication of the level in the containment sump. This modification does not replace that level indication system but supplements the same by providing a continuous liquid level indication both within the sump and above the 46' elevation. All power and readout equipment is provided from safeguard busses and is available should off-site power be lost. Thus, the possibility of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

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Although this system did not provide any automatic safety function, it did increase the reliability of an existing system by allowing a wider range of information to be available to the CCR operator during post-accident containment conditions. In addition, this equipment allows the operator to determine the exact height of the water in containment, thereby aiding in controlling the consequences of a postulated accident. Therefore, the possibility for an accident or malfunction of a different type than evaluated previously in the SAR was not increased.

3. Installation of Undervoltage Relays

This modification involved the installation of relays whose action trips the 480-volt supply circuit breakers to the safeguards busses upon sustained grid undervoltage and which tie the individual diesel generators to the affected safeguard buses.

Tripping the 480-volt feed-breakers under sustained undervoltage protects existing equipment (motors, etc.) in addition to allowing an alternate power supply to be made available.

The new relays have no effect on the 480-volt supply to the existing equipment during normal operation or under emergency conditions when normal supply voltage is available nor do they have any effect on the existing station blackout undervoltage relays. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in SAR were not increased.

Accordingly, this modification was deemed not to involve an unreviewed safety question.

4. Replacement of Battery #22

This modification involved replacement of the original 60-cell Battery #22 with a new 58-cell battery in order to alleviate an overvoltage concern when the battery was equalized.

Reducing the battery size from 60 to 58 cells reduced the equalizing-charge voltage from 139.8 to 135 volts, resulting in a larger margin between the equalizing-charge voltage and the maximum 140-volt tolerance on the RPS relays. The new battery met the system's voltage and capacity requirements for emergency conditions, including Seismic I conditions.

The fire protection and security plans as well as the battery room's Seismic I capabilities were not affected by this modification.

Since the new battery meets the system's design nominal voltage and capacity requirements, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The new battery, racks, and floor loading did not degrade the Seismic I capability of the system or the building. The possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The Surveillance-Testing requirements as defined in the Technical Specifications were met, resulting in no reduction in the margin of safety as defined in the basis for any technical specifications.

The replacement of Battery #22 did not involve an unreviewed safety question.

5. Replacement of Valve Arrangement for Reactor Coolant Flow Transmitters

The reactor coolant flow transmitters and their associated valve arrangement are located on rack #20, (68' elevation) inside the east crane wall of Indian Point Unit #2 containment building.

This modification involved replacement of the original transmitter on a new rack arangement and substitution of Rockwell valves for the existing Kerotest valves.

Even though the new valve arrangement differed from the original configuration and new valves installed, there was no change in its specifications and operational parameters.

The primary coolant system and the containment structures (Class "A" and Class 1) requirements were not degraded by this modification since the new standard valve arrangement met the same engineering and operational requirements of the original valve arrangement, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

Finally, since this modification did not change the primary coolant system's operation, testing, or integrity requirements, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

6. Main Steam Isolation Valve (MSIV) Hold-Down Cover Stud Modification

This modification involved repair to a damaged MSIV stud hole and consisted of drilling said hole slightly larger (1-3/4" to 1-7/8") and then tapping it. A special stud (1-3/4" - 8N on one side and 1-7/8"-8N on the other), installed in the larger hole, allowed the use of the same cover and nut as originally installed.

Atwood & Morrill (manufacturers of the valve) concurred that this procedure was commonly used by them to repair damaged bolt holes. The area around the cover was sufficiently reinforced and was not weakened by the slightly larger hole.

The repair to the bolt holes on the MSIV did not impact the Unit's operation. The repair did not change the design or leak tightness of the valve and allowed use of the same size cover and nut as originally installed. Thus, the probability of occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as the valve repair allowed the use of the original cover, and did not significantly weaken the area of the valve body, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

Finally, the repair did not change the ability of the valves either to be tested or to maintain the secondary-system integrity. Therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

7. Installation of Inching Controls on the Manipulator Bridge and Trolley

The Bridge-and-Trolley Inching Control on the fuel handling manipulators provided a way of moving the bridge and trolley in small controlled increments with the gripper-tube extended.

Inching is controlled by a four-directional control lever on the console. Moving the control lever off neutral causes the crane to step 1/16-inch in the indicated direction and stop. For successive steps, the control lever must be returned to neutral between each step. The inching control uses separate magnetic stepping motors mounted on the bridge-and-trolley gear reducers. The selector switch that energizes the inching mode disables the main motor-control system in order to prevent the drive from inadvertently switching to the high-speed drive.

Because of the 1/16-inch limit of travel in each step, the risk of collison damage to the reactor vessel or fuel assembly is reduced.

Inadvertant switching to the high-speed drive from the inching mode is prevented by an interlock which disables the main motor-control system.

No possible failure of inching controls or motor drives was identified as presenting a risk of damage to either the fuel assemblies or other reactor components.

No feature of this inching-control modification compromised the safety of refueling operations as previously analyzed in the SAR. Also, no potential safety hazard of a different type from those previously analyzed in the SAR was identified.

Further, in no instance did the modification reduce the margin of safety of any components as defined in the basis for any technical specifications. Thus, this modification was deemed not to involve an unreviewed safety question.

8. Repair to Steam Generator Lower Manway

This modification involved repair to damaged manway bolt holes and consisted of drilling each damaged threaded bolt hole slightly larger (1.885"/1.905") and then tapping the hole and inserting a Heli-coil type insert. This allowed the use of the same size bolt (1.7/8") as originally installed.

Westinghouse (the steam generator manufacturer) concurred that a Heli-coil is commonly used by them to repair damaged manway bolt holes. The area around the manway is sufficiently reinforced and will not be weakened by the slightly larger hole.

Repairs to the bolt holes on the steam generators have no affect on the Unit's operation. Also, it does not change the design or leak-tightness of the manway and allows use of the same size bolt as originally installed. Thus, the probability of occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as the manway repair allowed the use of the original bolt and did not significantly weaken the area around the manway, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created. Further, it did not change the ability of the steam generators to be tested or to maintain the primary-system integrity. Therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

For these reasons, this modification was deemed not to involve an unreviewed safety question.

9. Drain Valves for the Drain Lines of the Fan Cooler Units (FCUs)

This change involved the installation of two one-inch manual drain valves in the supply and return lines of FCU's #21, 23, 24, 25. These valves were not necessary for FCU #22, since it receives service water from the bottom.

These valves can isolate the one-inch line and can be used to control draining of the FCU's headers as needed. They also conform to the leak-rate requirements and are capable of withstanding the 150-psig system pressure. The design rating of the valves is 200 psig.

The installation of the valves into the drain piping had no impact on the containment penetrations, the FCUs, or any other existing system. Metal compatability was maintained in order to avoid corrosion and the valve was seismically supported. Further the modification conforms to all applicable code and specification requirements.

Installation of the valves provides isolation capability for the 1" line from the 10" line (and drainage) with no adverse effect on either the FCUs (10" line) or the existing systems. Therefore, there was no increase in the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the SAR.

In addition, the valves did not affect the operability of any FCU and/or any existing system. Since the valves are manually operated and capable of withstanding system pressure (150 psig), the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

Also, the proposed modification did not involve any technical specifications, so the margin of safety was not reduced.

Thus, it was concluded that the modification did not involve an unreviewed safety question.

10. Weir Replacement

This modification involved replacement of the original five Fan Cooler Drain Pipes' weirs with those of a new design having an improved head-versus-flow characteristic.

The new weir is capable of passing approximately 150 gpm of condensate, although no flow measurement will be done above the limit of 30 gpm.

Since the installation of the new weir had no effect on the system and it performs the same function as the original device (with higher accuracy), the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The weir is seismically designed and conforms to all code and/or specification requirements. Therefore, no effect to the system or any other existing system will result and, thus, the possibility for an accident or malfunction of a different type other than any evaluated previously in the SAR was not created.

This modification did not involve any technical specification; therefore, the margin of safety was not reduced.

Accordingly, this modification was deemed not to involve an unreviewed safety question.

11. Radiation Monitoring Sample Line for the FCUs' Motor Coolers' Service-Water-Discharge Lines

This modification provided radiation monitoring of the Containment FCUs' Motor Coolers' Service-Water-discharge lines.

A one-inch sample line with a sight-flow indicator and a manual isolation valve now connects each motor cooler's service-water-common-discharge header (line #494) to the mixing nozzle located upsteam of the redundant radiation monitors, R-16 and R-23. The additional water supplied by this line to the radiation monitors is well within their capability and does not affect the instruments response. The addition of this sampling capacity insures that all service water coming out of containment is monitored for leakage in case of an accident.

Inasmuch as this modification did not affect either the capability or response of the radioactivity monitors or the seismic capability of the system and increased the probability of detecting any Containment leakage (in case of an accident) into the service-water-discharge lines, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

This modification did not involve any technical specification; therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

This modification was deemed to not involve an unreviewed safety question.

12. Vent and Flow Meter in the 18- Inch Service Water Return Flow

The modification involved the installation of three items on the 18-inch Service Water System (SWS) return line from the Containment Cooling Coils (CCC). The first item was a new flow-restricting orifice. The orifice restricts the flow to a minimum of 10,000 gpm, thus assuring adequate cooling water for the CCC during an accident mode of operation. Further, the installation entails an increase of pressure in the SWS during the accident mode of operation. The second item was the installation of a new 8-inch open vent which replaced the original 3-inch vacuum breaker. The third item was the new flow meter which permits measurement of the total flow from the CCC.

The job involved a routine installation of an orifice, an 8-inch open vent, and a flow meter in an 18-inch line.

The probability of occurrence or the consequences of an accident or a malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The job involved an installation which did not degrade the present system. The flow restrictor passed a sufficient amount of water during the accident mode of operation and, at the same time, provided further assurance that the SWS pressure was within the range of values mentioned in the SAR. Consequently, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The implementation of this modification did not compromise the performance of the SWS. Flow rates necessary during both the normal and accident mode of operation were not decreased and a more reliable open vent and flow meter provided improvements of the SWS. Hence, the margin of safety as defined in the basis for any technical specification was not reduced.

For these reasons, this modification was deemed not to involve an unreviewed safety question.

13. Installation of a Flow Meter for the Containment Sump Pump Discharge Flow Indication and Totalization

This modification involved the installation of a flow meter in order to measure the flow passing through the sump-pump-discharge line and the total volume pumped from the containment during a given time interval. The flow indicator and totalizer indicators are located in the CCR.

The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased since the job involved an installation which did not degrade any present system.

The possibility for an accident or a malfunction of a different type than any evaluated previously in the SAR was not created inasmuch as the operation of the new system was strictly indication.

The margin of safety as defined in the basis for any technical specification was not reduced since the modification did not compromise the performance of any system; instead, it provided the ability to measure both the flow through the discharge line of the containment-sump pump and the total volume pumped during a specified time interval.

Accordingly, it was concluded that the modification did not involve an unreviewed safety question.

14. Removal of the Automatic Closure Mode on SWS Valves Nos. FCV-1111 and FCV-1112

The purpose of this modification was to remove the automatic-closure mode of the Service Water Isolation Valves, FCV-1111 and 1112. This entailed the removal of the air operators and solenoid valves from these isolation valves.

Removal of the automatic-closure capability did not affect the required service-water-supply arrangement; that is to say, during normal plant operations, all of the service water was fed to the conventional (non-essential) plant services and during accident conditions, all of the service water will go to the essential plant services only.

However, the modification does mean that the flow control valves (FCVs) will have to be aligned manually when an essential header is selected. While this will result in the loss of some operating flexibility, the loss is more than offset by the improved reliability of the system. Originally, in the case of the loss of instrument air or electric power, both of the FCV's would open, causing the service water to be fed to both the essential and non-essential services.

The current alignment of the FCVs with the "essential" header is controlled administratively. The valves, however, are equipped with remote-position indicators for the operator which show that the valves are aligned correctly.

This modification did not increase the probability of an unsafe occurrence as the flow arrangement during normal or accident conditions remained unaltered. It did, rather, decrease the consequences of an accident or the malfunction of equipment important to safety. Originally, either a malfunction in the air operator/solenoid valves or the loss of instrument air or electrical power would cause the FCVs to open, resulting in reduced water supply to the essential services during accident conditions. However, this modification removed the air operators and the solenoid valves, and, with the proper manual alignment of the valves, there would be no change in the water supply during accident conditions to the essential services.

The removal of the automatic-closure mode from the FCVs did not create the possibility for an accident nor malfunction of a different type than evaluated previously in the SAR, inasmuch as the modification did not involve the installation of any new electrical or mechanical hardware whose malfunction could create a new type of accident.

The modification maintained the margin of safety as in the basis for any technical specification since nothing had been changed to affect said basis.

It was, therefore, determined that the modification did not constitute an unreviewed safety question.

15. Anti-Deadheading Protection for the Containment-Sump Pumps

The purpose of this modification was to add anti-deadheading protection for the two Containment sump pumps.

This modification involved the drilling of holes in the discharge piping a short distance after the impeller, thereby allowing recirculation through the pipe even in the event of a valve closure downstream.

This modification prevented deadheading and any subsequent effect on the motor. It did not, in any way, affect either the operation of the sump pump or any other safety-related equipment.

This modification had no adverse affect on any safety-related equipment. For this reason, the probability of occurrence or consequences of an accident or a malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Except for the drilling of holes in the discharge pipes, this modification did not add to or change this system or its operation. Hence, the possibility of an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

This modification did not affect any technical specification. Therefore, the margin of safety as defined in the basis for any technical specifications was not reduced.

Consequently, this modification was deemed not to involve an unreviewed safety question.

16. Use of Flanges in the Service Water Piping

A change was made to the Service Water System (SWS) to provide removable sections of piping for inspection, replace degraded welds, and install insulating pipe flanges.

The major safety consideration of this modification was the effect of the added weight on the seismic design of the SWS. Prior to the installation of the piping, all areas were reviewed for their impact on the seismic design, and additional piping supports were added where necessary.

This modification did not change the design of the SWS as described in the FSAR. The system for replacing welds, adding insulating flanges, and providing removable sections of pipe for inspection did not violate the system's original design specification. This modification also did not change any flow path for the service water or the basic design configuration. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The use of flanges in the SWS or the piping itself was not discussed in any technical specification, thus, the margin of safety as defined in the basis for any technical specification was not reduced.

Accordingly, the modification was deemed not to involve an unreviewed safety question.

17. Temporary Repair to the Seal Table Seals

This modification provided an alternative means of effecting a primary-system closure at the Seal Table during refueling operations.

This temporary seal was not used under operating conditions, and thus, did not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR.

The only possible failure of the seal would be if it leaked. In this case, the seal pressure would be small (approximately 15 psi), so the postulated leak would be small compared to the total cavity volume of 350,000 gallons. Thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The Technical Specifications did not address the Seal Table during refueling or shutdown conditions; hence, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

18. Cutting and Capping of Thimble Tube, C-8

This modification involved the cutting and capping of a thimble tube (C-8) in order to repair the first-fitting-above-the-Seal-Table which was leaking.

The instrument that was capped is a fixed incore detector which is never used for any safety or operational system. The failure of said instrument would not impact any safety system. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The only type of failure that this modification could produce is a leaking cap which would be no different from an existing tube-connection leak. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The fixed incore detectors are not addressed in the Technical Specifications, thus, the margin of safety as defined in the basis for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

19. System-Level Indication for Safety-System Bypass

This modification consisted of installing status lights for each of the safeguard-activation-circuit-reset bypasses and for the high-steam-generator-radiation bypass in the sample and blowdown isolation valve circuits. Also, a set of key-locked switches (also provided with status lights) were installed in order to bypass each of the "daisy chain" circuits.

The new indication for the contacts on the safeguards switches serves no operational function other than indication. Also, the power requirements of the new circuits are insignificant with regard to the capability of the electrical supply. In addition, this modification allows the operator to be alerted if it becomes necessary to bypass a safeguards train (or safety-related circuit) for reset, testing or repair purposes.

Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The key-locked switches bypass the Containment isolation "daisy chain." The use of the key-locked bypass switches requires direct operator action in the same way that the operator takes action removing any piece of equipment from service for test or inspection purposes. Therefore, the possibility of an accident or malfunction of a different type than any evaluated in the SAR was not created.

The new indicating lights and switches, themselves, are not listed in the Technical Specifications; rather, they are part of a larger system that must be operable prior to and during operation in order to maintain the plant in a safe operating condition. These lights provide information to the CCR operator that necessary safeguards equipment, as defined in the Technical Specifications, has not been bypassed. Therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

20. Addition of Check Valves in Lines #204 & #208

This modification involved the installment of check valves in lines #204 and #208 (Chemical and Volume Control System) in order to prevent high levels of radioactivity from entering these lines following a postulated accident utilizing the assumptions given in NUREG-0578 (Lessons Learned Task Force Report).

This job did not change any of the pressure boundaries or designed flow paths of any fluids outside Containment; the purpose of these valves is to prevent backflow into the boron-addition piping. Moreover, the addition of these two check valves helps to assure that a system remains uncontaminated. This would result in lower radiation fields in certain areas of the PAB without degrading or isolating an existing safety system. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

Finally, the addition of these check valves did not change any of the test or post-critical parameters as described in the Technical Specifications.

Thus, the margin of safety as defined in the basis for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

21. Removal of Accessible and Inaccessible Snubbers

This modification extended the scope of a previous modification and called for the removal of additional hydraulic snubbers. The analytical justification for this modification was based on thermal and/or dynamic analysis similar to those performed for the original modification. Inasmuch as this is of the same type as discussed and analyzed in a previous safety evaluation, the justification for that analysis remains valid. Accordingly, this modification was deemed not to involve an unreviewed safety question.

22. Installation of Motion Limiters in the Reactor Vessel Wall and Modification of Blowout-Plug Design

In response to a NRC concern involving a postulated reactor-vessel-nozzle LOCA, this modification mitigated the physical consequences of said occurrence by:

1. Installation of motion-limiting devices (mechanical restraints) around the reactor-coolant-loop hot-and-cold-legs' piping.

2. Modification to the blowout plugs (eight plugs, one above each hot and cold leg) surrounding the reactor vessel and the shielding material within these plugs.

Each motion-limiting device consisted of series of clamps, each of which was made of stainless steel with inserts of carbon-steel bars (motion limiter).

These devices do not affect the pressure boundary of the primary coolant system inasmuch as they are bolted onto the piping. The clamp material is the same as the original piping so that the thermal expansion between the primary piping and the clamp does not cause any excessive stresses

in the primary-pressure boundary. Westinghouse has designed this system to ensure that during accident conditions the original piping will maintain its position. Since the gap spacing will be maintained between the restraint bars and the penetration sleeve, the load component during a seismic event will be small, and therefore, the installation of this modification did not affect the seismic design of the system.

The new blowout plugs are of an improved design and will release the postulated accident-condition pressure faster than the original design. Further, the shielding material (BoroSilicon) is equal to or has better neutron-shielding properties than the original design material (sand).

The new shielding blocks and reflective (mirror type) insulation are fire resistant and do not pose any added fire hazard inside of Containment.

The primary system was discussed in the FSAR. This modification did not change any of the functions or pressure boundaries as described in the FSAR. The motion limiters are designed to limit the break-opening area due to a primary-pipe displacement, thereby reducing the severity of the postulated accident.

The new blowout plugs are designed to quickly relieve the pressure in the area of the postulated primary-line break. That is to say, they assure that the design parameters of the orignal system are met.

Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

This modification reduces the parameters of the postulated accident without adding any changes to the pressure boundaries of the primary system or any other safety-related system. Further, there was no failure mode of this system that could create the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR.

Since both the reactor-vessel supports and the blowout plugs were not addressed in the Technical Specifications and inasmuch as the modification did not change any aspect of containment or the reactor coolant system, the margin of safety as defined in the basis for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

23. Installation of Backdraft Dampers on the Fan Discharge of Control Rod Drive Motor (CRDM) Cooling Fans

This modification involved the installation of a damper on the fan discharge of each CRDM-cooling fan in order to impede any back-draft. This, in turn, diminished the excessive load on the fan motor caused by reverse flow.

Each damper is equipped with hinged blades that are opened by the force of the discharge air. As long as the fan is running, the discharge air holds the damper open; but, as the fan stops, the damper is gravitationally shut, thus impeding reverse flow. The modification prevents equipment malfunction due to reverse windmilling. Thus, it did not increase the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the SAR.

The butterfly-type damper assembly was seismically analyzed and installed, thus diminishing the probability of the damper assembly falling into the duct. However, if the damper assembly falls into the duct, it could stop the fan from operating. But, there are four fans, three of which are capable of providing enough cooling capacity for at least one day. Hence, the possibility of an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

This modification had no bearing on the Technical Specification, and consequently the margin of safety as defined in the basis for any technical specification was not reduced.

This modification did not constitute an unreviewed safety question.

24. Installation of a Leading Edge Flow Meter (LEFM) in the SG Feedwater Lines

Installation of the LEFM allowed more accurate determination of feedwater flow than the originally-installed flow meter (Venturi nozzle). This in turn, allowed the calorimetric power level (actual reactor-core power) to more accurately reflect the true plant power level.

The feedwater piping contains new LEFM transducers which input to a console in the CCR. This console proceses the incoming data and provides a visual indication of feedwater flow.

This modification encompassed two fire zones: first Zone 15 contained the new feedwater piping and; second, Zone 15 contained the CCR console. After careful consideration of these zones, it was determined that this modification did not pose a fire hazard.

Since the accuracy of the feedwater flow measurement was increased, greater precision in the plant heat-balance computation results. This modification neither increased the probability of occurrence or the consequences of an accident or malunction of equipment important to safety previously evaluated in the SAR report, nor increased the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR.

Since the Technical Specifications do not rely upon measurement of feedwater flow, the margin of safety inherent in the Technical Specifications has not been reduced. The measurement could represent an enhancement of plant safety by providing another means of assessment of incidents involving the secondary side.

For the above reasons, this modification was deemed not to involve an unreviewed safety question.

25. Attachment of a Stainless-Steel Plate to the Containment-Sump Weir

This modification involved attaching a stainless-steel plate (three inches of which projects above the top of the weir) to the side of the Containment-sump weir, thereby allowing additional level capacity and improved pump-actuation reliability. This, in turn, reduced the probability of water entering the RHR-suction portion of the sump during normal operation.

This modification had no effect on RHR-system performance following a postulated accident since the entire sump area would be flooded prior to the use of the RHR system in the accident mode. The plate provided no significant resistance to flow and had no effect on pump-suction requirements.

In addition, the plate was installed in accordance with Class A and Seismic I criteria. Therefore, the probability of a passive failure was not changed and the consequences of previously evaluated accidents were not increased.

Since this was a structural change not associated with any safety-system operation, the possibility of a new type of accident was not created.

Finally, there were no technical specification considerations associated with this change.

It was therefore, determined that no unreviewed safety question was involved as per 10CFR50.59.

26. Installation of Backup Pneumatic Transmitters For Electric Transmitters

This modification involved the installation of backup pneumatic transmitters and indicators within Containment in order to monitor Steam Generator #21 and 22 levels as well as the Pressurizer's level and pressure.

Existing transmitter sensing lines were tapped in order to supply input for the pneumatic transmitters. The transmitters are supplied with air from the Instrument-Air header located inside of Containment. A backup supply from the Nitrogen (N_2) system located inside of Containment was also installed. An isolation valve, restriction orifice, and two check valves were installed in each supply line tapping off the N_2 system and Instrument Air header. In addition, for the N_2 supply, a relief valve and a reducing valve were located upstream of the check valves.

The accident consequences, postulating a pipe break in the modification, are the same as the consequences resulting from a pipe break occurring where the original lines interface with those introduced by this modification. An Instrument-Air header

loss inside of Containment would place the air-powered valves to their safeguard or fail-safe position. Loss of Instrument Air occurs normally during a LOCA, since the header inside of Containment is isolated during a phase A isolation condition. Any break in the new supply line from the Instrument-Air header to the pneumatic transmitters downstream of the restriction orifice would not result in the loss of header pressure. That is, the flow through the orifice was designed such that the ability of the instrument-air compressors to maintain header pressure would not be compromised.

The N_2 supply also provides a makeup source both for the OPS and SIS accumulators. The postulated pipe break in the N_2 supply would have no effect on either safety-related system since: (1) The OPS accumulators are isolated from the N_2 supply by check valves and (2) the SIS accumulators are isolated by normally shut remotely operated valves.

Both the sensing-line tap-offs and instrument-air-supply tap-off meet the specifications and seismic classifications of the systems being tapped into. As can be seen above, in the event of a postulated break in the original sensing lines, Instrument-Air System, or N_2 system, the consequences thereof would be the same with or without this modification. Therefore, an accident of increased consequences was not introduced.

For these reasons, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased. Also, the possiblity of an accident or malfunction of a different type than any evaluated previously in the SAR was not created. And since the basis or intent of any technical specification was not changed, the margin of safety was not reduced.

Hence, this modification was deemed not to involve an unreviewed safety question.

27. <u>Chemical-Volume-Control-System (CVCS)-Hold-up-Tank (HUT) Pump Trip-and-Alarm System</u>

Installation of the new pump trip-and-alarm system activated by low tank pressure allowed closer monitoring of the HUT pressure and recirculation pump flow. The system consisted of pressure switches and indicators - mounted off the top of the tank in the pressure relief line and an alarm to the PAB (80' elevation).

The modification did not change any of the equipment functions as described in the FSAR. The new system enhanced the original system by preventing a possible, unwanted occurrence by automatically stopping the CVCS transfer pump. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The modification did not change the operation or capacity of the original equipment. In fact, should any equipment fail, the small amount of leakage would be trapped in the HUT and building and would be pumped into the Waste Holdup Tank by the building's sump pump.

Thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

There is no reference to, or discussion of, the three holdup tanks or their transfer pumps in the Technical Specifications. Thus, the margin of safety as defined in the basis for any technical specification was not reduced.

Therefore, this modification was deemed not to involve an unreviewed safety question.

28. Extension of Reactor-Vessel-Head Vent Line

This modification extended the original vent line situated on top of the reactor-vessel head, thereby allowing greater flexibility and disposal of any bubble that may accumulate at the top of the reactor head.

The extended line, having two new remotely-operated valves, vents into Containment.

Since there now are two closed valves serving as a barrier between the primary reactor coolant and the containment atmosphere safety was enhanced, and thus, the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

A previous analysis of the consequences of a postulated rupture of the original vent line showed that the effects, if any, were minimal, and, since the modification did not increase the chances of an accident or consequence thereof, the possibility for an accident or malfunction of a different type than previously evaluated in the SAR was not created.

After a careful review of the Technical Specifications and bases thereto, it was determined that said modification did not have any effect on these and thus the margin of safety as defined in the basis for any technical specification was not diminished. For these reasons, this modification was deemed not to involve an unreviewed safety question.

29. High-Range Containment Radiation Monitors

This modification involved the installation of two high-range radiation monitors, one at the top of the pressurizer and the other on the steam-generator wall in such a way that it can monitor dose rates within the containment. These monitors are connected to displays and data processors by coaxial cables, making use of original containment penetrations.

These monitors provide information about the accomplishment of plant safety functions and about the imminence or extent of breach of a fission-product barrier.

The instruments cannot cause damage if dislodged; nor are any containment penetrations or other modifications necessary. Further, should either instrument fail to perform its intended function, other indications are available.

Aside from fastening these instruments to some relatively immobile object or structure and attaching cables to the original equipment, there is no discernible safety concern.

Based on the foregoing, it was concluded that the modification did not constitute an unreviewed safety question.

30. Modification of the Actuation Logic for The Emergency Diesel Generators' (EDGS') Fuel Pumps to Meet Single-Failure Criteria

The actuation logic of the fuel-transfer pumps for the EDG's was modified in order to meet the single-failure criteria of said pumps.

A separate and independent actuation logic for each pump was provided. Each pump was then actuated by the low level of its associated day-tank with direct actuation of its back up pump logic system. The modification involved the removal of the original selector switch and rewiring of the actuation logic system with additional relays as needed (like-and-kind to the existing relays).

Since the modification increased the reliability of the system by protecting against single-mode failure, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as the Seismic I capabilities of the actuation logic and the existing transfer pumps were not affected, the possibility for an accident or malfunction of a different type other than any evaluated previous in the SAR was not created. And, since this modification did not involve any technical specification considerations, the margin of safety as defined in the basis for any technical specification was not reduced.

Therefore, this modification was deemed not to involve an unreviewed safety question.

31. Installation of a Fourth Inverter and Battery to Supply Instrument Bus #23

This modification installed a new battery and fourth inverter system in order to provide an uninterruptable power supply for Instrument Bus #23 in case of an accident accompanied by a loss of off-site power.

This installation consisted of a static inverter, a battery system and charger, a DC panel, an external manual bypass switch, and a new battery room.

The new battery room is located in the IP 1 Superheater Building (33' elevation) and contains a ventilation system (duct and exhaust fan as in the other battery rooms) in order to prevent hydrogen from building up to its critical level of 4%.

Further, the room has sufficient fire protection and does not degrade the surrounding area's fire protection. Moreover, the ventilation system prevents degradation of the plant's fire-protection capability by removing any hydrogen produced in the battery room.

In case of a ventilation-system failure, no reactor protection/safety system would be damaged, nor would battery operation be affected, since detection of said failure would be made before the hydrogen reached its critical level because of the administrative control of checking the battery room every eight hours.

Further, the addition of this power supply to Instrument Bus #23 increased the reliability of the reactor protection/safety logic systems. Therefore, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as this modification affected the manner in which power was supplied to the instrument bus and not the logic sequence or channel instrumentation, the possibility for an accident or malfunction of a different type than any evaluation previously in the SAR was not created.

This new battery system met the same Technical Specifications' surveillance-testing requirements as the original battery system, and increased the effectiveness of the engineered-safeguards system. In addition, the new ventilation system was the same as the other ventilation systems for the other battery rooms and did not interfere with either battery operation or testing requirements. Thus, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to constitute an unreviewed safety question.

32. Removal of the Waste Evaporator to Allow for the New RCS-Sentry-Sampling Skid

This modification involved the removal of the obsolete Waste Evaporator (PAB 80-foot elevation), including components, piping, and services thereto, in order to allow for the installation of a new RCS-Sentry-sampling skid.

This modification entailed the cutting of several Seismic I lines from the Component-Cooling-Water System (CCWS), Boric Acid Evaporator (BAE), and Instrument-Air Supply. Additional seismic restraints were added, where necessary, in compliance with the Seismic I requirements of said lines.

The capping of the Class "A" piping beyond its associated shutoff valve protects these lines against single-failure modes.

Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Since removal of the Waste Evaporator had no effect on the seismic capabilities of the CCWS, BAE, or the Instrument Air supply line, the possibility for an accident or malfunction of a different type other than any evaluated previously in the SAR was not created.

Since this modification did not involve the removal of any existing seismic restraint and since Technical Specification requirements were met, the margin of safety as defined in the basis for any technical specification was not reduced.

Consequently, this modification was deemed not to involve an unreviewed safety question.

33. <u>New Unit-Fed Power Source for the Rod-Position-Indication (RPI) System and Rod-Control Cabinet (RCC)</u>

This modification provided a new power source for the RPI system and RCC in order to establish a single feed that transfers to offsite power upon a Unit trip. The original power supply (MCC-20) was replaced by a more reliable one (MCC-24). This replacement established a single feed to the RPI system from a unit-fed source. No new electrical penetrations were involved and the manual transfer switch remained intact and locked onto the MCC feed.

Since this modification did not overload the power supply and does provide backup offsite power to the system, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as the Seismic 1 capabilities of the building were not affected, and as the disconnection and installation of cabling did not affect the existing equipment, the possibility for an accident or malfuncion of a different type other than evaluated previously in the SAR was not created.

This modification did not involve any technical specification and hence, the margin of safety as defined in the basis for a technical specification was not reduced.

Therefore, this modification was deemed not to involve an unreviewed safety question.

34. Installation of Belleville Washers on Fan Cooler Units' (FCUs') Waterboxes and Flanges

In order to further ensure the proper sealing of portions of each FCUs' cooling-coil section, this modification involved the installation of Belleville washers on the bolts holding the water box cover plates and inlet/outlet flanges.

The proper functioning of the Containment FCUs during normal or accident conditions was dependent upon proper sealing of the cooling coils and associated piping. The method o;f achieving such a seal in accordance with applicable codes, standards and specifications, however, did not impact on such functioning. Since proper sealing had been determined prior to criticality, by testing under postulated accident conditions, the probability or consequences of previously evaluated accidents was in no way increased.

In addition, the configuration and heat-transfer capability of the FCUs were not altered by this change, and no other safety system was affected. Therefore, no new type of accident would be created.

The technical specifications dealt with the operability of the FCUs. However, since the purpose of this modification was to further ensure proper sealing of the cooling-coil sections, and thereby, the ability of the FCUs to perform their intended function, the margin of safety as defined in the basis for any technical specification was in no way decreased.

Thus, the modification was deemed not to involve an unreviewed safety question.

35. Operation of 125V-DC Battery System

This modification was the result of discussions between Consolidated Edison and the NRC initiated by the commitment in the February 11, 1980, Director's Decision (pursuant to 10CFR 2.206) to reevaluate the IP 2 battery system.

This change maintained all engineered-safeguards equipment operational following the loss of a 125V DC bus/battery and removed the automatic transfer of loads between the redundant station batteries #21 and 22.

Each DC transfer circuit was modified to transfer loads from batteries #21 or 22 to batteries #23 or 24. That is to say, batteries #23 and 24 are utilized as "swing busses" for batteries #21 and 22, thereby eliminating any transfer of loads between batteries #21 and 22.

The DC power feeds to each redundant 480V AC switchgear and diesel generators were routed independently from their separate circuit breakers at the DC power panels for the automatic transfer circuit.

All transfer circuits were mounted external to the switchgear and diesel generator enclosures in order to ensure against postulated common-mode failures and to maintain maximum reliability. CCR indication provides status for the new transfer-circuit arrangement.

This modification satisfied Condition 4.C of Regulatory Guide 1.6. Further, the use of the two additional batteries (#23 and 24) and the automatic transfer from batteries #21 and 22 to batteries #23 and 24, together with periodic surveillance testing of said batteries, improved the reliability of the DC power systems.

Thus, based on the foregoing, it was concluded that this modification did not constitute an unreviewed safety question.

36. Installation of a Main-Steam-Radiation-Monitoring System

This modification involved the installation of a radiation monitoring system in order to continuously monitor the radioactivity levels in the main-steam lines and to detect and assess any inadvertant release through the main-steam safety valves.

It consisted of a recorder, four rate meter alarms installed on the CCR Unit #1 Flight Panel, and radiation monitors (two Geiger-Muller tubes per steam line) installed in close proximity to the pipes in the Auxiliary Boiler Feedwater Building.

Since the installation of the monitoring system improved the plant's ability to monitor unplanned releases, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as this modification did not affect the Seismic I capabilites of the above buildings or systems, the possibility for an accident or malfunction of a different type other than any evaluated previously in the SAR was not created.

Finally, the installation of the monitoring system did not involve the Technical Specifications, so a reduction in the margin of safety could occur.

Consequently, this modification was deemed not to involve an unreviewed safety question.

37. Installation of Expansion Bolts, Anchor Bolts, and Dowels for the Maintenance Outage (MO) Building

This modification involved the installation of expansion bolts, anchor bolts and dowels on the Waste-Holdup-Tank building and the PAB-To-Boric-Acid-Building Tunnel in order to support the MO-Building-to-PAB passageway; and on the Containment wall by the equipment hatch to support the overhead-crane system between the MO Building and Containment.

Since the installation of these bolts did not support any Class "A" structure or safety system, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

This project did not affect the seismic requirements of the above buildings, tunnel or passageway. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

This project did not involve any technical specification, so that the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

38. Service Water Isolation Valve Replacements

This modification involved replacement of each of the inlet and outlet isolation valves of the FCUs by a more reliable, manually operated, flanged gate valve constructed of a bronze material.

In addition to these valves, a 10-inch globe valve was installed on each of the return lines in order to balance the service-water flow through each of the FCUs. These valves are flange-ended, constructed of a carbon-steel body with bronze trim, and have an interior surface coated with epoxy.

Since the job provided added reliability by the installation of corrosion-resistant valves and additional valves for balancing the service-water flow through the FCUs, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The newly installed valves did not affect either the operability of FCUs or any other system. Since the valves are manually operated and capable of withstanding system pressure, the possibility for an accident or malfunction of a different type other than any evaluated previously in the SAR was not created.

The margin of safety as defined in the basis for any technical specification was not reduced by this modification.

Thus, it was concluded that the modification did not involve an unreviewed safety question.

39. Thermal-Flow Probes

This modification involved the installation of five thermal-flow probes in the 10-inch discharge line of the Containment Service Water Piping in order to measure the flow rate through each FCU.

The flow data was utilized for the adjustment of upstream valves in order to balance the flow through each FCU.

Since the installation of the probes did not affect either the pipe's or system's operability, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Since the seismic design of the probe avoided the possibility of affecting the system or other systems, the possibility for an accident or malfunction of a different type other than any evaluated previously in the SAR was not created.

This modification did not involve any technical specifications, so that the margin of safety was not reduced.

Therefore, this modification was deemed not to involve an unreviewed safety question.

40. Installation of Pressure-Equalizing Line for Valves PCV 1310 A&B

The purpose of this modification was to facilitate the opening of control valves PCV 1310 A&B.

The room in which the three Auxiliary Boiler Feed pumps are located is equipped with temperature sensors. In the event of a steam-line break within the pump room, the sensors signal the control valves to shut off the steam supply to the turbine driven feedwater pump in order to-protect the motor-driven pumps.

Originally, whenever these valves were closed, either during tests or by a spurious sign, they could not be reopened since the design of the operators precluded opening the valves when steam differential pressures existed accross the seat. In addition, the arrangement of the instrument-air lines hindered the reopening of said valves, thereby preventing the free venting of the air in the valve operator.

This modification compensated for these conditions by installing a pressure-equalizing line around the valves and by rearranging the instrument-air lines.

This modification did not change the intended function of the system. In fact, it increased the availability of the turbine-driven ABFP and allowed a rapid means to manually reopen the valves. The equalizing line was acceptable in terms of seismic and thermal considerations.

Thus, this modification was deemed to not involve an unreviewed safety question.

41. Cycle 4/5 Refueling - Reactor Operation

This modification deals with Unit 2 completion of its fourth refueling and initiation of Cycle 5 operation.

An evaluation performed for the reloading concluded that the LOPAR fuel assemblies of Cycle 5 were mechanically and hydraulically compatible with the existing HIPAR assemblies, control rods and reactor internals interfaces. In addition, both the HIPAR and LOPAR fuel assemblies satisfied the Indian Point Unit 2 design bases. Operation with either type of fuel would satisfy previously reviewed and licensed safety limits. Methods of plant operation and fuel storage were not affected by this reload, although fuel handling equipment was modified to accommodate the LOPAR design.

Several changes were incorporated into the Unit 2 Technical Specifications to accommodate operation with LOPAR fuel. These changes were approved by the Commission. The margin of safety as defined in the bases for any technical specification was not reduced.

Thus, neither the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR, nor the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR were increased.

Thus Cycle 4/5 refueling and operation was deemed not to involve an unreviewed safety question.

42. Safeguards Reset Study Implementation

This modification upgraded the safeguards system, and satisfied a NRC Staff position, by providing a continuous system-level manual-actuation capability for the safety equipment.

The modification involved the installation of Containment Isolation manual-actuation pushbuttons and the rewiring of other manual-actuation pushbuttons so that each button would be only in either Train "A" or Train "B".

The original radiation signals for Containment-ventilation isolation utilized contacts from each relay in both Train "A" and Train "B". Also, new relays were installed in parallel with the original relays. Thus, the new relays actuate Train "B" only, while the original relays actuated Train "A" only.

Unitization of manual-actuation, pushbuttons and radiation relays enhanced the system's ability to meet any single-failure criteria.

The continuous manual-actuation capability of the equipment enhanced plant safety. In addition, by placing all the pushbuttons into separate Trains "A" and "B", train separation was improved while not degrading the actuation capability. This modification did not involve any change to the Technical Specifications.

Thus, based on the above, this modification was deemed not to involve an unreviewed safety question.

43. Installation of a Larger Motor-to-Pump Coupling on #23 Auxiliary Boiler Feed Pump (ABFP)

This modification involved the replacement of the coupling on motor-driven ABFP #23 in order to reduce its frequency of failure, by making it more tolerant of slight motor-pump shaft misalignment.

The replacement of the motor-to-pump coupling did not change the operation or configuration of any of the safety components within the Auxiliary Feedwater System. Therefore, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The new coupling was made of the same type of material as the original and provides the same function. Additionally, the new coupling was a "full-flex" design which was more tolerant of a slight motor-pump-shaft misalignment. Thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

This addition of the new coupling did not change the pump's operation or testability. Therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

44. Modified Fuel-Transfer-Car Drive and Related Improvements

This modification involved the following changes to the Fuel-Transfer System as per Westinghouse recommendations:

1. Replacement of the fuel-transfer car's original underwater pneumatic drive with an electric one located on the operating floor over the pool and modification of the pool propulsion train.

2. Replacement of the original push-off devices for the upenders with weights in order to improve its reliability.

3. Replacement of bushing-type bearings in the fuel-transfer car and upender trunnions with a set of improved Westinghouse-developed ones having graphite plugs which ensure continuous lubrication in or out of the water.

4. Installation of a backup car-stop in the Fuel Storage Building side of the transfer system in order to prevent the car wheels from falling off the end of the rails should the normal carstop fail.

This modification did not change any structural members associated with fuel transfer or with the method of effecting movement of the fuel between the storage pool and containment. Structural safety and provisions to avoid operator error remain unchanged.

The transfer-car drive train is protected against self-destruction by a three-tier program, to wit: a small torque switch to stop the motor and apply a brake; a mechanical coupling designed to disengage an overload; and an electrical-over load protection on the motor.

There could be no credible accident arising from these changes which could either endanger the integrity of fuel or otherwise lead to a release of radioactivity.

Based on the above considerations it was concluded that this modification did not:

(i) Increase the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the SAR;

(ii) Create a possibility for an accident or malfunction of a different type than previously evaluated in the SAR; and

(iii) Reduce the margin of safety as defined in the basis for any technical specification.

Accordingly, this modification was deemed not to involve an unreviewed safety question.

45. Installation of New Manipulator-Crane Gripper

This modification consisted of the installation of a new gripper in the manipulator crane in order to handle LOPAR as well as HIPAR fuel.

The gripper assembly is used to place and remove fuel elements in the core, and to transport them between the reactor vessel and the fuel transfer system. The gripper is air-operated with air pressure needed to disengage the fingers, which are moved from their engaged-to-disengaged position by a cam. The cam position is determined by a piston that is moved via the air supply in the same way the existing HIPAR gripper is activated.

Since the new LOPAR-fuel dimensions differ not only in the axial direction but also radially from the HIPAR fuel, a new gripper assembly to handle both of these co·figurations was necessary.

Since the new gripper performs the same function as the old equipment, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Since the new gripper did not interfere with any other equipment, the possibility for an accident or malfunction of a different type than evaluated previously in the SAR was not created.

And, as there was no technical specification concerning the gripper assembly, the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this modification was deemed not to involve an unreviewed safety question.

46. Modification of the Manipulator-Crane Mast to Handle the New LOPAR Fuel

This change modified the manipulator-crane mast in order to handle-the new LOPAR fuel. The manipulator-crane gripper tube telescopes into the outer mast, and at the bottom of the tube, the gripper assembly was mounted. A hoist on the manipulator-crane trolley raises and lowers this tube. This change involved raising the mast by 5 inches and was accomplished by installing four 5-inch-high steel plates (spacer blocks) under the mast-support feet.

The modification provided the necessary clearance between the gripper assembly and the LOPAR fuel during fuel-handling operations.

The installation of the spacer-blocks under the support feet involved a minimal change of the manipulator-crane center of gravity. Since this change was small, the probability of occurrence or the consequences of an accident or a malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Since the spacer-blocks did not change the function of the mast, the possibility for either an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The crane was not addressed in the Technical Specifications or their basis. Therefore, the margin of safety as defined therein was not affected by this modification.

It was therefore concluded that this modification did not involve an unreviewed safety question.

47. Fuel-Transfer Car Modification

This change modified the fuel-transfer car in order to accommodate the new LOPAR fuel.

The conveyor-car assembly is made up of two parts, the conveyor frame and the fuel-element container. The frame consists of a long stainless steel pipe. The front of the conveyor frame is fitted with a stop-plate which prevents the fuel element and its inserts from sliding out of the container during car movement.

This modification involved replacement of the original stop-plate with a new one in order to accommodate the new LOPAR fuel.

Since this change did not affect the function of the equipment, but only provided the necessary clearance for transportation for the LOPAR fuel, the probability of occurrence or the consequences of an accident or a malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Since the new elongated stop-plate on the conveyor car did not interfere with any other system, the possibility for either an accident or a malfunction of a different type than any evaluated previously in the SAR was not created.

Since the system is utilized only during refueling outages, the change did not reduce the margin of safety as defined in the basis for any technical specification.

Thus, this modification was deemed not to involve an unreviewed safety question.

48. Installation of a Metal Impact Monitoring System

The modification involved the installation of an upgraded metal-impact monitoring system capable of detecting abnormal Reactor Coolant System (RCS) vibrations which may be indicative of an undesirable level of foreign material within the reactor coolant. While the system has no control capability, it is, nevertheless, quite valuable as an advisory system.

Transducer mounts, the primary vibration-sensing devices, were installed in the following locations:

1. Steam Generators - One steam generator hold-down bolt on each of the four steam generators was replaced with a slightly longer bolt in order to provide sufficient additional thread exposure to allow for the installation of a mounting-unit nut.

2. Reactor Head - Two mountings were magnetically attached and positioned on the closure-head between the hold-down bolts.

3. Incore-Instrumentation Penetration - A mounting clamp was attached to each of two penetration nipples above the penetration-to-tube weld.

As this was a advisory system only, it had no real effect upon any accident or occurrence previously evaluated in the SAR. Insofar as this system provides operator indication of the presence of any debris within the primary system, it has in fact, decreased this probability of since it provided early warning of a potentially degrading condition in the RCS.

The advisory nature of the system also precluded it from creating any type of accident or malfunction different from those previously evaluated in the SAR.

Finally, the Technical Specifications were unaffected by the installation of this system.

Therefore, it was concluded that the modification did not involve an unreviewed safety question.

49. Addition of Air Receivers to the Main Steam Isolation Valve (MSIV) Instrument Air System (IAS)

Each MSIV is held open by air pressure, supplied from the IAS, against a piston in a pneumatic cylinder. The MSIVs have been subjected to spurious closures caused by momentary fluctuations in the air supply.

This modification added a 30 gallon (4 cubic feet) air receiver to each of the air-supply systems in order to counteract the fluctuations. Each tank, located outside of Containment, is connected to the supply system between the header check valves and the MSIV panel.

Since the air receiver is a passive system, it does not contribute or detract from the physical operation of the IAS. Further, the connections of the air receivers to the IAS are at a point where they do not affect either the closure mode of the MSIV or its five-second closure time.

If any of the new components should develop a leak, the consequences would be no different than a leak in any other part of the instrument-air systems which supply the various MSIVs.

Futher, no other type of failure or malfunction different from any previously evaluated in the SAR was postulated. Finally, none of the bases for the Technical Specifications are affected by this modification.

Based on the foregoing, the modification was deemed not to constitute an unreviewed safety question.

50. Replacement of Main Steam Line #24 Trap Piping Globe Valve, MS91-D

Because of leakage problems, this modification involved the replacement of a 1-1/2", 600-pound Crane globe valve with a 1-1/2", 1500-pound Conval globe valve in the trap piping for Main Steam Line #24. Although the Conval valve weighs 10 pounds more than the original valve, it has been determined that the surrounding Class A, 1-1/2" Sch-80 piping is capable of withstanding the increased load imposed by the new valve.

The replacement valve did not alter the system design function in any way. An inasmuch, as the trap piping was not changed and the replacement valve is of higher rating than the original one, the possibility or consequences of any previously evaluated accident was not increased; nor would the modification create an accident or malfunction different from any previously evaluated in the SAR.

In addition, the replacement did not either change the ability of the main-steam system to perform its intended function or prevent any related safety system from complying with the Technical Specifications. Thus, the margin of safety as defined in the basis for any technical specification was not reduced.

Therefore, this modification was deemed not to involve an unreviewed safety question.

51. Containment High-Range Pressure Indication and Recording

The purpose of this modification was to add the capability to indicate and record the Containment pressure up to 150 psig.

The modification involved the installation of a "T"- socket weld connection downstream of valve #1814A and the condensate pot. The new branch from the "T" leads to a new pressure transmitter. A similar modification was made to a parallel sensing line to install a second redundant high range pressure monitor.

The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased since the modification involved an installation which did not degrade any system. The installation of the new transmitters did not impact on the safety-related functions (safety injection, containment spray and containment isolation/high pressure alarm) of the other existing containment pressure transmitters.

The possibility for an accident or a malfunction of a different type than any evaluated previously in the SAR was not created because this modification did not significantly impact any system.

The margin of safety as defined in the basis for any Technical Specification was not reduced because said modification provided the additional ability to indicate and record the containment pressure, thereby improving the quality of data intelligence.

Therefore, it was concluded that the modification did not involve an unreviewed safety question.

52. Audible Alarm for the Containment-Sump Level

This modification consisted of the addition of a redundant containment-sump level alarm in the CCR in order to alert the operators of impending sump level excursions.

The modification consisted of modifying the containment-sump-level indication system so that it activated rising sump-level annunciators, the latter of which consists of a sound alarm and spare panel-window both located on the Supervisory Panel. In addition, the new circuit was designed so that the panel-light alarm remains on until the sump level drops below the 45 inch level.

The addition of containment-sump-level alarms is solely for operator information. Also, the new system (like the original) serves no active function in automatically starting or stopping safety systems. That is to say, if failure of any part of the new system occurred, system redundancy would still provide sump-level indication and alarm. Thus, the probability of an occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the SAR was not increased.

There was no possiblity for creating an accident or a malfunction of a different type than any evaluated previously in the SAR since the existing sump-level system is redundant, and consequently, single-failure proof.

The addition of the alarm alerts the CCR operator to possible leakage inside Containment. Further, the sump-level indication, as referenced in the Technical Specifications, will continue to monitor sump conditions and will not degrade the existing level circuits. Thus, the margin of safety as defined in the basis for any technical specifications was not reduced.

Therefore, the modification was deemed not to involve an unreviewed safety question.

53. Differential Pressure Level Instrumentation for the Containment Sump

This modification consisted of the addition of two identical differential-pressure-level systems to the containment sump, in order to monitor water levels. Each transmitter consisted of an open-ended tube running from the bottom of the sump to a differential-pressure transmitter mounted near the containment sump. Each transmitter senses tube pressure as a function of the sump water level. This electrical signal is then routed to the CCR Assessment Panel in order to provide light indication at specified water levels.

The new transmitters are powered from separate instrument busses and contain fuses which prevent a malfunctioning transmitter from affecting other equipment or instrument busses.

This modification did not affect any present system; nor did it perform any automatic safety function. Thus, any possible malfunction of the new system would not impact on the redundant sump-level system.

The margin of safety as defined in the basis for any technical specification was not reduced as this modification provided new instrumentation to monitor the sump-level.

Thus, this modification was deemed not to involve an unreviewed safety question.

54. Upgrading of the Limitorque Operators on Pressurizer Block Valves, MOV #535 and 536

This modification involved the operators on the pressurizer motor-operated block valves (MOV #535 and 536) in order to assure their complete closure during maximum differential pressure.

It involved the following changes to the valves' motor-operator assembly:

a) Modify the wiring to assure that the motor-operator closes the valve to a preset travel limit, thereby ensuring a positive and predictable sealing force.

b) Change the motor-pinion worm-shaft gearset to ensure compatibility with the required thrust range.

The pressure boundary of the primary system was not affected by this change. The addition of the new gears only changed the speed of the valve when either opening or closing. Thus, the probability of occurrence or the consequences of an accident or a malfunction of equipment important to safety previously evaluated in the SAR was not increased.

This modification did not change either the flow-path capability or operation (other than speed) of the primary system.

Therefore, the possibility for an accident or a malfunction of a different type than any evaluated previously in the SAR was not created.

And finally, the project did not affect any of the conditions, limitations or tests as described in the Technical Specifications. Therefore, the margin of safety as defined in the basis for any technical specification was not reduced.

Therefore, this project was deemed not to involve an unreviewed safety question.

55. Replacement of SIS Pump #23

The purpose of this modification was to support the replacement of the damaged motor of SIS Pump #23.

In order to accommodate the new motor's different physical dimensions, minor changes to the pad had to be made.

Also, since the new motor lacked the shaft extension for driving the water pump, a new stud shaft had to be provided.

The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety not previously evaluated in the SAR was not increased, since the new pump functions were the same as the original pump.

The possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created, since the essential specifications of the new motor are the same as those of the original motor.

The margin of safety as defined in the basis for any Technical Specification was not reduced by this change.

Therefore, it was concluded that the modification did not involve an unreviewed safety question.

56. Removal of Original Sampling Room Equipment

The purpose of this modification was to remove obsolete equipment from the sample room in order to allow for the installation of the new PAB 80' elevation Sentry Liquid Sampling System, namely: sample hood, sinks, sample flush tank, sample valve panel, sample system valves, gauges and instruments.

In addition, it was necesary to cut and cap Component Cooling Water connections to the Reactor Coolant System sample coolers which were within the sample room.

The obsolete equipment served no purpose; therefore, its dismantling had no effect on plant safety.

This modification had no bearing on the Technical Specifications.

Based on the above, this modification did not constitute an unreviewed safety question.

57. Installation of Four New 118-Volt AC Instrument Panels

This modification involved the installation in the CCR of four new 118-volt AC instrument panels (#21A thru #24A) to reduce circuit loads. Each panel, similar to the other ones, operates 24, 15 ampere circuits.

The cables extend from the CCR to the Cable Spreading Room; new terminal boxes provide the connection point to the original cables.

Cable penetrations leading from the CCR to the Cable Spreading Room have fire protection barriers and materials which conform to the fire protection plan.

Since no additional loads were placed on the battery, system requirements remained the same, and thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The panels are similiar (like-and-kind) to the original ones and conform to Seismic I system requirements. Thus, this modification did not create the possibility of an accident or malfunction of a different type other than any evaluated previously in the SAR.

The modification did not involve the Technical Specifications, so that a reduction in the margin of safety would not occur.

Thus, this modification did not constitute an unreviewed safety question.

58. Installation of 125-volt DC Distribution Panel and Redesignation of Existing Panel #23 as 21A

This modification involved the installation of a 125-volt DC Distribution Panel as a spare panel to the present panels and the redesignation of Distribution Panel #23 as #21A. The panel, similar to the other ones, operates twenty four - 20 ampere circuits. Battery 21 provides the power for all DC panels.

In case of a plant trip and loss of all AC power, a backup system would be supplied by connecting the battery to the power panel, the latter of which will compensate for the loss of power.

The operating capacity of the battery has not been affected by the addition of the panel.

The cable penetrations leading from the CCR to the Cable Spreading Room have fire barriers and materials which conform to the fire protection plan.

Since the capability of Battery #21 was not affected by the new panel, system requirements remained unchanged, and hence, no increase in the probability of occurrence or the consequences of an accident or malfunction in the SAR would occur.

And, since the modification is Seismic I and Class IE, no effect on the capabilities of the existing equipment can occur, and thus, the possibility for an accident or malfunction of a different type other than evaluated previously in the SAR was not created.

Finally, since the modification was not involved with any Technical Specifications, a reduction in the margin of safety did not occur.

Thus, this modification was deemed to not involve an unreviewed safety question.

59. Fan Cooler Unit Heat Exchanger Replacement Part II Installation of New FCU Coils (Sheets 1A, 2A, and 3A)

This modification involved the replacement of five (5) Unit 2 fan cooler cooling coil units and fan motor cooler heat exchanger cooling coils.

Originally, the fan cooler consisted of two banks of cooling coils, one bank with a six tubes per row design and one bank containing coils with a four tubes per row design. Each bank consists of five coils stacked vertically. The cooling coil arrangement elimated the four tubes per row design and a six tubes per row design was substituted. Each bank will continue to be stacked 5 high. The physical difference that resulted was a reduction in coils width by 3". The motor coolers were of the same physical size as the original units. Thus, the probability of occurence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The support structure of the new coils was changed from galvanized steel to stainless steel. An inboard lower support was moved to support the new coils. A new splash tray was installed between the vertical coils and the crane wall to block the opening created by the shorter coil bundles. New drip trays were also installed. The possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

The new installed coils included a water collection system similar to that of the original units such that requirements of the Technical Specifications were met. For the installation of the cooling coils and motor coolers, the margin of safety as defined in the bases for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

60. Reactor Operation with New Fan Cooler Units

This assessed the impact of the increased heat removal capability of the new Fan Cooler cooling coils.

The containment Fan Cooling System's ability to reduce containment pressure transients and filter containment atmosphere radioactivity was not degraded. The increase in peak clad temperature would not result in a peak temperature above the maximum allowed so that the probability of occurence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

Inasmuch as the structural capability of the FCUs to meet the design basis earthquake remained within its design basis requirement, the leak detection coupled with containment isolation were improved. The possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

Plant operation with the FCU's increased heat removal capacity did not affect the margin of safety as defined in the basis for any technical specification.

This was deemed not to involve an unreviewed safety question

61. Disarming of the Blackout Strip and Sequence Relays During Cold and Hot Shutdown

The purpose of disabling the blackout strip and sequence relays was to allow for testing and maintenance of 480 volt busses 5A and 6A without frequent unnecessary tripping of components due to inadvertent actuation of these relays' logic.

The test switches of blackout strip and sequences relays BFPB, BFPB2 and BFPB3 were placed in the open position thereby disarming the relays.

Inasmuch as core cooling was unaffected, the probability of ocurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report was not increased.

Since an accident could not be caused by disabling these relays, the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not increased.

This change did not affect any Technical Specification so that the margin of safety as defined in the basis for any technical specification was not reduced.

Thus, this change was deemed not to involve an unreviewed safety question.

62. Operation with Unrecovered Portion of RCP #24 Labyrinth Seal Ring

This entailed the evaluation of potential effects of operating the plant with unrecovered portions of the RCP #24 labyrinth seal ring. The evaluation consisted of:

- o effects of unrecovered bolts becoming wedged between the energy absorbing device and the reactor vessel bottom during heatup and 10% full power operation.
- o impact of the largest anticipated loose part on the core barrel, thermal shield flexures and bottom mounted vessel instrumentation penetrations.

Based on the analysis of the above items several guidelines were followed during plant heatup.

Also, thermal hydraulic consideration due to local flow blockage in the vessel, potential for material reaching higher elevations in the core, impact analysis and possible binding of the rod control cluster assemblies were considered.

Since analysis of the above items provided assurance that the reactor vessel would not be degraded by operation with the unrecovered pieces, the probability or consequences of previously evaluated accidents was not increased. The possibility of a new type of accident was also not increased.

The subject of this analysis addressed only the Technical Specifications dealing with allowable heatup rates. Westinghouse provided assurance that the vessel stresses would remain within applicable limits. Therefore, the additional stress resulting from the wedged material would have no significant impact on the longterm effect discussed in the basis for any technical specification.

Thus, this operation was demed not to involve an unreviewed safety question.

63. Temporary Manual Backwash Operation for Service Water Strainers

This modification allowed for a temporary manual backwash operation to be utilized until necessary equipment for automatic backwash of service water strainers could be used.

During manual mode of operation the operator manually opened the valves in the backwash line and manually actuated the motor to rotate the strainer.

This process was repeated every eight hours. It was determined that it would take more than eight hours to build up a substantial differential pressure across the strainer with no backwash. Since this temporary measure kept the Service Water System functioning, the probability of occurence or the consequence of an accident or malfunction of equipment important to safety previously evaluated in the SAR was not increased.

The possibility for an accident or malfunction of a different type than any evaluated previously in the SAR was not created.

This temporary manual operation did not compromise the performance of any system, thus the margin of safety as defined in the bases for any technical specification was not reduced.

This modification was deemed not to involve an unreviewed safety question.

64. Service Water Flow Rate for the New Fan Cooler Units

This modification involved placing valve(s) TCV 1104 and/or TCV 1105 in the open position during the normal mode of operation. The purpose of this is to reduce fluid velocity which causes erosive effects on the Fan Cooler Motor Cooler elbows.

Service Water System tests have verified that fluid velocity through motor coolers under this mode of operation will be reduced to acceptable values. Since valves TCV 1104 and TCV 1105 automatically open in the accident condition, this method of operating is not considered unsafe. Because of this, the modification neither increases the probability of occurrence or the consiquences of an accident or malfunction of equipment important to safety previously evaluated in the SAR, nor creates the possibility for an accident or malfunction of a different type than any evaluated previously in the SAR, nor changes the basis for any technical specification.

This modification was deemed not to involve an unreviewed safety question.

65. Sealing of RTD 420A

In the process of removing a failed RTD (420A) from Reactor Coolant (RC) Loop #22's hot leg, a portion of the RTD probe snapped off and presently remains inside the RTD boss and pipe penetration. The probe, which protrudes about one inch from piping inner surface (29" inside diameter), apparently has "frozen" in place; attempts to remove it have failed. The repair included spreading the probe at the top so that it cannot fall into the system and welding a stainless steel cap on the pipe's RTD boss.

The cap was fitted over the RTD pipe boss and welded to the boss (fillet weld) using approved procedures and applicable specifications whereby the integrity of the RCS pressure boundary is maintained.

There are three RTD's located in each hot leg of the four RC loops; one of these three is used for temperature sensing while the other two are spares. The temperature signal from each hot leg is used in the Reactor Protection System (RPS) for initiating overpower and overtemperature delta T trips. For RC Loop #22's hot leg, 420A has been capped off and is not used; 422A is presently being used, and 421A is a spare. With respect to the temperature signal from a hot leg, the installed spares only provide flexibility if the operating RTD fails, since only rewiring to one of the spare RTDs is required. Therefore, reducing the amount of available spares only reduces operational flexibility and does not affect reactor safety.

Since the RPS has not been degraded, the RCS pressure boundary integrity has been maintained, accordingly:

- The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis has not been increased.

- The possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report has not been created.

- The margin of safety as defined in the basis for any technical specifications has not been reduced.

For these reasons this modification was deemed not to involve unreviewed safety question.

66. Relocation of Reactor Coolant Drain Tank Pressure, Level & Temperature Transmitters

The Reactor Coolant Drain Tank pressure, level and temperature transmitters were located adjacent to the Reactor Coolant Drain Tank which is a high radiation area. Periodically these transmitters must be calibrated by plant personnel. In

order to reduce plant personnel radiation exposure this modification relocated these transmitters away from the immediate area of the Reactor Coolant Drain Tank. This new transmitter location allows plant personnel to calibrate the transmitters in a relatively lower radiation area.

The three transmitters associated with the Reactor Coolant Drain Tank (PT-1004, LT-1003 & TT-1058) have been relocated approximately 15 ft. from their present location.

The level transmitter piping, pressure transmitter tubing and temperature transmitter capillary have been run to the new transmitter locations.

The new extensions are class "A" and seismic I so that no new leakage probability has been introduced into the system and no degradation in the plant fire protection plan has occurred. Since the same transmitters have been reinstalled, no change in the system functions and capabilities resulted. This modification is not involved with plant security.

The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report has not been increased because the system's function and capabilities have remained unchanged.

Since no new leakage probability has been introduced into the system, the possibility for an accient or malfuntion of a different type than any evaluated previously in the safety analysis report has not been created.

This modification is not related to any technical specification so that the margin of safety as defined in the bases for any technical specification has not been reduced.

The relocation of the Reactor Coolant Drain Tank pressure, level & temperature transmitter does not involve an unreviewed safety question.

67. <u>Low Pressure Purification System In The Residual Heat Removal System</u>

The purpose of this job is to improve the water clarity in the reactor cavity when the system is depressurized.

The modification involved the installation of a new 100 gpm purification pump into line No. 29 and also a new line by-passing the volume control tank and the charging pumps. The modification enables the clean-up of the reactor cavity water during extended outages. The new system will only be used during outages when the primary system is not pressurized. During normal operation the new system will be valved out and therefore, there will be no impact on the normal mode of operation of any existing system.

The job involves a routine installation of 2" and 3/4" pipe, valves and a 100 gpm pump. There is no problem in any area related to safety associated with this job.

1. The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. This is the result of the modification being an installation which is not used during normal operation.

2. The possibility for an accident or malfunction of a different type than by evaluated previously in the safety analysis report is not created. This is because no new equipment is being added by this modification as far as normal operation is concerned.

3. The margin of safety as defined in the bases for any technical specification is not reduced. The margin of safety will not be reduced and the execution of the modification will bring about improved clarity of the reactor cavity water during the refueling operation.

It is concluded that the job does not involve an unreviewed safety question.

68. Redesign of Service Water Pumps

The reliability of the service water pumps has been improved by this redesign due to the reduction in bearing failures from dirty cooling water, the strengthening of the outer column pipe, and the strengthening of the impellers.

The new bearings are marine type bearings with better salt water wear resistance. A tube encloses the pump shaft and bearings to prevent the silt in the river water from entering the bearings. River water is passed through a Laval separator to remove the silt and then is flushed down the tube to lubricate the bearings. The outer column pipe thickness has been increased to .5 inch to strengthen it and maintain the pump aligned. The impeller material was changed from bronze to stainless steel to reduce erosion and wear. The pump was dimensionally designed the same as the existing service water pumps at Indian Point #2. This modification did not require any piping, structural or electrical changes. The pump has been tested at the manufacturer's facility to one and one half times the shut off head and a normal capacity vs. head test has also been performed as required by the F.S.A.R. (pg. 9.6-5). The pump meets seismic I requirements.

The pump design remains unchanged so that the system's characteristics, parameters and capabilities have not been changed. The added weight of the bearing and shaft enclosing tube and the thicker column pipe do not degrade the pump's or the service water system's seismic I capabilities. The use of stainless steel on the impellers for pumping salt water is acceptable for such low temperature applications. The modifications to the pumps will result in better reliability and will not affect the present A.S.M.E. Section XI testing requirements. This modification is not involved with either the plant security or the plant fire protection plans.

This modification does not affect the Service Water System's capabilities and characteristics so that the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report has not been increased.

This modification does not degrade the service water system's seismic I capability.

Therefore the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report has not been created.

This modification improves the reliability of the service water pumps so that the margin of safety as defined in the basis for any technical specification has not been reduced.

Therefore the redesign of the Service Water Pumps does not involve an unreviewed safety question.

69. Component Cooling Heat Exchangers - Install a Tube Sleeve and Application of Protective Coating to the Water Boxes

This modification corrected a leak between tube and tubesheet and inhibits further galvanic corrosion of the component heat exchangers in the water box areas.

The component cooling heat exchangers have experienced corrosion in the area of the admiralty brass tube/carbon steel tubesheet interface. To inhibit further corrosion, a protective coating has been applied to the waterboxes (service water) side of the tubesheet. Cleaning of the water boxes was accomplished by both chemical and mechanical means, before the coating was applied.

Two major considerations were involved with the proposed application; the effect on the exchanger heat transfer characteristics and the possibility of the coating separating from the water box surfaces.

The heat transferred through the tubesheet is not significant with respect to the overall heat transfer capability of the exchanger. The design of the exchanger does not take credit for this heat transfer pathway and therefore, the additional resistivity represented by the protective coating will have no effect on heat exchanger design performance.

A tube sleeve approximately 1/2 inch ID and 3 inches long will offer insignificant reduction in flow compared with the total 1705 5/8-inch ID tubes. In addition to application of the coating, a new tube end and a reinforcing sleeve within the tube was installed.

The type of coating used for this application has been qualified by Con Edison and used successfully in service water applications.

Based on this and other operating experience as well as an engineering evaluation for this specific application, it is highly unlikely that any significant separation will occur. In the unlikely event that fragments of the coating do separate from the tubesheet surface, the separated portions of this thin flexible coating would be carried away through the Service Water System directly to the discharge canal (there is no in-line equipment beyond the heat exchanger) and would result in negligible tube blockage or other equipment interference.

The protective coating is intended to inhibit further degradation of the component cooling heat exchangers, thereby increasing their reliability and capability to funtion as required. The application of the coating cannot therefore, increase the probability or consequences of any previously evaluated accident.

In addition, this modification did not involve any new equipment or alter the functioning of existing equipment and thus did not create a new type of accident.

Finally, the design heat transfer characteristics of the component cooling heat exchangers are not significantly degraded by the tube sleeves or coating and therefore, the operability of those exchangers as described in the unit technical specifications and the bases for those specifications is not adversely affected.

It can therefore be concluded that the application of the coating and installation of a tube sleeve is not an unreviewed safety question.

70. Manipulator Timing Belt Assembly

The purpose of this modification was to replace a chain and sprocket drive on the feedback control for the manipulator hoist with a timing belt assembly to improve reliability of the system and reduce frequency of failure.

The hoist control employs a signal generator which is driven from the hoist motor. Orginally the two were coupled with a roller or bicycle type chain and two sprockets. The high speed involved contributed to occasional failures. Stearns-Roger has improved the design through the use of a timing belt and sheave assembly and they recommended replacement of the chain drive assembly.

The replacement drive assembly functions exactly as that which it replaced. Therefore it does not increase the probability of an accident or of the severity of any postulated accident; similarly, it does not introduce the possibility of a different kind of accident. The modification does not change any part of the safeguards system and, therefore, does not decrease the margin of safety as defined in the basis for the Technical Specifications.

Therefore, the modification does not introduce an unreviewed safety question.

71. Seal Weld of Control Rod Drive Housing

The purpose of this modification was to repair, by seal welding, a leaking control rod drive housing.

The control rod housings (a total of 61) have a plug at the top. The housing and the plug are both threaded with an O-Ring between them as a seal. There is a needle valve in the housing. Both the O-Ring and the needle valve failed in one of the housings (housing H-3) creating a small leak path for primary water into containment.

The repair involved seal welding the two surfaces, where the housing and the plug abutts by doing the following:

1. Remove the plug and take out the O-Ring
2. Replace leaking needle in vent valve with new needle
3. Replace the plug without the O-Ring, and seal weld the plug
4. Run operational pressure test on the welded assembly
5. Non-Destructive Testing (NDT) and visual inspection of the welded seal for leaks.

Seal welding has been used before for the purpose of stopping leaks.

The original purpose of the needle valve and plug was for venting the RCS. However, the needle valves are no longer used or requried for venting. The RCS is vented by other means.

In addition, if the need should arise to remove the plug it can be removed by grinding down the weld. A new plug would replace the old plug.

Visual inspection and NDT has been performed to insure the integrity of the weld. A qualified weld procedure, compatible with the housing and plug material, has been used.

The plug has been welded in place without the O-Ring to avoid chemical decomposition of the O-Ring into Halogen gases due to the heat from the welding.

This modification has no bearing on the fire protection plan, the site security plan or the seismic design as presently instituted.

This modification has been analyzed to determine that it does not:

1. Increase the probability of an occurrence or the consequences of an accident or malfunction or equipment important to safety as previously evaluated.

2. Create a possibility for an accident or malfucntion of a different type than previously evaluated in the safety analysis report.

3. Reduce the margin of safety as defined in the bases for any technical specification.

The function of the O-Ring and the plug is to serve as a barrier between the control rod drive housing and the containment. Since the O-Ring fails occasionally creating a small leak path, the O-Ring has been replaced by the seal weld. The original function of the needle valve and plug was the venting of the RCS. It is no longer used for that purpose but rather as a barrier between primary system and containment. The seal weld insures a more reliable barrier.

This modification has no bearing on the technical specification.

Thus, it was deemed that no unreviewed safety question was involved.

72. Corrective Action for Net Positive Suction Head

This modification involves revising the design of the Pressure Relief Tank (PRT) and Reactor Coolant Drain Tank (RCDT) valves and piping and associated components which was required as corrective action for the recurring Net Positive Suction Head (NPSH) problem with the RCDT pumps. The actual work accomplished consited of installation of instrumentation and electrical cables.

The total modification eliminates the NPSH problem with the RCDT pumps. There will be no degrading effects to the system. The modification increases reliability and improves system operability. The advantageous results of the modification are: a) decreasing probability of pump failure, b) direct indication to the Waste Disposal Panel and, c) direct pathways to the sump from the PRT and RCDT.

The modification to the existing valves and the addition of new valves and piping did not affect the physical or functional design parameters of the existing pipes or associated components. The modification conforms to all applicable code and/or specification requirements. Therefore, the seismic capabilities of the system have not been affected.

All necessary wiring has been routed through existing trays and conduits with no effects to the existing systems. The additional loads to the power supply will not affect the existing systems, nor exceed the capacity of the power source.

The system to be modified is part of the Waste Disposal System and is located inside Containment. If leakage were to occur the containment sump would collect all leakage. The containment would protect against any radioactive leakage and thus the health and safety of the public would not be affected.

Since the modification corrects the recurring NPSH problem with no degrading effects to the system, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report will not be increased.

Since the modification does not affect the seismic or operational capabilities of the system or any existing systems the possibility for an accident or malfunction of a different type other than any evaluated previously in the safety analysis report will not be created.

The modification is not involved with any technical specifications so a reduction in the margin of safety will not occur.

Therefore, the modification is deemed not to involve an unreviewed safety quesiton.

73. New Radio/Telephone Console System

The modification involved the installation of a new Radio/Telephone Communication Console System to replace the existing communication facilities to improve the operability of the system.

The 2 new consoles and associated wiring have been installed at the Unit 1 and Unit 2 sides of the Central Control Room (CCR). The new consoles replaced those existing at a location near the present facilities. Since the existing system could not be removed until the new consoles were in place, new support penetrations had to be provided for the system. The following cable penetrations have also been made; CCR of Unit 2 to the Cable Spreading Room (CSR) (floor penetration), CCR of Unit 1 to the Terminal Board Room (TBR) (floor penetration) and the TBR to the CSR (wall penetration). New wiring also replaced portions of the existing wiring. A non-Class "A" power supply is used.

The system was installed by the New York Telephone Company. Con Edison installed the necessary furniture, conduits, AC power supply and interconnections to the radio and P.A. system.

The installation of the new console will not affect the Seismic response nor the load capacity of the CCR. The console support penetrations and the cable penetrations of the CCR, CSR, and TBR will have no degrading effects on the structures.

New wiring replaced the existing wiring where needed and additional wiring was provided as needed for the revamping of the system with no effects to the system nor any existing systems.

The modification to the system will not exceed the load capacity of the power supply and will have no effects on the operability of the associated equipment.

The installation of furniture, conduits and trays as needed have no effects to the structures involved and was consistant with seismic requirement.

The penetrations have fire prevention barriers and materials to meet the requirements of the Fire Protection Plan.

Since the modification is an improvement to the telephone system and does not affect existing equipment, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis will not be increased.

The modification has no effects on the power supply and associated equipment and no effect on the seismic response of the structures. Therefore, the possibility for an accident or malfunction of a different type other than any evaluated previously in the safety analysis report will not be created.

This modification is not involved with any technical specifications so the margin of safety is not reduced.

Therefore, this modification is deemed not to involve an unreviewed safety question.

74. Valve Replacement

The existing Nuclear Service Water Isolation Valves SWN 41's and SWN 44's on the 10" line have been replaced by manual and motor operated valves constructed of a corrosion resistant material for added reliability.

The isolation valves conform to the exisiting leak rate requirements and all valves are capable of withstanding system pressure. The valves have been seismically qualified. Therefore, the valve replacement will have no degrading effects to containment isolation, with increased reliability due to the second motor operated stop valve.

The installation of the valves onto the 10" supply and return lines maintains the seismic acceptability and has no effect on the containment penetration, the Fan Coolers Units nor any existing system. The valves have been flanged into place with insulation joints to decrease the corrosion effects. The modification conforms to all applicable codes and/or specification requirements.

Since piping supports and seismic restaints have been relocated as necessary, the additional loads (valves) to the lines will have no degrading effects and will maintain the seismic acceptability of the systems or structures involved.

All necessary wiring from the motor operated stop valves extends to the Central Control Room (CCR) and to a Class "A" power supply in existing trays and conduits. The power supply has the capacity to accept the added load with no effects on the operability of the associated systems and equipment. The system is also guarded against single failure. The valves remain in their existing position (open or closed) upon a loss of power. Manual operation is available for opening or closing of the valves as needed.

This modification does not affect the operability of the Fan Coolers.

Since the modification provides added reliability by the installation of corrosion resistant valves and a balance to the service water flow, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis is not increased.

The newly installed valves will not affect the operability of the Fan Coolers and any existing systems. Since the valves are capable of withstanding system pressure and are designed against single failure, the possiblity for an accident or malfunction of a different type other than any evaluted previously in the safety analysis report has not been created.

Since this modification conforms to the exisiting technical specifications and their bases, the margin of safety is not reduced.

Thus, it is concluded that the modification does not involve an unreviewed safety question.

75. <u>Service Water Piping Vent and Drain Modification</u>

This modification involved replacing vents on #25 FCU 10" service water lines 12e and 113, SWN-78s.

The only consideration in the replacement of these vents is the use of brass pipe and valves and the use of threaded connections. Both the material and the connections are a deviation from the specification.

These vents were completed prior to the system being put in service such that the system hydro test could locate any problems. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report was not increased.

The replacement vents are no different than the existing vents, thus, any failure of such a vent will not produce an accident or malfunction of a different type than any evaluated previously in the safety analysis report.

The Service Water System is discussed in Section 3.3 of the Technical Specifications. This modification will not change the ability of the system to meet the conditions described therein. Thus, the margin of safety as defined in the bases for any Technical Specifications will not be reduced by this modification.

The manual globe valves located only on the discharge side of the fan coolers have been adjusted to balance the flow of each line. These valves are locked in position to ensure the flow of service wtater in the fan coolers in the event of an accident.

There are no changes to the seismic considerations by changing the material of the vents.

Thus, this project is considered not to involve an unreviewed safety question.

76. Replacement of the 50 HP Instrument Air Compressor Motor's with 75 HP Units

The purpose of this modification was to upgrade the existing power supplies for the Instrument Air System to prevent frequent motor failure.

The existing motors have been removed and replaced with 75 H.P. units. Additionally the motor starters have also been replaced.

The new motors are approximately the same physical size and weight as the existing 50 H.P. units, such that there were no major changes to the compressors or the motor mounts.

The power required is from the same bus that presently supplies the 50 H.P. motor's. Actual compressor load does not change and, in fact, the larger motors may draw slightly less current than the 50 HP motors.

The seismic considerations as described in section 9.6.3 of the Unit 2 FSAR remain unchanged because from a physical standpoint the replacement of the 50 H.P. with a 75 H.P. motor is a like in kind replacement.

The replacement of the motor does not change the output of the compressors or their safety related operation. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

The replacement of the Instrument Air Compressor motor does not change the basic configuration of the Instrument Air System; thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report can not be created by this project.

The H.P. rating of the Instrument Air compressor is not related to the present Unit 2 Technical Specifications. Therefore, the margin of safty as defined in the bases for any can not be reduced.

Thus, this project is deemed not to involve an unreviewed safety question.

77. Missile Shield for Auxiliary Boiler Feed Pump Turbine

The purpose of this modification was to install a missile shield around the Auxiliary Feedwater Pump Turbine.

The missile shield was installed to insure, in the event of missile generation by the pump turbine, that a sufficient barrier against the release of missiles exists.

The Auxiliary Feedwater Pump is located in the Auxiliary Pump Room. The missile shield surrounds the pump turbine and is made of SA240 type 302 chromium-nickel stainless steel plate. The shield is a U-shaped structure with a radius of 2 feet, a height of approximately 4.67 feet and a width of 3 feet. The weight of the shield is approximately 2 tons.

The shields and the shield supports are designed to seismic I criteria.

The floor of the Auxiliary Feedwater Pump Room will be able to support the additional load of the shield under normal and earthquake conditions.

Proper procedures were established to ensure when maintenance to the pump is done during normal operation, that movement of the shield will not damage any required auxiliary feedwater pump equipment.

This modification does not alter the function of the Auxiliary Feedwater Pump nor does it interfere with its operation. For these reasons the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

The design of the shield is such that under normal and earthquake conditions the operation of the pump and surrounding equipment will not be affected. For this reason the possibility of an accident or malfunction of a different type than any evaluated previously in the report is not created.

This modification is not involved with any technical specification. Therefore, the margin of safety as defined in the basis for any technical specificaiton will not be reduced.

Therefore, this modification is deemed not to involve an unreviewed safety question.

78. Relocation of Cooling Water, Steam Trap and Instrument Air Pipes

The purpose of this modification is to reroute cooling water, steam trap and instrument air pipes to allow for the installation of the auxiliary feedwater pump turbine missile shield.

This modification was done to prevent the interference of these pipes with the installation of the steam driven AFW pump missile shield.

The cooling water, steam trap and instrument air pipes are small diameter pipes (2" diameter or less). These pipes have been relocated to a position approximately one foot from their existing locations.

The pipes have been cut and moved to their new position with extensions added where needed. Additional supports have been added as required.

The above modification has been done to Seismic I criteria.

The use of seismic I criteria for this modification insures that the operation of the pump will not be affected by the pipes.

The relocation of the cooling water, staem trap and instrument air pipes does not affect their function in any way.

This modification does not alter the function of the Auxiliary Feedwater Pump nor does it interfere with its operation. For these reasons the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

This modification is being done such that under normal and earthquake conditions the operation of the pump and surrounding equipment will not be affected. For this reason the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created.

This modification is not involved with any Technical Specification. Therefore, the margin of safety as defined in the basis for any Technical Specification will not be reduced.

Therefore, this modification is deemed not to involve an unreviewed safety question.

79. Reactor Vessel Level Indication System

The purpose of this modification was the installation of a reactor vessel level indication system. The new system will aid the CCR operators to determine the water level in the reactor at any time.

The new level indicator senses pressure differences between a connection at the top of the vessel thrugh an unused control rod penetration and a connection to the bottom of the vessel through an incore instrumentation thimble at the seal table.

Redundant capillary sensing lines are isolated from primary water by bellow seals. They pass through mechanical penetrations to transmitters outside the V.C. The signals are wired to a Class IE panel in the IP1 Terminal Board Room with indication on the CCR Accident Assessment Panel.

A minimum of four R.T.D's (Resistance temperature detectors) were installed for temperature compensation.

This modification is a direct result of the NRC's NUREG 0578 which required installation of the new level indication system due to the TMI lessons learned.

The new reactor level indication constitutes an additional means of determining the reactor level under any condition. Westinghouse designed the system.

This modification has been analyzed to determine that it does not:

1. Increase the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated.

This modification enhances safety by providing an additional means of determining reactor level. It helps to preclude a TMI type accident.

2. Create a possibility for an accident or malfunction of a different type than previously evaluated in the safety analysis report.

This modification will reduce the possibility of an uncovered core by monitoring water level within the vessel.

3. Reduce the margin of safety as defined in the bases for any technical specification.

No existing Technical Specifications area is affected by this modification.

Thus, this modification was deemed not to involve an unreviewed safety question.

80. Installation of Isolation Valves for Seal Water Bypass

The purpose of this job is to gain the capability to remotely control the pressurizing of the lines serviced by the Isolation Valve Seal Water System (IVSWS). The previous set-up required manual opening of the valves located in areas which would be inaccessible due to high radiation levels following a NUREG-0578 type accident.

The job is done in response to Lessons Learned - Requirement 2.1.6(b) (NUREG -0578).

The modification involved installation of new solenoid operated stop valves (flanked by two new manual valves) bypassing the existing stop valves 1401 (on line 10), 1402 (19), 1403 (16), 1404 (16), 1405 (15), 1420 (595), 1446 (9), 1447(60), 1448 (60), 1449 (294), 1450 (337), 1463 (51), 1464 (56), 1465 (56), 1466 (41), 1467 (42), 1468 (43), 1469 (44). Also installed: new power, control and indication system located in the new MCC (Motor Control Center) room on the 98 foot elevation of the PAB.

The existing manually operated stop valve (1465) is normally closed (N.C.), the new manual valves (4598 and 4599) are normally open (N.O.), the new solenoid operated stop valve (SOV 3513) is N.C. and fail closed (F.C.). The line (#56) can be supplied with pressurized water by remotely opening the new solenoid operated stop valve (SOV 3513) from the new MCC room or by opening the existing manual stop valve 1465.

The job involved a routine installation of 3/8" lines and valves, solenoids, indicators, electric parts and wiring. There is no problem in any area related to safety associated with this job.

1. The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. The modification involved an installation which is not degrading any existing system. The installation of the new solenoid operated bypass valves did not impair the safety related function of the IVSWS.

2. The possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created. The modification further insures the functioning of the IVSWS during any plant condition and has no negative impact on any system.

3. The margin of safety as defined in the bases for any technical specification is not reduced. The execution of the modification results in the additional ability to remotely control the supply of pressurized water through presently manual IVSWS paths. The remote control capacity is a desirable feature in case the valve area is subjected to a high radiation field.

It is concluded that the job does not involve an unreviewed safety question.

81. Remote Valves for Hydrogen Recombiner

The purpose of this job is to gain the capability to remotely control the supply of hydrogen and oxygen for the hydrogen recombiners. The previous set-up required manual opening of the containment isolation valves on the hydrogen and oxygen supply lines in case the Hydrogen Recombiner is to be used. These containment isolation valves are located in an area which would be inaccessible due to high radiation levels following a NUREG-0578 type accident.

The job is done in response to the Lessons Learned Task Force recommendation 2.1.6(b), (NUREG-0578).

The modification involved: installation of four new direct operated solenoid valves SOV 3420, SOV 3421, SOV 3422, SOV 3423 (on lines 576, 575, 574, 573, respectively); intallation of six new test valves (on linve 573, 574, 575, 576, 600, 601); replacement of valves 1V1A, 1V2A (on line 600), 1V1B, 1V2B (on line 601), 1V3A (on line 576), 1V3B (on line 574), 1V5A (on line 575), 1V5B (on line 573) with similar direct operated solenoid valves; modification of existing piping in order to accomodate the new valves. Also installed were the new electrical equipment, wiring and controls for the four new direct operated solenoid valves (SOV 3420 to SOV 3423). All equipment has been procured and installed Class "A", seismic category I. All pressure retaining items have been pressure tested subsequent to installation and periodically afterwards.

The job involved a routine installation of valves, solenoids, electric parts and wiring. There is no problem in any area realted to safety associated with this job. Also there is no detrimental impact on fire protection and security of the plant.

1. The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. The plant modification involved an installation which does not degrade any system. The installation of the new items will not impair the safety related function of the Recombiner System, i.e. to control hydrogen evolved within the containment following a loss-of-coolant accident (LOCA).

2. The possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created. This is because this modification brings about the capability to remotely control the supply of hydrogen and oxygen for the hydrogen recombiners. There is no negative impact on any system.

3. The margin of safety as defined in the bases for any technical specification is not reduced. The execution of the modification results in the additional ability to remotely control the supply of hydrogen and oxygen for the hydrogen recombiners. The remote control capability is a desirable feature in case the valve area is subjected to a high radiation field.

It is concluded that the job does not involve an unreviewed safety question.

82. Modification to Seal Injection Elbow in Line No. 402

Due to excessive line vibration a socket welded elbow in line 402 failed. This project is a permanent repair for the failed socket welded elbow.

The failed elbow in question is located in the No. 21 charging pump room in line No. 402. The elbow is on the 94'-5" el; the ceiling el. is 95'-6". Presently all elbows in the line 402 are socket weld units; this failed elbow was replaced with a long radius sch. 160 elbow of A403 F304.

To reduce the vibration levels in the line, at the location of the new elbow, a new hanger has been added. The new hanger supports line 402 in the X, Y & Z axes.

The replacement of the socket welded elbow with a butt welded elbow does not change the flow path or system function. The new elbow is in accordance with the existing design specification. To assure a satisfactory weld the elbow has been radiographed.

The new support has been analyzed and it will damper line vibration while not causing undue stress due to the system thermal expansion or contraction.

This project does not change any aspect of the present fire protection or security system.

This project involved supporting a line that sees excessive vibration. Additionally, a failed elbow was replaced with a unit that can withstand greater pressure and vibration and thus lower the probability of an occurrence and increase the system's resistance to failure.

Therefore, the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

This modification reduces the probability of pipe failure by reducing line vibration without changing the system flow path or configuration.

Thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety report will not be created.

The technical specifications addresses this system in Section 3.2. This project aids in maintaining system operability by reducing the vibration levels, thus, allowing the CVCS system to continue to meet the requirements of the specification. Therefore, there is no reduction in the margin of safety as defined in the bases for any technical specifications.

Thus, this project is deemed not to involve an unreviewed safety question.

83. Addition of Speed Control Valves to the Pneumatic Control Circuits for The Steam Generator Blowdown Isolation Valves PCV-1214 thru 1217 and PCV-1214A thru 1217A

The purpose of this modification was to add speed control valves to the pneumatic control circuits for certain steam generator blowdown isolation valves.

This modification involves the containment isolation valves PCV-1214 to 1217 and PCV-1214A to 1217A located in the steam generator blowdown lines. Isolation valves are 2" diaphragm operated valves with a quick closing plug design. This arrangement results in rapid closing of these valves which may create waterhammer conditions.

The modification added a delay valve in the line between the existing isolation valves and the solenoid operated valves associated with each PCV valve. The delay valve would slow the closing of both isolation valves in each blowdown line and would be adjusted to give maximum permissible closure time for isolation valves.

With the delay valves, closure time will increase therefore reducing or eliminating waterhammer. The delay valves are made of brass.

The containment isolation valves are located in the steam generator blowdown lines and are used to isolate containment.

Waterhammer can cause problems and it is directly affected by isolation valve operating time. This modification increased the valve closing time and decreased the problems due to waterhammer.

The addition of the delay valves only increases the closing time of the isolation valves. The closure time of the delay valves is within the system design requirements and the valves do not affect the blowdown line seismic I requirements. Therefore, this modification does not alter the function of the isolation valves in any way.

This modification does not change the containment isolation valves other than to increase their closing time to the maximum permissible. With this modification the chances of damage to the blowdown pipe supports due to waterhammer is reduced. For these reasons the probability of occurrence or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

The design of the delay valves is such that at no time can any of the valves by fully closed and hence prevent the valve from closing, a minimum flow is always available. For this reason the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created.

This modification is not involved with a Technical Specification. Therefore, the margin of safety as defined in the basis for any technical specification will not be reduced.

Therefore, this modification is deemed not to involve an unreviwed safety question.

84. Remote Operators for Manual Valves

There are certain valves that are manually activiated which must function during or after an accident involving loss of integrity of the primary system. At the same time the radiation fields in the areas where operators would have to stand to change valve positions would have prohibited personnel access after an incident. In the project hand-wheel extensions were provided for valves 248 and 306.

The affected valves are part of the CVCS system. Valve 248 is located adjacent to charging pump number 21. Valve 306 is adjacent to Reactor Coolant filter number 21. In both instances, addition of valve extensions permitted relocation of the position of operating prsonnel to behind shield walls. The shielding attentuates the radiation field to an acceptable level.

This modification does not affect the pressure boundary nor the funtion of the valves. It does permit valve access for the purpose of actuation under accident conditions in order to mitigate the consequences of the accident. Therefore, the possibiity of an accident or malfunction of a different type than any previously evaluated in the safety analysis report is not created. The modification does not effect any Technical Specifications; therefore, the margin of safety as defined in the technical specifications will not be reduced.

Accordingly this modification is deemed not to involve an unreviewed safety question.

85. Air Flow Measurement to Weld Channel and Containment Penetration Pressurization System

The purpose of this modification was to install an acceptable substitute to the existing air flow transmitter used in the containment isolation weld channel air system.

The present supplier, Brooks Instrument, no longer manufactures the existing transmitters.

This modification replaced the existing eight transmitting rotameters plus eight solenoid valves by eight thermal mass flow meters.

The system involved, pressurization of Weld Channel and Containment Penetration Pressurization system, is important in the event of incident inside containment. It insures inleakage into containment. The new thermal mass flow meters are more reliable, easier to calibrate, more accurate, simpler and add safety to the system.

The existing electrical system is adequate and was left untouched; hence, no electrical modification is needed.

This modification has been analyzed to determine that it does not:

1. Increase the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated.

   This modification enhances safety by providing a simpler system with less possibility of malfunctioning.

2. Create a possibility for an accident or malfunction of a different type than previously evaluated in the safety analysis report.

   The system and its previous function remain unchanged. The only change consists of replacing components of the system, i.e., the SOV and rotameter, by a more reliable component (the thermal mass flow meter).

3. Reduce the margin of safety as defined in the bases for any technical specification.

This modification does not require any change to the technical specification and hence does not alter its intent. The margin of safety to the public is enhanced.

Thus, it does not involve an unreviewed safety question.

86A. Installation of Fan Cooler Cooling Coils and Motor Cooler Coils

This modification involved two parts A and B. Part A is addressed here and Part B follows.

The purpose of Part A of the modification was to install replacement cooling coils in the Unit 2's five fan cooler housings with coils of an upgraded design that will meet the design criteria and accident cirteria as described in the Unit 2 FSAR.

This Part A addresses the physical installation of the new cooling coils and motor coolers. The operational evaluation (i.e., seismic, heat removal, air flow characteristics, etc.) are addressed in Part B of this evaluation.

Presently each of the five Fan Coolers' structure contains two banks of cooling coils and one motor cooler. Service water is pumped through these cooling coils to provide the heat removal medium. These coils are used for temperature and pressure control in containment both during normal and accident conditions.

The removed cooling coils consisted of two coil banks where one bank contained a 6 tube row design and the second coil bank contained a 4 tube row design. Both coil banks contained 5 coil bundles stacked one on top of the other.

The new cooling coils are of a design where both coil banks are of the 6 tube row. This design also has the coil bundles stacked 5 high. The new cooling coils are the same height and width as the coil banks that were removed. The physical difference in outside dimensions is that the new coils are 3" shorter than the removed coils. The new motor coolers are of the same physical size as the original units.

The cooling coils and motor coolers are constructed of the same material as the existing coils, 90-10 copper nickel tubes with solid copper finning. The support structure of the new coils have been changed from galvanized steel to stainless steel. Since the new cooling coils are 3" shorter than the existing coils, the inboard lower support were moved to accommodate the new coils. A new splash tray was installed between the crane wall and the new lower support. A larger angle beam was installed between the vertical coils and the crane wall to block off the opening produced by the shorter coil bundles. In addition to new cooling coils, new drip trays were installed. These new drip trays are made of a lighter material than now exists and required additional supports because of the possibility of damage to the trays if they were inadvertently damaged during inspection or maintenance in the coil face areas.

The new coil bundles have an added feature that was not used in the original design, i.e., a water box with a removable cover. The water box will be used to provide access to the end of the coolers tube sheet. Additionally the water box cover is attached to the service water piping by the use of flanges where the existing coolers were attached to the service water system by welded pipe.

The gasket material, used on the water box cover, was tested and shown that it can withstand the design base accident conditions as described in Unit 2 FSAR Section 6.4.

The water box covers, splash trays, motor coolers and cooling coil bundles are bolted together as in the existing design. This method of installation provides for a better installation from a serviceability standpoint. Additionally, to provide access to the new motor cooler and existing cooling motor's end-bell, a new removable access panel was installed between the carbon filter room and the motor room on an inner wall of the fan cooler structure.

All material used for the installation of the new fan cooler coils and motor coolers is the same as described in the Unit 2 FSAR. The support structure material has been upgraded to stainless steel from galvanized steel which is more corrosion resistant and will not interact with the caustic used during accident conditions.

The new installation uses the same number of coil banks and the coils have been installed in the same location in the fan cooler structure so the basic configuration of the coolers was not changed by this project. The new coils weigh somewhat more than the existing design because of the new water box and added tube rows. These coils rest directly on the 68' el. and will not overload any existing structure. A seismic analysis has been perforemd.

The fan coolers are discussed in Section 6.4 and 9.6 of the Unit 2 FSAR. This installation did not change any of the physical aspects shown in the diagrams or figures that show the location or number of coil banks or number of coil sections per bank. All the instrumentation, filters, and structural supports that were removed for the cooling coil replacement have been reinstalled bringing the units back to their as-built condition. Thus, the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report will not be increased by the installation of the cooling coils and motor coolers.

The new fan cooler coils and motor coolers are of the same physical size as the units that were removed. The material and installation technique for the new units are the same as for the units that were removed. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report will not be created by this modification.

The installation of the new coils includes a water collection system similar to the original unit such that the requirements of the technical specifications, Section 3.1, can continue to be met. Therefore, for the installation of the cooling coils and motor coolers, the margin of safety as defined in the bases for any technical specification will not be reduced.

Thus, the physical installation of the cooling coils and motor coolers is deemed not to involve an unreviewed safety question.

86B. Addition of Splash Frame and Associated Drain Pan to Fan Cooling Coils

The purpose of this modification was to provide a splash frame and a drain pan for the fan cooler coils to collect any leakage.

This modification involved the installation of a splash frame on the casing of the fan cooler coils and an associated drain pan. This is being done to provide a means to collect water due to any leakage.

The splash frame was placed around the fan cooler coil casing and the drain pan was placed below. A hole was drilled from the new drain pan thorugh the coil casing to the exisitng drain pan. This enables the water to go from the new drain pan to the existing drain pan and then follow the existing drainage route.

This modification provides a means of collecting leakage coming from the fan cooler waterbox gasketed joints.

This modification does not affect the operation of any safety related equipment. Also, this modification serves no safety function.

Due to the relatively light weight of the splash frame, the seismic acceptability of the fan cooler coil units have not been affected by this modification.

The splash frame is made of fire resistant fiberglass plastic. In the event of a major accident, where temperatures could go higher than 175°F, the frame will not ignite but will melt into a liquid. This liquid will tend to drip down to the drain pan and solidify when it contacts the cooler water. Therefore, this modification will not create a fire hazard.

This modification will not have any effect on the operation of any safety related equipment. For this reason the probability of occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

This modification will not serve any safety related function. For this reason the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created.

This modification does not affect any Technical Specification. Therefore, the margin of safety as defined on the basis for any Technical Specification will not be reduced.

Therefore, this modification is deemed not to involve an unreviewed safety question.

John D. O'Toole
Vice President

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February 7, 1985

Re: Indian Point Unit No. 2
Docket No. 50-247

Dr. Thomas E. Murley, Regional Administrator
Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pa. 19406

Dear Dr. Murley:

Enclosed please find two (2) copies of Indian Point Unit No. 2 Changes, Tests and Experiments for the year 1981 as required by 10 CFR 50.59(b).

Very truly yours,

John D. O'Toole

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

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