CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

INDIAN POINT UNIT #2

CHANGES, TESTS AND EXPERIMENTS - 1983

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"onorail Structure Over CRD Motor Generator Sets

Two lifting structures have been installed to assist in the maintenance and/or repair of the #21 and 22 Control Rod Drive (CRD) Motor Generator Sets (MG). An "I" beam design monorail has been attached to the floor above each MG set. Support beams have been fillet welded in place for use when needed. The modification had no effect on structures and conformed to the floor load requirements of el. 33 of the Cable Spreading Room. The monorail structure was seismically designed. Therefore, the MG sets were not affected by the monorail structure under normal or accident conditions. The hoist is in place only when in use and removed when its function is no longer required.

Since the modification had no negative effects upon the building, 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.

Since the monorail structure did not affect the operation of the MG sets or existing equipment, the possibility for an accident or malfunction of a different type than evaluated previously in the safety analysis report has not been created.

The modification does not modify any technical specifications so the margin of safety as defined in the bases for the technical specifications has not been reduced.

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

2. Installation of CVCS Holdup Tank Safety Ladders

Safety ladders have been installed around the CVCS holdup tanks. One ladder has been installed near each tank. The ladders are curved around the tanks and are anchored to the floor and ceiling of the building. The purpose of the ladders is to allow easy access to the nitrogen purge valves atop the CVCS holdup tanks. The building housing the CVCS holdup tanks can withstand a safe shutdown earthquake event. The installation of the ladders required welding ladders to the building beams and installing anchor bolts. This installation allows the ladders to withstand a safe shutdown earthquake event. The safety ladders are non-Class "A".

The modification did not change any of the functions of the CVCS. Therefore, 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.

Since the modification did not weaken the CVCS holdup tank building's capability to withstand a safe shutdown earthquake event or cause the ladder to become a missile, the possibility for an accident or malfunction of a different type other than any evaluated previously in the safety analysis has not been created.

The modification is not involved with any technical specification so the margin of safety as defined in the basis for any technical specifications has not been reduced.

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

3. Modification of Spare Service Water Valves TCV-1104 and TCV-1105

Service Water Valves TCV-1104 and TCV-1105 are 18 inch diameter wafer-type butterflys which are located in parallel paths of the Containment Fan Cooler Units discharge header. The valves are closed during normal plant operation and open upon initiation of an Engineered Safeguards Signal. To provide single failure protection, each of the valves can pass 100% of the cooling water requirements.

The valves modified are a spare set. The work consisted of:

a. Removing the existing rubber liner from the body of the valve.

b. Machining out approximately 1/2 inch from the inside diameter.

c. Inserting a stainless steel liner which was a shrunk fit and pinned in place.

d. Removing the stainless steel rubbing ring from the edge of the disc and replacing it with a built-up stainless steel weld.

All work has been performed in accordance with quality control procedures for Class A equipment.

The above modification did not alter technical specifications. It is considered not to constitute an unresolved safety question since:

a. The modification described did not result in an increase in the probability of occurrence of an accident, result in the malfunction of equipment important to safety, nor increase the severity of an accident analyzed in the FSAR. The valves were tested to the same pressure called for in the original specification to demonstrate that the integrity of the valves and the Service Water System were maintained. Functionally the valves were required to meet all other original equipment specifications, with the exception of leak tightness. This condition does not have any affect on the safety function which the valves must perform going to the full open position. The valves were tested to ensure that the valves proceeded to the full open position within the time period allowed by accident analyses.

   Thus, there was no reduction in the margin of safety.

b. It is inconceivable that the valve modification will result in an accident or malfunction of a different type than those developed by the FSAR.

4. <u>Power Supply Changes to the Diesel Generator Auxiliary Equipment</u>

The purpose of this modification was to utilize the Diesel Generator (D.G.) auxiliary equipment to improve the system's reliability.

Power supplies to the auxiliary equipment (consisting of fuel oil transfer pumps, air compressor, jacket water heater and pre-lube pump oil heater) have been changed so that each diesel generator feeds its own auxiliary equipment. The auxiliary equipment for D.G. #21 has been switched from Motor Control Center (MCC) #27 to MCC #29; auxiliary equipment for D.G. #22 has been switched from MCC #29 to MCC #24; auxiliary equipment for D.G. #23 remains on MCC #27. A third separate and independent conduit run is used for the power cables from MCC #24.

The MCC's cable and conduit have the capability of withstanding a Design Basis Earthquake. A twelve (12) inch high curb has been built around MCC #24 and a concrete 3 hour fire retardant wall on the north side of MCC #24 as well as between the MCC and the turbine building wall (extending to the entrance of the switchgear room and higher than the cable trays from MCC #24) has been installed to comply with the Indian Point Fire Protection Plan. The concrete fire retardant wall is capable of withstanding the design safe shutdown earthquake. MCC #24 is located in an area of the Turbine Building that has been reinforced to meet safe shutdown earthquake requirements. MCCs #27 and #29 already meet Fire Plan and Seismic I requirements. Electrical load capability for these MCCs was not affected. Administrative action by changes to the procedures requires the operators to energize these MCCs in case of loss of offsite power.

The safety-related operation of the Diesel Generators was not affected by this modification.

Therefore 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 will be able to withstand a safe shutdown earthquake so that the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report has not been created. No changes to technical specifications were involved.

It is therefore concluded that this modification does not constitute an unreviewed safety question.

5. <u>Temporary Manual Backwash Operation For Service Water Strainer</u>

Due to a delay in delivery of equipment necessary for automatic backwash of Service Water Strainers a temporary manual backwash operation was utilized.

The manual backwash of Service Water Strainers was a temporary measure. An operator opens the valves in the backwash line and manually actuates the motor to rotate the strainer every eight hours. It would take more than eight hours to build up a substantial P across the strainer with no backwash. The pressure downstream of the strainers is displayed in the Central Control Room and logged once every hour.

It was concluded that the job does not involve an unreviewed safety question since:

a. 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.

b. 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 so since the affected system still maintains all its functions.

c. Margin of safety as defined in the basis for any technical specification is not reduced. This temporary manual operation will not compromise the performance of any system.

6. Preparation for Future Use of Interim Ventilation Filter System (Part of CB/PAB Carbon Filter System)

The purpose of this modification was to provide the necessary work to protect an interim ventilation filter system (part of CB/PAB Carbon Filter System) for possible future use.

The only possible accident during use of this system is that the coupling might become loose and puncture the duct. Since such an accident would not cause a release in excess of any release previously evaluated, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report will not be created.

Inasmuch as the purpose of this modification is to protect the interim ventilation filter system for possible future use without affecting either its function or capabilities, 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 system is used in support of the main CB/PAB Carbon Filter System. This modification does not alter the system's capabilities and is not addressed in the Technical Specifications. As such the margin of safety as defined in the bases for any technical specification has not been reduced.

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

7. Addition to PAB for Storage

The purpose of this modification was to construct an addition to the Primary Auxiliary Building (PAB) for storage.

This modification was needed due to the lack of adequate storage space in the PAB.

The storage building is free-standing with no structural attachments to the PAB. The storage building has its own concrete foundation. It consists of a steel frame with metal siding similar to the PAB with a width of 13ft. and a length of 36 ft. The only attachment between the storage building and the PAB is a joining of the metal siding on the two buildings to attain a water tight seal. The storage building was also seismically designed.

There are two floors in the storage building, one at the 80' elevation and one at the 96' elevation. At each of the two floors, doors have been constructed from the PAB for access to the storage building.

A door on the Diesel Generator Building has been widened to accommodate movement of equipment in and out of the building. The door previously used for this is located such that the building partially blocked the movement of equipment once outside this door.

The storage building is seismically designed so that a variety of equipment can be stored in it. There are no outside doors to the storage building. The only access is through the PAB which has controlled access. The building is used for dry storage.

Localized heating is used to heat the storage building during the winter months so that there is no impact on the existing ventilation system in the PAB.

Since the storage building is free-standing, it will not affect the seismic capability of the PAB nor will collapse of the storage building impair the structural integrity of the PAB. 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 storage building does not contain any functional safety-related equipment. 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 unreviewed safety question.

8. Lower Internals Support Stand Installation

The reactor vessel requires inspection after ten years of operation in accordance with Technical Specification section 4.2 and Section XI of the ASME Code for Inservice Inspection of Nuclear Reactor Coolant System. A support stand, for the lower internals package, was necessary to free the polar crane so it can handle the inservice inspection tool.

The lower internals laydown area is located in the east end of the refueling canal. The stand rests on el 60' and is 6'3" high. Westinghouse, the Units' engineer/constructor, has designed the stand to interface with the lower internals so the package rests in the stand on its lower radial support. The stand has six legs connected by a hexagonal support assembly. Horizontal movement is prevented by four wall support assemblies on the north, south, east and west walls of the canal.

The internals package is lifted from the reactor using the existing internals lifting rig and guided onto the new stand by use of two guide pins located at el 95'on the north and south side of the refueling canal.

The modification was reviewed from four aspects consisting of:

A. The design for the stand is from Westinghouse. It provides the support necessary to assure ease in interface between the lifting rig, stand, and lower internals package. All material was stainless steel type 304 or equivalent.

B. The stand supports the internals without putting undue stress either on the existing structure (which was designed to support the internals) or on the lower internals package.

C. The stand allows for fuel movement in the canal without modifications to any refueling operations. Provisions have been made to remove the guide pins on el 95' so the manipulator crane will have unrestricted movement across the entire length of the refueling canal. The seismic capability of any structure or component has not been changed by this installation.

The stand serves no operational process or safety function. During the time fuel is being moved or the plant is operating, the stand only has to support its own weight. 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.

At no time when fuel is in the Containment will the stand be used. Thus the only failure that could occur is when the lower internals package is in the stand and since there is no fuel in the building, any failure would not pose a hazard to the health and safety of the public. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report was not created.

Neither the lifting of the upper or lower internals or the support of same is addressed in the present Technical Specifications. Thus the margin of safety as described therein has not been reduced by this modification.

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

9. <u>CCR Ventilation Modification</u>

The Central Control Room (CCR) Ventilation System was modified to ensure CCR integrity by isolating the duct work from uncontrolled areas.

The areas that were isolated from the CCR are:

- The Watch Supervisor's Office supply and return ducts using a built-up plate arrangement. A separate HVAC system (two 60% capacity heat pump units) was installed in the glass partitions above the glass door side partitions of the watch supervisor's office.

- The CCR toilet exhaust system ductwork exhausting from the general toilet. The duct extending to the General Toilet and First Aid Room (previously isolated) was

relocated to within the locker room with a return grill to assure minimum acceptable exhaust air to the exhaust fan K-8. The toilet exhaust fan speed has been reduced accordingly to accommodate reduced air flow.

The following dampers have been blanked off to ensure a leakage of less than 500 cfm to the CCR.

- Unit No. 2 isolation dampers E and E', Building air intake.
- Unit No. 1 outside air intake plenum for dampers D1, D2 and dampers 1 and 2.
- Unit No. 1 outside air discharge dampers 3 and D4. Damper D4 was replaced by a new damper identical to damper 3 as an upgrade to allow its use in the future should the use of outside air into the Unit 1 system be determined to again be feasible.

The Unit 2 CCR isolation dampers A & B were switched, to improve leak tightness of the outside air intake duct by-passing the filter Unit. Any leakage of dampers B and B' will be into the filter unit and processed before entering into the HVAC system.

The CCR ventilation system was isolated from the Watch Supervisors' Office and the General Toilet, to be used solely for the CCR and adjoining rooms.

The supply and return ducts to the Watch Supervisor's Office are sealed air tight in accordance with the Fire Protection Requirements and Security Plan. The bolting arrangement of the plates does not affect the integrity of any Class A systems or structure. A separate HVAC system located outside the CCR was securely attached to the overhead supports not affecting the structural capabilities of the building.

The duct work to the General Toilet was isolated from the CCR ventilation system and the duct work supplying the pantry and locker room was relocated. Seismic restraints were provided to avoid any degradation to the existing system. This portion of the modification is not in an area that could affect any safety related systems. Two new wall penetrations were made in specific locations in the pantry/control room wall in conformance with applicable procedures and do not affect the integrity of the structure. One penetration was for the relocated duct and the second penetration was to allow air passage from the CCR to the pantry. A new penetration was also made in the duct work in the pantry to accept the additional air from the CCR. This penetration did not affect the stability of the duct work.

The modification diverts the air supply and return from the Watch Supervisors' Office and General Toilet to the CCR resulting in a greater volume of air passage without affecting homogeneous flow distribution in the CCR. The additional flow provides more cooling to the CCR but flow through the system (filters & fans) remained unchanged.

Isolation of the dampers specified above was done to assure air inleakage to the CCR is less than 500 cfm. Blanks have been installed and sealed leak tight. Any leakage of dampers B and B' will be into the filter unit and processed before entering the HVAC system. In addition, during normal operation the booster fans and their associated dampers are isolated to preclude a path to the CCR. The minimal weight added to the duct work and the physical installation of the blanks have been determined to have no effect on the integrity and functional capabilities of the system.

This portion of the modification enables the Unit 1 HVAC to operate only in the full recirculation mode within the CCR. Outside air for the CCR is provided from the Unit No. 2 Normal Building Air Makeup. The exclusion of Mode 2 does not affect the functional capabilities of the system during an accident situation and it has been determined that Mode 2 is not necessary to maintain adequate heating and cooling of the CCR during normal operation.

Since the ventilation system has been modified without degrading the system's operational capabilities and is isolated from uncontrolled areas, 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.

The modification to the duct work does not affect any Class A systems and/or structures and minimizes inleakage. Therefore, the possibility for an accident or malfunction of a different type other than any evaluated previously in the safety analysis report has not been created.

This modification does not affect the technical specifications so the margin of safety as defined in the bases for any technical specification has not been reduced.

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

10. Installation of New Instrumentation for the Hydrogen Recombiners of the Waste Gas System

During plant operation, the waste gas surge tank will be filled with a mixture of nitrogen, air, hydrogen and radioactive fission gases xenon and krypton. In order to eliminate the hydrogen rich mixture and reduce the total volume of gases a catalytic converter (hydrogen recombiner) is utilized to recombine hydrogen and oxygen into water.

The subject installation was done in order to make possible the operation of the hydrogen recombiner. Since the previous instrumentation did not perform as required, it was retired in place and new instrumentation of a different design was installed.

The equipment installed included new gas analyzers, sample points and all associated recorders and controllers.

The design of the new instrumentation insures safe operation of the hydrogen recombiner. The composition of the gas mixture entering the hydrogen recombiner is maintained at the appropriate and safe level. The oxygen analyzer signal is sent to a pneumatic controller which positions an oxygen regulating valve, so as to maintain an excess oxygen of 0.4% downstream of the recombiner. This is to assure the efficient elimination of the hydrogen from the stream. Also, the oxygen addition stops when oxygen concentration reaches 0.8% and at 0.95%,the whole process trip stops. Similarly, the hydrogen analyzer working in comparable fashion causes the waste gas pump to shut off at 5% H-2 and at 6% H-2 the entire process shuts down. The third analyzer is of the combustible gas type: its function is to monitor the combustible gas content and to prevent the forming of an explosive mixture of H-2 and O-2. Its high alarm of 25% trips the oxygen valve closed and the high-high alarm of 50% combustible gas content shuts down the entire process. The new instrumentation (analyzers, controls and the associated equipment) is designed for these ambient conditions: temperature range between 50°F and 120°F pressure 14.7 psig; radiation field 15 mr/hr; acceleration of 0.15 g horizontal and 0.1 g vertical. The design service conditions are: maximum gas pressure 30 psig, maximum gas temperature at pre-heater sampling points 75°F and 150°F at after cooler sampling points.

The safe functioning of the instrumentation itself is assured by its intrinsically safe design (e.g., purge lines design will prevent the back flow of radioactive gases). There are two identical hydrogen recombiner systems; each is furnished with its own instrumentation package. If the instrumentation

of one recombiner becomes inoperable, it is possible to connect and use the instrumentation of the other recombiner. Considering the overall design of the new instrumentation, it is concluded that its installation did not introduce any new safety problem, therefore,

a. The probability of occurrence or the consequence of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased since an accident involving the modified system is not evaluated in the safety analysis report,

b. The possiblity for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created since the basic function of the new system will be the same as the existing one,

c. The margin of safety as defined in the base for any technical specification is not reduced since this area is not covered there.

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

11. <u>Additional Supervisory Instrumentation for Auxiliary Boiler Feedwater System</u>

The modification to the Auxiliary Boiler Feedwater System involved the addition of indicating lights (8) in the CCR, for all three auxiliary boiler feed pumps.

The lights are designed to inform the operator in the CCR that one or both of the motor driven pumps have not started five minutes after a start signal and to show what valves on the turbine driven pumps must be lined up to provide backup flow to the motor driven pump.

Electrically the indicator light system has no control over the auxiliary boiler feed pumps or control valves. The indicating system is activated by the signals to the motor driven pumps to start. If the pumps start within five minutes, the indicator system will be stopped. If the indicating system were to fail, it could not prevent the pumps or control valves from fulfilling their design function. Thus, the possibility or consequences of any previously evaluated accident are not increased and the modification cannot cause any accident or malfunction different from any previously evaluated.

The addition of this system is an operational means for the CCR operator to be informed of a possible system problem and allows for faster and easier compliance with present technical specifications. The above instrumentation will in no way affect the ability of the pumps to meet decay heat removal requirements as defined in the technical specifications bases. Therefore, the margin of safety as defined in the bases for any technical specifications have not been reduced.

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

12. Electrical Separation of Air Ejector Isolation Valves

The purpose of this modification was to modify the circuitry of the air ejector exhuast isolation valves to gain electrical separation of the valves, so that a single short circuit will only cause one air ejector exhaust isolation valve to remain open. Originally a short circuit could cause both air ejector exhaust isolation valves to energize open and remain open in the event that a containment isolation signal was generated.

The air ejector exhaust of the main condenser is monitored for radiation. In the event of a steam generator leak and subsequent presence of contaminated steam in the secondary system, a high activity level signal automatically diverts exhaust gases from the air ejector to containment. Isolation valves in the air ejector exhaust line to containment serve to isolate the line, and are shut by containment isolation signals. In its previous configuration, a short circuit between point 3S to solenoid valves 20-1 and 20-3 and supply voltage would cause both isolation valves (PCV-1229 and PCV-1230) to remain open, even if containment isolation signals are generated. The electrical separation of 20-1 and 20-2 allows a single short circuit to affect only one isolation valve while the other acts as necessary.

This modification only improves the present reliability of the circuitry for the air ejector exhaust isolation valves. Failure of the modification will leave the circuitry for isolation in the same condition of reliability as afforded before this modification was made.

Since this modification improved the reliability of the circuitry for the isolation valves, 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. Also, the margin of safety as defined in the bases for any technical specification is not reduced. With this modification the single failure, which would have prevented both isolation valves

from closing, will only prevent one valve from closing. The modification reduces the consequences of the single short circuit and it will not create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report.

For these reasons the modification is not deemed to be an unreviewed safety question.

13. Human Factor Engineering - Portion of Modification Dealing with the Relocation of Alarms and Displays from one Panel to Another Panel in the CCR

The purpose of the modification was to correct "Human Engineering Discrepanices" in the CCR. The changes consisted of:

a. Modification of the undervoltage indicator lights on Panel SH for the 480 bolt buses 5A, 2A, 3A &6A to illuminate on an undervoltage condition. Installation of Push-to-Reset buttons, indicators and labels.

b. Relocation to the Assessment Panel and label the Reactor Head Ventilation System control switches and indicators presently on panel SA. Replaced labels VALVE HCV 3101 OPEN/CLOSED and VALVE HCV 3100 OPEN/CLOSED with black labels with white letters and corrected the control convention of these two switches to open to the right. Add an alarm for "Reactor Vent Valve Not Closed".

c. Relocation "Recirculation Sump Hi or Hi-Hi Water Level" alarm to Panel SC.

d. Relocation of Containment Sump controls and displays on Panel SF to Panel SC.

The four items above consisted mainly of:

a. Relocation of indications and alarms from one panel to another.

b. Installation of additional indicators and alarms.

c. Improving panel readability by replacing labels which have small front and low contrast.

d. Establishing the "turn to the right to open convention."

Items 1, 2 and 4 were installed Class "A" and item 2 was installed IE.

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

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

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

   Human factors engineering requires the indicators, switches etc. be grouped and segregated by demarcations and, in some instances, they be color coded for ease of recognition by the operators.

   The relocation of indicators and alarms, the addition of indicators and the establishment of the "turn to the right to open" convention are all intended for the benefit of the operators and to eliminate any possible source of confusion and, as such, neither increase the probability of an accident or the malfunction of equipment important to safety nor create the possibility for a new type of accident.

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

   The above modifications had no bearing on the technical specifications.

Therefore, it was concluded that the modification did not constitute an unresolved safety question.

14. <u>Temporary Installation of Rupture Disk Downstream of Pressure Relief Valve RV-264</u>

The CVCS Volume Control Tank (VCT) is blanketed with H_2 during normal operation. One of the pressure relief valves RV-264 was believed to be leaking H_2 across its seat. The leaked H_2 gas was being transported to the CVCS Holdup Tank. In order to stem the H_2 leak it was proposed to insert a temporary rupture disk downstream of valve RV-264.

Valve RV-264 is spring loaded and set to relieve at 74 psig. The rupture disk is designed to rupture at 50 psig. The downstream side of valve RV-264 is flanged. The flange was separated and a stainless steel rupture disk, in a 2 to 3 inch thick holder assembly, was inserted and bolted in place. If the system pressure should exceed 50 psig, the disk would rupture. The inner portion of the rupture disk is designed

in the form of pre-weakened petals which will open, in sections, to allow full unimpeded flow. The petals will remain attached to the body of the rupture disk rather than being swept away into the system.

There is an existing pressure transmiter, PT-139, that alarms in the CCR and is set to alarm at 65 psig. This set point was reset to alarm at 35 psig in order to alert the operators of an increase in pressure approaching the rupture disc's limit of 50 psig.

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

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

   The insertion of the rupture disk, downstream of the relief valve, and with a rupture pressure of 50 psig did not affect equipment important to safety. The relief valve is set at 75 psig; therefore, the disk will rupture before the relief valve opening setpoint. Also, the metal from the disk will not detach from the body of the disk. The maximum tank pressure that could occur approaches 150 psig which is within the design capability of the tank.

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

   The disk performs the secondary function of the relief valve i.e., isolate the H_2 in the VCT from the rest of the system. Since the disk has no other function, the insertion of the disk did not create the possibility of an accident or malfunction of a different type than any previously evaluated.

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

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

15. Modification of the Connections (of Lines Nos. 216 and 243) to the Suction Elbow (Line No. 200) of the Charging Pump No. 23

The change involved an addition of flange connections on the subject lines. This was done in order to facilitate the removal of the suction elbow. This removal is done when the cleanup of the strainer is necessary.

The subject modification resulted in an improvement of the Chemical and Volume Control System. The new connections facilitated the elbow removal and reinstallation, and so increased the availability of the Charging Pump.

Modification of the subject connections did not affect the bases or assumptions of any previously-reviewed accident/transient analyses nor require any changes to the Plant Technical Specifications or SAR. It did not create a possibility for an accident or malfunction of a different type than previously evaluated in the safety analysis report.

It was concluded that the project did not involve an unreviewed safety question.

16. Installation of "Annubar" Flow Measuring Device for the Spent Fuel Cooling System

The purpose of the "annubar" installation is to provide flow measurement capability for the Indian Point Unit No. 2 Spent Fuel Cooling System. This capability is necessary to:

a. Adjust the throttle valves to maintain the flow rate within the design limit. Higher flow rates can result in damage to the heat exchanger and the pump.

b. Maintain the spent fuel pit water temperatures within the FSAR limits.

c. Optimize the SF cooling system by proper interface with the component cooling system.

To obtain the flow measurement, the normally closed valve has been opened and the sensing probe (annubar) pushed through the 8" pipe until it made a contact with the opposite side of the pipe. After the necessary flow readings, the annubar can be withdrawn and the valve secured.

The coupling, nipple and the valve conform to Class "A" specification, while the rest of the system including the "annubar" are Non-Class "A". All of the components, both Class "A" and Non-Class "A", are designed for higher operating pressures and temperatures than the normal operating pressure and temperature. All of the components are made out of stainless steel material and as such provide protection against corrosion.

The "annubar" probe is a stainless steel flow sensing element. It is 1" in diameter and measures the total and static pressures; the differential of these pressures, when connected to the flow meter, will display the flow rate.

The installation provides the flow measurment capability for the spent fuel cooling system. It does not affect the operation of the spent fuel cooling system either when functioning properly or in a malfunction condition. Further, while the FSAR discusses the spent fuel system, the critical criteria as far as the public health and safety is concerned, is that the spent fuel assemblies must stay under a cover of water. The installation of the "annubar" does not, in any way, increase the probability of occurrence or consequences of an accident or malfunction of equipment relating to the uncovering of the fuel assemblies or the water make-up system for the pool of the SF cooling system.

The modification also, neither creates the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report nor reduce the margin of safety as defined in the basis for any Technical Specification.

It is therefore determined that the changes do not constitute an unreviewed safety question.

17. <u>Flow Measuring Instrumentation for the Waste Gas Release Line No. 131</u>

The purpose of the modification was to obtain means for measuring the flowrate in the waste gas release line No. 131. The flowrate was estimated from the position of valve No. RC 014.

The flow meter was installed in the waste gas release line No. 131.

The modification involved the addition of a flow meter into line No. 131 and installation of the associated instrumentation. There was no adverse effect on any system as a result of this modification. It provided the capability to determine the exact flowrate, via line 131, together with the concentrations for each radioisotope released.

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

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

c. The margin of safety as defined in the bases for any technical specification is not reduced.

It is concluded that the modification does not constitute an unreviewed safety question.

18. Installation of Rotameters in the Penetration Weld Channel Pressurization Piping to Airlocks

The purpose of this modification was to provide a means for "on line" measurement of Containment airlock leakage rate independent of other Weld Channel and Containment Penetration Pressurization System (WCPPS) Zone 2 components.

Two in-line rotameters have been installed in the WCPPS piping to the Containment airlocks. Readout is local. Isolation valves and bypass piping allow maintenance and/or replacement of the rotameters without affecting the WCPPS.

The four valves installed directly in the WCPPS flow path are normally locked in the open position when the reactor is critical. In addition, administrative controls preclude the possibility of inadvertant malpositioning by operator action. The rotameters and associated equipment are Class "A" and do not degrade the ability of the system to meet Seismic I criteria.

The rotameters and associated components have no significant affect on the functioning of the WCPPS. As a result, installation of these rotameters neither increased the consequences of previously evaluated accidents nor created the possibility of any new type of accident.

The probability of previously evaluated accidents is unaffected by the WCPPS.

Finally, the modification assists in satisfactorily complying with the requirements of Appendix J of 10 CFR Part 50. Those requirements form the bases for the applicable technical specifications and thus the margin of safety is not reduced.

It is, therefore, concluded that the modification does not constitute an unreviewed safety question.

19. Modification to Auxiliary Feedwater Flow Control Valves

The eight flow control valves for the motor driven and turbine driven auxiliary feed pumps had a history of wear due to cavitation damage. This modification changed the trim so to reduce or eliminate the cavitation problem.

The modification was performed on valve FCV-405 A, B, C, D (turbine driven pump) and FCV-406 A,B,C,D (motor driven pumps). The existing valve internals were removed and new valve internals were installed. For FCV-405, A-D the positioner was readjusted for full stroke of 2 inches.

This modification was essentially a like and kind replacement for valves FCV-406 where C_V and size of the valve were maintained.

The modification to valves FCV-405 (turbine driven pump) was a little different. The trim reduces the C_V of the valves from a C_V=48 to C_V=36. This slight increase in flow resistance does not affect system operation. The turbine driven auxiliary feedwater system has the excess capacity to deliver the 200 gpm per steam generator with the slight resistance increase in the valves flow characteristics. Previously, to deliver 200 gpm to each steam generator, the flow control valves just had to be raised a small amount off their seat which was the main cause for the cavitation. The replacement valves have to open slightly more than the existing valves (thus reducing the cavitation problems), but the system is still operating well below its maximum capability when delivering the 200 gpm necessary for accident condition flow.

Calculations have shown that there is 180 PSI available to deliver the feedwater from the turbine driven pump to the steam generators after all system pressure drops have been accounted for. This modification only reduces the excess capacity of the system by a few percent.

The trim replacement was of approximately the same weight as the existing system; therefore the change is negligible as far as a seismic reanalysis is concerned.

The auxiliary feedwater system is discussed in section 10.2 of the Unit 2 FSAR. This modification did not change the capacity or ability of the feedwater system to supply the required amounts of feedwater during startup, cooldown or accident conditions.

Section 14 describes the postulated accidents where auxiliary feedwater is necessary; this modification did not reduce the ability to meet the requirements as described in Section 14 but aids in keeping the feedwater system more reliable and in service for longer periods of time. 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 has not been increased.

The valves in question FCV-405, 406 (8) have been analyzed. Thus, their replacements could have no different effect on the system 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.

The auxiliary feedwater system is discussed in Section 3.4 and 4.8 of the unit's Technical Specification. This modification allows all test and operational requirements to be met by providing flow control valves of a more reliable design. Thereby the margin of safety as defined in the bases for the Technical Specification has not been reduced by this modification.

Thus, retriming of Flow Control Valve FCV-405 & 406 is deemed not to involve an unreviewed safety question.

20. Post Accident RCS Liquid Sampling System

The purpose of this modification was to provide a sampling system that can be used under normal operating and post accident conditions.

The bulk of the High Radiation Sampling System (HRSS) is located in two places, the waste evaporator room at the 80' elevation and the pipe trench area at the 51' elevation, both in the PAB

The sample lines, which run out of containment, were utilized so there would be no new penetrations of containment. On two lines that run out of containment several of the pneumatic operated valves become motor operated valves. These valves are 955 A&B (inside containment), 956 E&F (outside containment) and 990 A&B (outside containment).

There were several changes on the sample line that comes from two of the hot legs of the Reactor Coolant System (RCS). The reactor coolant sample heat exchangers No. 21 and 22 were relocated from the existing sample room to the pipe trench area (at the 51' elevation). A line to provide water for flushing of the sample line from the Primary Make-up Water was added. Also,

a booster pump was installed for increasing the pressure in the line if needed. This pump has two motor operated isolation valves which are closed when the pump is not in use. The booster pump is located in the pipe trench area.

All the sample lines go to the HRSS panel, which is located in the waste evaporator room. This panel has four modules. The reactor coolant module takes the samples from the reactor coolant for depressurization and degassification. The demineralizer module depressurizes and degases the samples from the demineralizers. The demineralizer samples are then sent to the reactor coolant module and from there sent to the chemical analysis module. The chemical analysis module measures for hydrogen, oxygen, chlorides, the ph and the conductivity. The fourth module is a radwaste module which is not used at this time.

From the HRSS panel, the samples enter an isotopic analyzer, also located in the evaporator room. The analyzer determines the radiation level in the samples. The indication panel for the isotopic analyzer and the HRSS panel is just outside the evaporator room.

After analysis is completed, the liquid and gaseous samples are routed to the collection tank. There are several new lines that are associated with the collection tank. One line provides nitrogen to the tank to maintain both pressure and a non-combustible atmosphere. A second line is for the venting of excess gases.

There is a line running from the tank back to the HRSS panel so that the contents of the tank can be analyzed before they are removed from the tank. If the level of radiation is too high following an accident the samples in the tank are routed back to containment. This line to containment was a new line but it used an existing penetration so that no new penetration of containment was needed. If the level of radiation is sufficiently low the samples are routed through a new line to the chemical drain tank.

This modification was needed so that the capability is available to handle both low and high radiation sampling without exceeding GDC19 personnel exposure guidelines.

On all parts of this modification, including associated piping, applicable specifications and codes are adhered to.

Access to the HRSS panel and indication panel by personnel is required during sampling. Due to the need for access, sufficient shielding has been provided on the panel to allow work to be done, in and around the area.

In the event of a large break accident resulting in primary system depressurization, the booster pump increases the pressure in the sample line to insure that the samples reach the HRSS panel.

The HRSS is an independent system whose function is to provide information to the plant operators. It is separate from other safety and non-safety related system. Since operation of this equipment under any plant condition has no effect on existing safety related systems, the probability of occurrence of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased.

This modification is located in areas served by the PAB ventilation system. Therefore, no new path or increased probability for an offsite release is created. In addition, the equipment has no control capability beyond its primary function which does not interface with any engineered safeguard systems. For these reasons the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report was not created.

The only parts of the HRSS which were involved with a Technical Specification are the two containment isolation valves on the line which runs to the containment sump. These valves were installed and tested in accordance wtih the Technical Specifications for containment isolation valves. Therefore, the margin of safety as defined in the base for any technical specification has not been reduced.

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

21. <u>Fan Cooler Acceptance Test Instrument Requirements and Test Procedure</u>

The purpose of this modification was to verify specified operational criteria of the Fan Cooler Units (FCUs) and service water piping.

The following physical instruments were installed and then removed after the test was completed.

a. A pressure gauge at each fan cooler inlet (Lines 11a thru 11e) using taps that were previously connected to drain line of relief valves SWN-42 thru SWN 42-4.

b. A thermometer and well at each fan cooler inlet (Lines 11a thru 11e) using taps that were previously connected to relief valves SWN-42 thru SWN 42-4.

c. A pressure gauge was connected at each fan cooler outlet (Lines 12 a thru 12e) by teeing into the inlet impulse lines to the respective elbow flowmeters (FT 1121 thru FT 1125).

d. Differential pressure gauges were connected across each coil of each fan cooler and the motor cooler using existing 1/2" NPT holes. Eleven gauges were required per fan cooler unit.

e. Manometers were connected across cooling coil, demister and the roughing filter on each fan cooler. One 7/16" hole was required between the roughing filter and the cooling coil. Existing holes were used for the other connections.

f. "Strap-On" sonic flowmeters were used on the following lines:

   On Line #495, 496, 497, 498 & 499. On the 1" sample lines from Lines 12a, 12b, 12c, 12d, 12e. On the 3" lines that connect to the coils in the cooler unit.

g. Clamp-on/clip-on meters were connected on leads to the fan motors to determine actual power. Connections were made in the 480V switchgear room.

h. Portable instruments are used to measure air flow temperature and relative humidity at the inlet of each cooler unit.

i. Replacement for the period of the test of the following B1-metallic thermometers with glass organic fluid thermometers:

TI 1232 thru TI 1236

TI 1239

TI 1309 thru TI 1313

j. The probe for a dew point hygrometer and a thermowell and thermometer were installed in the discharge duct of each fan cooler.

After the test was complete Items 1,2,4,5,6,7,8,9,10 were removed and the B1-metallic thermometers in Item 9 were replaced.

After the test was completed the only remaining equipment on or in the Service Water System were the thermal wells and the local pressure indicators. These units will not affect the total operation of the system but could be used to provide instrument locations for future in-service inspection tests. The test was completed prior to the unit being put into service. The test connections that remain do not interfere with the operation of the Service Water System but provide local pressure information. 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 equipment that remained after the test is no different than the existing instrumentation, thus, any failure of such instruments 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 Unit 2 Technical Specification. 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 is not reduced by this modification.

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

22. Check Valve Replacement

This modification involved replacement of six check valves with 14" check valves at the pump discharge of the Service Water Systems to facilitate maintenance and repair of the valves.

The existing check valves were cut out. Mating flanges were welded to the end of the pipes. The new check valves are connected to the new mating flange and the existing flange. The new check valves are like-and-kind to the previous check valves.

The new check valves and flanges connected to the pipe allow access to the valves for maintenance purposes. The valves were seismically qualified and are capable of withstanding system pressure.

The new valves, being like-and-kind to the previous ones, perform identical functions. their installation has no detrimental effects on the pipe or associated components. The modification conforms to all applicable codes and/or specification requirements.

Since the modification involved a like-in-kind valve replacement performing an identical function, neither the probability of occurrence nor the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report was increased.

The modification conforms to all applicable codes and/or specificatiions with no degradation of the piping or associated components. Therefore, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report was not created.

Since this modification conforms to the existing technical specifications and their bases, the margin of safety has not been reduced.

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

23. Installation of Permanent I.R. Spent Fuel Pit Pump

The FSAR for Indian Point Unit #2 requires that, in the event of a failure of the Spent Fuel Pit Cooling Pump, alternate connections be provided for connecting a temporary pump for use in the Spent Fuel Pit Cooling Loop. An installed temporary standby pump was being utilized.

This modification replaced the temporary pump with a permanent standby pump.

The probability of occurrence or consequences of an accident or malfunction of equipment important to safety has not been increased. The reliability of the Spent Fuel Cooling Loop was increased due to installation of a permanent standby pump.

The possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report has not been created. Consequences for a possible loss of level in the Spent Fuel Put are the same with or without the installed standby pump; the Spent Fuel Pit cannot be drained so as to uncover spent fuel using existing suction/ discharge connections of the Spent Fuel Pit Cooling Loop.

The margin of safety as defined in the bases for any technical specifications was not decreased.

For these reasons, it is therefore determined that the installation of a permanent standby pump for the Spent Fuel Pit Cooling Loop does not constitute an unreviewed safety question.

24. Low Pressure Purification System in the Residual Heat Removal System

The purpose of this job was to improve the water clarity in the reactor cavity.

The modification involved the installation of a new line bypassing 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 is only used during outages when the primary system is not pressurized. During normal operation the new system is valved out and there is no impact on the normal mode of operation of any existing 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 was not increased.

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

The margin of safety as defined in the bases for any technical specification is not reduced.

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

25. Mechanical Work Associated with Electric Penetration Replacement

The electrical penetrations that have been modified are pressurized with air from either rack No. 12 or 13. These two racks are considered to be zone 1 of a 4 zone system and are supplied by air receiver 21. During modification of the air supply tubing to these penetrations no other zones (air supply lines) were affected.

Re-routing of tubing did not affect the functional capabilities of the WCPPS system or any other existing systems and provides accessibility to the electrical penetrations. The tubing has been supported in such a way that it is capable of withstanding a safe shutdown earthquake and is in conformance with all applicable specifications and requirements. The installation of the tubing and associated supports does not have any detrimental effect on structures.

The relocation of tubing does not alter the function or nature of the air supplies to the penetrations. Therefore, 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.

Since this modification is capable of withstanding a safe shutdown earthquake and does not adversely affect any existing safety related systems, the possibility for an accident or malfunction of a different type other than any evaluated previously in the safety analysis report has not been increased.

Since the existing Technical Specifications, and their bases, were unaffected by the change in the tubing run the modification has not reduced the margin of safety as stated in the Technical Specifications.

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

26. Containment Recirculation Fan Flow Alarm Modification

The purpose of this modification was to modify the relay portion of circuit to ensure the alarm relay drops out when the fan is shut off. This allows the annunciator to be reset, and thus alarm on new fan cooler flow alarms.

Diodes and zener diodes were installed in a relay circuit. The diodes prevent reverse current flow, thus allowing relay to drop-out when fans have been shut off. The zener diodes are a discharge path for voltage spikes upon relay drop-out, and therefore provide protection for the other diodes.

The diode installation did not alter the operation of the Containment Recirculation Fan Flow Alarm, but only improved the performance of its intended mission by eliminating the existence of "sneak" circuits. The alarm circuit is connected to the safety related D.C. power supply; but the power supply is protected by a pair of fuses. Since the alarm circuit is isolated from all other safety related equipment as well, the installation of diodes has no effect upon any safety related equipment.

Since the alarm circuit does not provide a safety function, installation of diodes in it neither increased the probability nor the consequences of any previously evaluated accident.

Moreover, failure of the alarm circuit cannot affect other equipment important to safety. Therefore, installation of the diodes did not create the potential for a new type of accident.

Finally, the Technical Specifications on the Containment Air Recirculation, Cooling and Filtration System and all other technical specifications were unaffected by the installation of these diodes.

It is therefore concluded that this modification does not constitute an unreviewed safety question.

27. <u>Upgrade of Independent Electrical Overspeed Protection System</u>

The modification involved replacing a) in the turning gear casing, a set of three magnetic pickup units by another set of four, and b) printed circuitry for the speed measuring channel in the IEOPS panel for the purpose of upgrading the system.

The original purpose of the system remains the same. The added components enhance its capabilities by refinements made to its detection and signal conditioning portions. Thus, the logic of its speed measuring channels and relay trains remains intact. The system has been upgraded in the sense that, a) the magnetic pickup units have been increased to four and are

interchangeable under turbine operation, and b) the electronic software installed at IEOPS Panel is of the latest design. This installation will not increase the probability of occurrence or consequences of an accident or malfunction of equipment, important to safety. It also will not create an acident of a different type than any previously evaluated. It will not involve a change in the Technical Specifications. It is thereby concluded that this installation does not involve an unreviewed safety question.

28. Replacement of Battery #21

The 60 cell Battery 21 has been replaced due to a problem of deteriorating cells. A number of cells in the previous battery had been splitting, expanding and cracking and had required replacement. The new higher quality battery replaced the previous unit, eliminated high maintenance, and provided more reliable service.

The new 58 cell lead calcium battery is IEEE qualified and represents a more powerful and reliable 1,500 ampere-hour battery than does the 60 cell lead acid battery rated at 1,320 ampere-hours. The battery supplies emergency DC power for emergency lighting and vital instruments and controls i.e.; control circuitry for initiation of emergency diesels. The battery has been installed on new Seismic I racks. This modification is Class "A" Class "IE".

Reducing the battery size from 60 cells to 58 cells reduced the equalizing charge from the 139.8 volts to 135 volts resulting in a larger margin between the equalizing charge voltage and the maximum 140 volts tolerance on the Reactor Protection System relays. The new battery still meets the systems nominal voltage and capacity requirements for emergency conditions including seismic I conditions. The surveillance testing requirements of the technical specifications are met with the new battery. The fire protection and plant security plans as well as the battery room seismic I capabilites have not been affected by this modification.

Since the new battery is able to meet and exceed 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 safety analysis report will not be increased.

The new battery, racks, and floor loading will not degrade the seismic I capability of the system or the building so that the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created.

The surveillance testing requirements as defined in the Technical Specifications have been met resulting in no reduction in the margin of safety as defined in the bases for any technical specification.

Therefore, the replacement of Battery #21 does not involve an unreviewed safety question.

29. <u>Addition of a Remotely Operated Isolation Valve in the City Water Supply to the Auxiliary Boiler Feed Pump Suction</u>

The purpose of this modification was to prevent possible contamination from the City Water System into the Condensate System in the event of leakage through existing valves PCV-1188, 1187 and 1186.

A remotely operated isolation valve has been installed in the 8" City Water supply line to the Auxiliary Boiler Feed Pumps upstream of valves PCV-1188, 1187 and 1186 and downsteam of valve CT-49.

The City Water supply line, downsteam of valve CT-49, is classified as seismic I. Therefore this modification has been supported, as necessary, to maintain the line's seismic classification.

The Auxiliary Boiler Feed Pumps main water source is by gravity feed from the Condensate Storge Tank. The tank contains, at a minimum, a water inventory equivalent to the steam generation due to 24 hours of residual heat generation at hot shutdown conditions. City Water provides an alternate water supply for long term cooling. Normally, the Auxiliary Feed Pumps are lined up to take suction from the Condensate Storage Tank while the City Water remotely operated isolating valves, one per Pump (PCV-1188, 1187 and 1186), are kept shut. The new City Water isolation valve is remotely operated from the CCR, designed to fail open, has provision for manual positioning and has position indication in the CCR. Therefore, it is deemed that the capability of the City Water line to supply an alternate source of feedwater has not been compromised by this valve installation.

Previously the Auxiliary Feedwater Pump suctions would be lined up to the City Water supply after the Condensate Storage tank is depleted. The procedures used to administratively control this valve lineup change have been revised to include opening of the isolation valve prior to opening valves PCV-1188, 1187 and 1186.

This modification did not functionally change the City Water line to the Auxiliary Feed Pumps, nor did it affect the main source of water for these pumps. Also, the seismic I classification of the City Water line is maintained. For these reasons, the following is deemed to be true:

- 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, since the new valve is both remotely operated and fails open.

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

- The City Water supply, as described functionally in the basis of the Unit 2 Technical Specifications has not been altered, therefore, the margin of safety, as defined in the Technical Specifications, has not been changed.

For these reasons, this modification is deemed not to be an unreviewed safety question.

30. <u>M.G. Set Grease Lines</u>

The Reactor Rod Control M.G. Sets have been modified to facilitate routine lubrication of the system.

The M.G. Sets were greased (in sequence) by removing the outer housing to allow access to the fittings which requires down-time of the motor. The modification avoids this condition by the installation of extended grease lines which penetrate the motor housing. Two lines have been provided (2 penetrations) to each unit. There is an inlet line and outlet line (exiting of grease from the outlet line signifies a filled unit).

The installation of the grease lines has no effect on the operation of the motors. The modification provides a better means of greasing the generator bearings and less down-time of the motors. When grease begins seeping from the outlet line the unit is filled to capacity. This procedure is as reliable as the existing method.

The installation of the grease lines does not have any degrading effects on the M.G. set housing and is as reliable as the previous procedure. Therefore, 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 be increased.

Since this modification has no effect on the operation of the motor and/or generator, the possibility for an accident or malfunction of a different type other than evaluated previously in the safety analysis report has not been created.

This modification did not involve any Technical Specification, so the margin of safety as defined in the bases for any technical specification is not reduced.

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

31. CVCS Hold-Up Tanks - Pressure Interlocks

The CVCS holdup tank low pressure interlock has been reconnected to an auxiliary relay which will trip the gas stripper pumps as well as the holdup tank recirculation pump upon low pressure in any CVCS Hold-Up tank. This additional interlock reduces the potential for creating a negative pressure condition in the CVCS Hold-up Tanks during drain down.

This additional trip on the gas stripper feed pumps is an improvement of the existing system, 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.

No existing analysis has been changed due to the installation and no new type of occurrence has been produced by the modification. Thus, the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created.

The CVCS is addressed in the Technical Specifications, however, there is no reference to, or discussion of the three holdup tanks or their recirculation pump. Thus, the margin of safety as defined in the bases for any technical specification has not been reduced by this modification.

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

32. Metal Impact Monitoring System

The modification involved the installation of a metal impact monitoring system capable of detecting abnormal Reactor Coolant System vibrations and converting this input into an electonic signal thereby providing an indication to operating personnel that an undesirable level of foreign material may be present in the reactor coolant.

Transducer mountings, the primary vibration sensing devices of the intended system, have been installed in the following locations in Unit No. 2:

a. Steam Generators - The accelerometers for the S/G were installed in tapped holes - one on the channel head and one on the secondary side shell.

b. Reactor Head- The installation consisted of two mountings magnetically attached and positioned on the closure head between existing hold-down bolts.

c. Incore Instrumentation Penetration - The installation involved the attachent of a mounting clamp to each of two penetration nipples above the penetration to tube weld.

Neither the above installations nor those of the charge pre-amplifier boxes which receive the signals from the transducers involved any welding or have any physical effect on the pieces to which they were attached. The replacement steam generator bolts are identical in all material and physical characteristics except for bolt length. The minimum required thread exposure of these bolts beyond their load bearing nuts is by virture of fact that the replacement bolts are longer. Concerning the mounting made on the incore instrumentation penetrations, there was no possiblity of deforming these penetrations by proper installation and torquing of the mounting clamps, such that the required instrumentation cannot pass freely within its tubing.

As this is an advisory system only, it has no negative effect upon any accident or occurrence previously evaluated in the safety analysis report. Insofar as this system indicates to the operating personnel the presence of debris witin the primary system, it in fact theoretically decreases the probability of an adverse event occurring. The advisory nature of the system also precludes it from causing any type of accident or malfunction different from those previously evaluated.

The technical specifications were unaffected by the installation of this system.

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

33. Capping of Thimble Plug No. E-5

This modification involved repairing a damaged thimble plug in location E-5.

The project involved cutting the existing thimble, welding in a connector and adding a new section of tube. The whole assembly was then pushed until the thimble was back in the core. The excess tube was cut off and sealed within larger OD Swagelok fittings. These fittings form the pressure boundary. Water in the tube will have no effect on the operation of the core. The original thimble design did have water inside the thimble.

The instrument that was capped was one of the fixed incore detectors. These detectors were never used for any safety or operational system. The only use for these instruments has been for R&D. The modification was designed such that at a future date the instrument could be removed and replaced with a new unit.

The capping of the thimble tube No. E-5 did not change any operational aspect of the plant. The thimble plug was not used to operate or monitor any functions of the core. Additionally the failure of the instrument has no effect on 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 safety analysis report is not increased.

The only type of failure that this modification could produce is if the cap, at the seal table, were to leak. This is no different than if a previous tube connection leaked. 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.

The incore fixed detectors are not addressed in the Technical Specifications, thus, the margin of safety as defined in the bases for any technical specifications has not been reduced.

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

34. Installation of Isolation Valves (with CCR Position Indication and Alarm) in Weld Channel Pressurization System

This modification was proposed to enable isolation of sections of the Weld Channel Pressurization System to facilitate the location and repair of possible leaks in the system.

The modification involved the installation of nine isolation valves (WCP I through 9) in the Weld Channel Pressurization System. In addition, valve position indication and alarm was provided for each valve in the IP #2 Central Control Room.

The new isolation valves that were installed are normally locked in the open position when the reactor is critical, thereby reducing the possibility of inadvertent closure which could affect the system safety function. Administrative controls, supplemented by valve status indication in the Central Control Room will preclude the possibility of inadvertent closure by operator action.

The new 1" valves are located in close proximity to existing hanger supports and the addition of the valves does not degrade the ability of that system to meet seismic I requirements.

Finally, since the source of power for the alarms is safety-related (IP #2 Instrument Buses), each of the circuits contains a current limiting device such that a fault within the new circuitry will not adversely affect operation of the safety-related power source.

The Weld Channel Pressurization System is a passive system whose function is leakage monitoring and accident consequence mitigation, and therefore the failure of the Weld Channel Pressurization System can in no way cause or affect the probability of an accident previously analyzed, nor can the possibility of an accident or malfunction of a type not previously analyzed be created.

The consequences of any accident previously analyzed will be unaffected by the change, since the system safety function is in no way altered. The normally locked open positioning of the valves involved and the indication and controls provided will insure against inadvertent malpositioning.

Finally, margins of safety as defined in the basis for any technical specifications will be unaffected. Technical Specifications are based on continuous operation of this system to monitor leakage from potential leak paths; this capability has been fully retained by this modification.

In addition, accident analyses performed in the FSAR to verify compliance with 10CFR100 did not take credit for the Weld Channel Pressurization System.

It is therefore concluded that no unreviewed safety question exists.

35. Installation of Service Water Trash Rack/Intake Fine Screens

The Service Water System, as described in FSAR Section 9.6 includes two paths of service water flow, each sufficient to supply all essential loads. Water drawn from the river passes first through a course screen at the inlet of the intake followed by a fine traveling band screen in one channel and a temporary fine screen in the other. As such, installation of trash rack/fine screens at the inlet of the service water intake represented a change to the facility as described in the FSAR.

This modification causes more debris to be captured at the inlet rather than further downstream in the intake, thus decreasing the likelihood that debris will propagate to the service water pumps and/or their strainers and impair pump function.

While fine screens at the inlet of the intakes may clog with debris more rapidly than a coarse screen, this does not impair the safe functioning of the service water pumps for the following reasons:

a. Inlet fine screens will be monitored for debris build-up on a regular basis and cleaned when warranted, and

b. Two additional intakes are provided for the service water pumps via openings provided between the two adjoining main circulating water pump chambers and the service water pump chamber. Two gates control these openings which are designed to receive an open signal on safety injection. However, they are normally open. According to the FSAR, even if the circulating pump intake were 90 percent blocked it would still be capable of providing all water required by the service water system without any contribution from the service water intakes (i.e., with the service water full flow intakes 100 percent blocked).

Since the likelihood of debris impairing the performance of the Service Water System decreases as a result of this modification and the fact that there are four separate alternative paths for service water, and because this modification does

not contribute to seismically induced missiles, it is concluded that neither the probability nor the consequences of any previously evaluated accident have been increased.

Moreover, the fine screens are functionally equivalent to coarse screens. Thus, based on all of the above, the modification will neither affect the performance nor operation of the service water system nor any other systems, and it is concluded that the modification cannot create the potential for a new type of accident.

The technical specifications for the Service Water System and all other technical specifications are unaffected by this modification.

Therefore, it is concluded that this modification does not involve an unreviewed safety question.

36. <u>Containment Hydrogen and Oxygen Monitoring</u>

The purpose of this modification was to gain the capability to monitor the hydrogen and oxygen concentration in the containment atmosphere. The original set-up allows only grab-sampling of the containment atmosphere. This action was in response to the Lessons Learned Task Force Recommendation (NUREG-0578).

The modification involved installation of a new system of valves, two H-2/O-2 analyzers, controlling equipment and Central Control Room (CCR) display.

The system comprises a closed loop, i.e. the sampled air is withdrawn from and discharged to the containment. The new items are located downsteam of valves 1875A, 1875C, 1875D, 1875E, 1875F and upstream of valves 1875G, 1875H. Solenoid operated valves SOV 5018 to SOV 5025 are normally closed and remotely controlled from the PAB control panel. All equipment was procured and installed Class "A" seismic category I. All lines and other pressure retaining items have been pressure tested subsequent to installation.

The job involved a routine installation of 3/8" lines and valves, solenoids, H-2/O-2 analyzers, indicators, electric parts and wiring. There is no problem in any area related to safety associated with this job.

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 since the job involved an installation which is not degrading any system. The new installation retains the grab-sampling capability of the original set-up.

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 resulted in the capability to monitor the hydrogen and oxygen concentration in the containment atmosphere and thus add potentially important information for the CCR. There is no negative impact on any system.

The margin of safety as defined in the bases for any technical specification is not reduced. The modification results in an improved level of information available to the operator. The capability to display the H-2/O-2 concentration of the containment atmosphere is a desirable feature in case there is some unusual event taking place.

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

37. <u>Installation of Remote Manual Operator on Transfer Tube Isolation Valve</u>

The purpose of this modification was to install a permanent handwheel operator on the fuel transfer tube isolation valve in lieu of the removable handwheel design. The previous design involved repeated physical moves to install and remove the handwheel every time the valve was operated.

The permanent handwheel design is a continuation of the valve extension stem.

The handwheel was removable in order to provide over the pool lateral clearance for the bridge crane. The installation of the permanent handwheel did not alter the method of valve operation. It does provide a means to easily monitor and change the position of the valve shutoff gate at all times. The need for the operator to physically move the handwheel is eliminated. Once the valve has been positioned the handwheel can be locked out in situ.

The installation of this permanent handwheel does not:

a. Increase the probability of an occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the safety analysis report.

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

c. Reduce the margin of safety as defined in the basis for any Technical Specification.

The permanently installed handwheel provides positive means to operate this isolation valve and eliminates handling uncertainties.

Consequently, it is concluded that this modification does not constitute an unreviewed safety question.

38. Installation of Pneumatic Transmitters for Back-up to Electric Transmitters

This modification provided a non-electrical back-up to the present Steam Generators' (S/G) electric level indication and Pressurizer electric pressure and level indication. Pneumatic transmitters and indicators have been installed to indicate (inside Containment near the personnel airlock) S/Gs 21 and 22 levels and the Pressurizer's level and pressure.

Existing transmitter sensing lines were tapped to supply input signals into the penumatic transmitters. The transmitters are supplied with air from the Instrument Air header inside Containment; a back up supply from the Nitrogen (N_2) system inside Containment has also been 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 (120 psig) and a reducing valve (660-65 psi) are located upstream of the check valves. During operation of the transmitters, Instrument Air (80-100 psig) drives the transmitter; if pressure drops below 65 psig, the air pressure is supplemented by the N_2 supply.

The sensing lines utilized by the S/G electric level transmitters (LT-417D for S/G21 and LT-427D for S/G 22) have been tapped to supply input signals for the pneumatic level transmitters. Both LT-417D and 427D give wide range level indication only.

For the Pressurizer, there are three pairs of sensing lines. The sensing line set, which serve as inputs for LT's 461 and 462 and Pressure Transmitters (PT) 457 and 458, has been tapped and used for input into the pressurizer pneumatic pressure and level transmitters.

The sensing lines that were tapped, to serve as inputs into the pneumatic transmitters, are either primary coolant or S/G secondary side boundaries. For this reason, all the sensing lines are seismic I. Also, the Instrument Air header inside Containment is seismic I. To maintain the integrity and

reliability of the present pressurizer and S/G sensing line, and the Instrument Air Header, the following sections of the modification are designed to meet seismic I requirements:

- Pneumatic transmitters and their sensing lines which tap into existing S/G and Przr sensing lines.

- The penetration into the Instrument Air header, for the pneumatic transmitter supply, up to and including the restriction orifice.

Also, material specifications meet the system being tapped into by this modification.

Given a postulated failure of the N_2 reducer valve, resulting in N_2 pressure control loss and possible overpressure downstream of the reducer, the relief valve will provide protection of downsteam components and the Instrument Air supply check valves will prevent N_2 flow into the Instrument Air header.

The accident consequences, postulating a pipe break in the modification, are the same as the consequences resulting from a pipe break occurring where the lines interface with the modification. An Instrument Air header loss inside Containment would result in operation of the air powered valves to their safeguard or fail-safe position. Loss of Instrument Air occurs normally during a Loss-of-Coolant Accident, since the header inside 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 will not result in loss of header pressure. The flow through the orifice is designed such that the ability of the Instrument Air Compressor to maintain header pressure is not compomised.

The N_2 supply also provides a makeup source for the Over-Pressurization System (OPS) accumulators and a makeup source for the Safety Injection (SI) 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 by check valves and (2) the SI accumulators are isolated by normally shut remotely operated valves.

The sensing line tap offs and Instrument Air Supply tap off meet specifications and seismic classification of the systems tapped into. Given a postulated break in the present sensing lines, Instrument Air System, or N_2 system, the consequences of such a break would be the same with or without the modification; an accident of increased consequences is not introduced.

For these reasons the probability of occurrence or the consequencs of accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. Also, the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created. Since the bases or intent of any Technical Specification is not changed, the margin of safety defined in the safety analysis is not reduced.

For these reasons this modification is deemed not to be an unreviewed safety question.

39. <u>Pipe Clamp on 3/4" Line #31 Adjoining the Branch Connection to Valve 855</u>

The purpose of this temporary modification was to repair the leak on the weld of the SI test line at the "T" connection for relief valve 855 and thereby maintain the integrity of this line.

The repair modification consisted of installing a PHIDCO "T" around the "T" on the line and attaching clamps on the inlet and outlet piping connected by turnbuckles or equivalent clamps to insure that the piping remains in the "T".

The repair modification was designed for 1800 psig service to accommodate the full capacity pressure of the relief valve. This is greater than the design pressure of 1500 psig for this line. Installation of the repair package did not affect the capability of the line to withstand a safe shutdown earthquake (SSE). The repair package itself is capable of withstanding an SSE and still maintain the integrity of the line. This temporary modification does not change the functional characteristics for which this line was designed.

Because the repair has been designed to greater than the system's design pressure and does not affect the line's functional characteristics and integrity, 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.

The repair package does not affect the SSE capability of the line and maintains the integrity of the line during and following an SSE event so that the possiblity of an accident or malfunction of a different type than any evaluated previously in the safety analysis report has not been created.

This temporary modification does not involve any technical specification; therefore, the margin of safety as defined in the bases for any technical specification has not been reduced.

Therefore, this temporary repair modification has been deemed not to involve an unreviewed safety question.