CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

INDIAN POINT UNIT #2

CHANGES, TESTS AND EXPERIMENTS - 1984

IE01

1

Preface

Discussed herein are descriptions and safety assessments of changes performed at Indian Point Unit 2 completed in 1984. These have been evaluated and determined to meet the following criteria as established by 10 CFR 50.59. It has therefore been concluded that none of these changes represents an unreviewed safety question.

Criteria

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 has not been increased.

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

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

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

1. 18" Service Water By-Pass

This modification added a by-pass around two valves, TCV-1104 and TCV-1105, whose function is to control the temperature of service water flow to the Containment Fan Cooler Units. The by-pass contains a flow limiting orifice and a butterfly valve. The purpose of the by-pass is to permit adjustment of flow through the Fan Cooler Units under normal plant operating conditions to eliminate corrosion-erosion in the Fan Cooler Units.

The installation is in accordance with seismic requirements and applicable codes and standards. The modification does not affect the safety function of the service water flow to the Fan Cooler Units during an accident as both TCV-1104 and TCV-1105 will continue to go to the full open position on a Safety Injection Signal.

2. Installation of Debris Screens for the Containment Purge and Pressure Relief Exhaust Ducts

The purpose of the modification was to install protective debris screens which are amenable to periodic removal for valve access. The previous design had proved cumbersome in this respect. The debris screens have been designed to withstand the effects of a LOCA and are seismically qualified. In no way will the new screens affect valve performance.

3. Installation of Fire Detection Equipment

The purpose of this modification was the installation of fire detection equipment in the Containment Building, the Primary Auxiliary Building and the Auxiliary Feedwater Pump Building. The type of equipment utilized is identical to detectors employed elsewhere in the plant.

The detectors and their installation have been designed and installed to assure that they will not affect the operation of safety related equipment.

4. Removal of Fan Cooler Unit Tubes for Examination

This modification reflects the removal of tubes from Containment Fan Cooler Units for the purpose of destructive examination. Two tubes each were removed from Fan Cooler Units #22, 24 and 21. The respective tube sheets were plugged at the inlet and outlet locations of the removed tubes. "Elliot Plugs" were used to plug the tube stubs.

A previous analysis had been performed to determine the maximum number of tubes in the F.C.U.s which could be out of service without exceeding either the Containment peak pressure or peak clad temperature attained in a LOCA. The number of presently plugged tubes is within this limit.

5. Addition of Overhead Beam and Door Enlargement to #22 RHR Pump Room Cell

The doorway to #22 Residual Heat Removal pump cell in the Primary Auxiliary Building was enlarged by 3 inches to accommodate the removal of the pump. A beam with trolley was installed over the pump and installed to the cell walls to ease pump rigging operations. The design and installation of the beam/trolley is in compliance with seismic requirements. The widening of the door did not affect the seismic response of the wall. These modifications have no impact on the safe operation of the RHR system.

6. Disconnection of Cell No. 22 in Station Battery No. 22

This modification involved the removal from service of cell No. 22 in station battery No. 22 and the connection of battery cell No. 21 to 23. There are normally 58 cells in battery No. 22. The battery capacity was evaluated for this condition and it was determined that the modified battery will still perform its safety function. The battery will still be able to maintain its shutdown load following a plant trip for a period of time in excess of 2 hours without terminal voltage degrading below a minimum acceptable voltage. The performance of the modified battery is in conformance with the applicable section of the Technical Specifications.

7. Installation of Cooling Water Supply to Auxiliary Condensate System Radiation Monitoring Sample Cooler

This modification provides cooling of a sample of auxiliary condensate prior to passage of the sample through a radiation monitor. Half inch lines form both the supply and return lines and are tapped into the Component Cooling System. The design and installation of the piping is in accordance with the Codes and Standards for the Component Cooling System and does not affect the capability of the Component Cooling System to perform its intended safety functions. There has been no decrease in the reliability of the system.

The subject modification has no adverse effect on the "double barrier" function of the CCS (to prevent conventional system contamination from primary system leakage), and provides no new path of effluent release. There is no impact upon the Technical Specifications.

8. Reactor Trip Breaker Auto Shunt Trip Actuation

The design implemented requires the de-energizing of two relays to actuate the shunt coil. This prevents a reactor trip due to a single failure of this new circuit. The use of two out of two tripping logic is consistent with the present plant reactor trip design philosophy. Since the new trip circuitry and shunt trip device is separate and diverse from the present RPS/UVTA trip, a failure in RPS/UVTA circuits will not affect the new automatic shunt trip and vice versa. The modification will enable the reactor trip breakers to utilize the shunt trip device as a backup to the undervoltage trip device for automatically initiated reactor trip signals. Seismic and electrical design criteria have been met.

9. Redundant Indication for RHR Motor Operated Valves (MOVS) 743 and 1870

This modification installed stem driven limit switches on MOVs 743 and 1870 for the purpose of providing improved operator information regarding positioning of the MOVs. These switches have no controlling capability and indicate position only. The design and installation of these switches and the associated cabling do not interfere with seismic and fire protection considerations.

New cabling from the valves to existing cable trays was run in seismically restrained conduit which prevent this conduit/cable from becoming a potential seismic missile. The cable runs in the existing cable tray system are such that the seismic loading of the trays is not affected and the fire protection separation criteria is met. The opening and resealing of the fire barrier penetrations (i.e., the PAB/Control Bldg. electrical tunnel interface and the Cable Spreading Room/Control Room Floor interface) was performed in accordance with the fire protection program.

10. Residual Heat Removal Loop Purification Pump

The modification installed a new canned 100 gpm purification pump and also a new line bypassing the volume control tank and the charging pumps. This modification improved water clarity in the reactor cavity during refueling outage. The new system is valved out during normal operation and has no impact on the normal mode of operation of any other system.

11. Modification of Sustained Undervoltage Relay Circuits

New electrical equipment was installed which accelerates the trip of 480 volt feeds in the event of a sustained degraded voltage coincident with a safety injection signal. This modification provides for rapid introduction of an alternate power supply to re-establish correct voltage. Test switches and indicating lamps were also installed to provide testing capability.

The new system maintains the separation of the safeguard busses; the overall system is on a bus to bus basis. Relays are used in a 2-out of-2 logic on each bus to reduce the potential for spurious trips.

12. Containment Access Improvements

An access barrier cage with card readers to allow easier access to the Primary Auxiliary Building was installed. The construction seismically conforms to safe shutdown earthquake (SSE) event requirements. The subsequent relocation of the gas analyzer sample hood, associated duct work and the primary water downspout also satisfies SSE requirements.

An alley from the PAB to the Fan House and an adjoining health physics station was also constructed. Double doors at the entrance of the alley to the Fan House were installed. Extension of the hydrogen and nitrogen system fill lines and relocation of the pneumatic instrumentation panel was necessary. All construction and relocation of existing equipment satisfy Seismic and safety requirements.

A VC equipment hatch access gate at the 95'0" elevation MO building was attached to an existing gate frame. A health physics station was also placed in the building. All construction either satisfies SSE requirements or does not endanger safety related equipment.

13. Appendix R Alternate Safe Shutdown System - Additional Instrumentation

This modification provides for the installation of a source range monitor and RCS hot and cold leg RTD's together with associated electrical cabling. This equipment supplies additional monitoring capability for the Alternate Safe Shutdown System. All instrumentation and conduit runs are capable of withstanding safe shutdown earthquake conditions and are also completely independent of all other operation and shutdown systems. An existing electrical penetration through Containment was utilized. Cabling from the electrical penetration has been seismically restrained to ensure no damage to safety equipment cabling in this area occurs in case of an SSE. The integrity of the building containing the cable runs was maintained to insure protection against radioactive releases. All supports on the outside neither degrade the seismic I capabilities of the adjoining structures nor create any unmonitored radioactivity release paths. The associated panel for this instrumentation system is seismically restrained to preclude its becoming a missile on the 88' el. of the Fan House.

14. Installation of an Additional Primary Coolant RTD

The purpose of this modification was the installation of environmentally qualified resistance temperature devices (RTD's) in the reactor coolant system (RCS) hot and cold legs. The environmentally qualified system will be able to withstand any design basis environment and continue to function and provide post-accident monitoring information.

Each RCS cold leg has one thermowell type RTD and three (3) direct liquid submerging type RTD's. The new environmentally qualified RTD replaces the one existing thermowell type non-environmentally qualified RTD directly in each RCS cold leg. Each RCS hot leg has three (3) direct liquid submerging type RTD's and no thermowell type RTD. Therefore, each RCS hot leg was drilled and a thermowell installed to house the new environmentally qualified RTD's. The final arrangement is that each hot and cold leg have one environmentally qualified RTD in thermowells.

15. Installation of Differential Pressure Switch on the Refrigerant Dryer

This modification installed a differential pressure switch which activates a control valve bypassing the refrigerant air dryers of the Instrument Air System. Upon a high pressure drop condition across the dryers, the bypass is utilized. Previously, detection of low pressure downstream caused the dryers to be bypassed even if the malfunction is not located in the dryers themselves. This modification will improve the reliability of the Instrument Air System since it will not be unnecessarily deprived of the moisture-removing function of the refrigerant dryers.

16. Installation of Separate IVSW Supply Line to Non-radioactive Systems from Seal Water Tank

This modification provided a separate seal water supply from the Isolation Valve Seal Water System (IVSWS) to non-radioactive systems. The purpose of the modification was to eliminate the possibility of contamination of these systems by radioactive systems via the common IVSWS. A new supply line and associated valving were seismically installed. The individual system valving configurations remained as previous so there is no change in the engineering basis for the system. Only the specific supply paths for IVSWS were changed with the source and end points remaining the same. The valves conform to all leakage requirements and thus the inventory of the IVSWS is unaffected. The valves were procured and installed in accordance with applicable codes and standards.

17. Replacement of Existing Fan Cooler Weir Dump Valves

The five (5) Fan Cooler Weir Dump Valves LCV 1163 through LCV 1167 were replaced with new valves manufactured by Grinnel Saunders. The new diaphragm valves have been selected to give equal or better performance and zero leakage when closed.

18. Alternative RCP Seal Injection Filter & Flow Adjustment Facilities

Loss of flow in the non-redundant seal injection system required a unit shutdown to prevent RCP seal damage. In order to avoid this occurrence, this modification installed a complete redundant path for seal water injection outside containment. This path is identical to the existing path and was constructed with regard to the same safety standards. This second seal water path allows the primary path of seal flow to be removed from service for maintenance during the time the unit is on line without putting the R.C.P. seals in danger of damage.

The new piping and components were designed in accordance with the existing system's codes and standards. The new seal water injection filter meets the code requirements of ASME section III, class C. As in the existing path, Isolation Valve Seal Water injection will be used to seal the new containment isolation valves.

19. Replacement of Rubber Hoses on Radiation Monitors R-11,12 and 13

Existing rubber hoses were replaced with stainless steel hoses. Deterioration of the rubber hoses is caused by the temperature in the radiation monitors and is avoided by the use of stainless steel. The function of the radiation monitors was not altered.

20. Welding to 95' Elevation Equipment Hatch

Lugs for an attachment of a monorail and an electrical penetration protector were welded to the equipment hatch. The additional weight of these attachments were determined to not affect the design of the hatch. The monorail will not be used when the plant is on line and therefore does not affect containment integrity. There is no impact on the seismic capability of existing structures.

21. Seal Weld of Control Rod Drive (CRD) Housing Vent Caps to Plugs

The CRD housing vent caps were welded to the plugs in order to prevent primary leakage to containment. The welds passed qualification tests. Any leaks will be detected in the same manner as before the modification.

22. Retire and Remove Steam Generator Blowdown Sample Lines

The steam generator blowdown sample lines 364, 365 366 and 367 and their isolation valves were eliminated. These lines were no longer in use and had been previously capped off. To fulfill the function of the isolation valves, the associated pipe penetration was capped on the inside and outside of containment to form a double isolation barrier. The pipe was connected to the Containment Penetration and Weld Pressurization System so that any leak would be from outside containment rather than from inside. The required welding was tested for integrity.

23. Manipulator Crane Mast Bolting Replacement

Existing carbon steel bolting was replaced with stainless steel bolting of equal or greater strength. In order to prevent construction materials from dropping into the reactor vessel the installation was done over the transfer canal away from the vessel.

24. Post Accident Air Sampling System Vacuum Pump Isolation

The suction and discharge lines to the post accident containment air sample system vacuum pump were capped. The purpose of this modification was to reduce the number of potential leakage paths from containment. The new post TMI method of obtaining a containment air sample, the N_2/O_2 analyzer, does not require the use of the original sample pump. Therefore, the capping of these lines will not affect ability to obtain a sample. Containment integrity is improved by this modification.

25. Install Extended Grease Lines to the Reactor Rod Control M.G. Sets

Extended grease lines to the M.G. sets were installed to allow lubrication of the system without removing the outer housing. This eliminates down-time of the reactor rod control motor. A grease outlet was provided in order to show completion of lubrication.

26. Upgrade of Auxiliary Boiler Feed Pump Recirculation Systems

The purpose of this modification was to upgrade the low flow protection provided for the auxiliary feedwater pumps and to provide a means for more reliable testing. The recirculation system was upgraded to handle a flow of 80 GPM rather than 25 GPM. This higher flow rate was recommended by the pump manufacturer to reduce wear on the pump. The CCR was provided with a Close-Auto-Open switch to provide for override of the auto recirculation control. The modification does not impair the ability of the pumps to provide their minimum required flow nor affect the redundancy between the motor driven pumps.

27. Inaccessible Hydraulic Snubber Modification, Unit 2

Among hydraulic snubbers which required periodic inspection and maintenance, many snubbers were located in inaccessible areas of Containment, the Primary Auxiliary Building and the Auxiliary Feedwater Pump Building. It was desirable to determine whether any of these snubbers could be removed or replaced by rigid restraints.

It has been known that I.P.-3 located at the same site, employed fewer hydraulic snubbers that I.P.-2. This was achievable due to a more sophisticated piping analysis which was performed upon Unit 3 which resulted in less conservatism. Thus a comparison was made between Unit 2 and Unit 3 which resulted in either the elimination of snubbers or the substitution of rigid restraints. For this specific modification 13 snubbers were affected. Nine (9) were replaced by rigid struts and four (4) were eliminated. The changes had been previously reviewed and approved by the NRC in an amendment to the Technical Specifications.

28. Addition of a Box Compactor for Dry Radioactive Waste

The Container Products Corporation Model B-100-88 Solid Waste Compactor is suitable for the volume reduction of low-level dry radioactive wastes. It is designed as a totally self enclosed unit.

The major safety consideration in the operation of the compactor, located on the Indian Point Unit #1 Chemical Systems Building (CSB) Elev. 70'-6" operating deck, is the prevention of an uncontrolled release of radioactivity to the environment. This release will not be possible due to the unit's closed design which prevents open compacting and its associated airborne releases. The unit is also equipped with a pre-filter and HEPA filter on its exhaust to remove radioactive dust and smaller sized particulates generated during the compaction process. These filters will be changed out based on a magnehelic gauge with indicator light. The largely uncontaminated air leaving these filters will be released to the Chemical Systems Building operating deck which is a radiologically controlled area equipped with a filtered/monitored roof top exhaust system. The use of the compactor's self contained ventilation system also meets the design guidance in NRC's Branch Technical Position - ETSB 11-3.

29. Redundant N_2 Regulator for the Isolation Valve Seal Water Tank

A second automatic N_2 supply path and pressure regulator was provided to the IVSWS tank. This improves the reliability of the N_2 supply since failure of a single pressure regulator would no longer require manual control. This modification also allows preventive maintenance to be performed without shutting off the automatic N_2 feed. Failure of this new redundant N_2 supply branch does not affect the supply of nitrogen to the IVSWS tank. The modification does provide single failure protection for maintaining an automatic nitrogen supply to the IVSWS Tank.

30. Installation of Spray Wash Piping for New Service Water Intake Fixed Screens

Spray wash piping for the new fixed screens was installed to prevent buildup of river material on the screens. This will assure unrestricted flow of water to the service water pumps.

31. Packing and Modified Lantern Rings for MS-1 and MS-2 Valves

This modification installed new, modified lantern rings and reduced the number of packing rings on the Main Steam Isolation Valves. This improves the reliability for closure of these valves by reducing friction on the shaft of the valve (making it easier to close) and providing better lubrication.

32. Brace for 3/4" Pipe Under Relief Valve No. RV-855

A brace for the 3/4" pipe under relief valve No. RV-855 was installed to provide horizontal and vertical restraint of the pipe. This extra restraint retards vibration and/or movement during normal operation or a seismic event and will provide further assurance of integrity of the safety injection piping.

33. Weld Channel Pressure Control for Electric Penetrations

The purpose of this modification was to protect the replacement electric penetration assemblies against overpressure. The assemblies are designed to withstand a pressure of 70 psig. To prevent excess pressure buildup a relief valve has been installed in the supply line. A restricting orifice on the discharge side of the relief valve has been included in the event the relief valve sticks open in order to limit relief flow and thus maintain pressurizing capability. In addition a new high pressure switch has been added for high pressure alarming.

34. Modification to Containment Pressure Relief Valves

The pressure relief system consists of 3 butterfly valves in series. The valves are pneumatically controlled with indication in the CCR for fully open and fully closed positions. These are the normal positions for the valves with the safety function being to close on a containment isolation signal. As configured, the control circuit for these valves incorporated a positioner which would permit a valve position other than full open or full closed. The operation of the pneumatic positioner had become sluggish due to "dirty " instrument air. This modification removed the positioner from the pneumatic circuitry and replaced appropriate valve components and added a filter to improve the quality of the supplied control instrument air. The modification in no way affected the safety function of containment isolation.

35. Remote Valves for Hydrogen Recombiner

Remotely controlled valves were installed on the hydrogen and oxygen supply lines to the hydrogen recombiners. These replaced manually controlled valves which would be inaccessible during an accident due to high radiation levels. The valves were procured and installed according to the safety class commensurate with their function. The modification is considered to be an enhancement of safety.

36. Replacement of Service Water Strainer Elements

Existing strainer elements with 1/8" diameter perforations were replaced with elements with 1/16" perforations. The smaller diameter improves filtering capability and protection against impurity build up in the Fan Coolers and other heat exchangers served by the service water system. The strength and differential pressure capacity of the strainers were not compromised and required service water flow is unaffected.

37. Installation of Motor Operated Valves - Containment Heat Removal System

Four motor operated valves were installed on four cooling outlet lines for the containment fan motors. This addition provided for double isolation and remote actuation. Four manual containment isolation valves on four sample lines from the cooling coils were replaced by motor operated valves. This addition also provided double isolation and remote operation capability. Four manual valves in the outlet lines from the fan coolers were replaced by four motor operated valves.

These changes represent an enhancement in reliability and safety as in all cases motor actuation was achieved and, in two instances, double remote isolation was provided.

38. Control Rod Drive (CRD) Fan Motor Bearing Lubrication and Bearing Seal Modification

A grease tube was installed to carry grease within the CRD fan motor to the area of the inboard bearings to facilitate even grease distribution. Also, a new cap with a grease retention seal was installed under the outboard bearings to prevent grease leakage due to gravity. This modification improves the reliability of the CRD system.

39. Test Connections for Air Lock Valves 85 C & D and 95 C & D

A test connection consisting of a T-connection with a manual valve and cap was installed between the series containment isolation check valves associated with both containment air locks. The manual valve and cap provide a double boundary between the Containment atmosphere and the inner isolation check valve.

This modification facilitates leakage testing of the Containment Isolation check valves. When not in the test mode, the manual test valve will be closed and the cap will be in place thus maintaining Containment Integrity.

40. Rerouting of Electrical Penetration WCPP Tubing

Weld channel pressurization piping and tubing was rerouted to provide easier access for the installation of cable trays and wiring associated with the new high density electrical penetration assemblies. The rerouting does not affect the functional capability of the system. The tubing will conform to seismic requirements and will not interact with surrounding structures and components.

41. Fan Cooler Units Service Water Pressure Drop Measurement Improvement

Permanent differential pressure indicators were installed on the inlet and outlet water headers of the Fan Cooler Units. The purpose of the instrumentation will be to determine the degree of fouling. These replaced portable indicators whose use required excessive time and exposed personnel to a radiation dose. The indicators are seismically supported.

42. Containment Make-up and Purge Valve Actuator Modification

The actuators of containment make-up and purge valves were modified to allow opening to a full 90° position when containment integrity is not necessary. These valves are returned to their 60° opening limit before containment integrity is required, i.e., above cold shutdown. This modification improves ventilation and cooling air flow into containment during an outage while maintaining the ability to assure proper positioning of the valves for normal operation. The modification does not affect the seismic adequacy or operability of the valves.

43. PCU Water Flow Measurements

This project involved the installation of annubar flow probes on the 10" fan cooler service water discharge lines inside Containment to replace existing thermal mass flow meters located outside Containment. The annubars, impulse tubing and transmitter housing are stainless steel. The design and material are compatible with the specification for the service water system. The thin stainless steel internal transmitter diaphragm may be susceptible to degradation under long-term exposure to service water, however, the failure of the internal diaphragms will not cause leakage of service water into Containment during normal operation or Containment atmosphere leakage into the service water system during accident conditions.

44. Replacement of Blowdown Valves

The purpose of this modification was to replace three small (2" and under) blowdown valves located on the blowdown lines from the steam generators to the upstream side of the blowdown tank. The original valves with a 600# rating were replaced with valves of 1500 # rating. The new valves have a higher pressure rating and offer better leak-tightness.

45. Reduction in Size of Batteries No. 23 and No. 24

The size of batteries No. 23 and 24 was reduced from 60 cells to 58 cells. This reduction reduced the batteries' charge from 139.8 volts to 135 volts and provides a larger margin between the batteries' voltage and maximum (140 volts) tolerance of relays associated with protection systems. The modification does not affect the batteries' ability to supply the system nominal voltage and capacity requirements for emergency conditions and will enhance the reliability of the protection system relays.

46. Isolation of Service Water System Interconnecting Header

A 12-inch 150# weld fitting with an O-ring completion plug and blind flange was installed in the service water valve pit in the 16-inch line connecting line numbers 408 and 409. This connection allowed for temporary plugging of the line to afford the isolation necessary for maintenance of a flow control valve. The weld fitting, completion plug and blind flange remain as a permanent installation.

Temporary disabling of the Service Water System was analyzed to assure no impact on safety. Material compatibility has been evaluated and the seismic capacity of the piping with the additional weight has been considered.

47. Remote Indication for Steam Generator Level, Pressurize Level and Pressurizer Pressure

This modification enhanced the remote indication outside of the Central Control Room of the Steam Generator level, Pressurizer level and Steam Generator pressure. This was accomplished by extension of the existing instrumentation for these parameters. The modification was evaluated to determine that its failure would not affect the existing instrumentation and that Containment integrity would be maintained.

48. On Line Boost Charging of 125 Volt Battery Cells

This change involved a procedure for charging battery cells while on line which exhibit deviations in voltage.

The boost charge operation is a recognized industry practice which results in increased battery capacity margin and therefore battery availability. However, since the procedure requires use of a charger and the opening of a fire barrier (door), the procedure was evaluated with respect to its impact on nuclear safety and fire safety. Stringent monitoring and administrative controls have been applied to assure that charger operation or malfunction cannot adversely affect battery function. In addition a 24 hour limit on battery charging has been established which is consistent with the Technical Specification L.C.O. for an inoperable battery.

49. Environmental Health and Safety Procedure - EH&S Support for Receipt, Solidification and Shipment of Resin from the Spent Resin Storage Tank.

The subject procedure has been employed in the handling of spent resin. The major consideration in evaluating the subject procedure was the prevention of an uncontrolled release to the environment resulting from a spill of resins being transferred from the spent resin storage tank inside the Primary Auxiliary Building to the carbon steel liner system located outside. A number of administrative and equipment design barriers were implemented to prevent such an occurrence. Design features include:

1. The portion of the resin transfer line located outdoors is doubly encapsulated to retain resin in the unlikely event of a line break.

2. An enclosed containment structure is erected around the outside trailer, containing the liner and cask, during resin processing.

3. Two independent level monitoring schemes are provided for the liner.

If despite the administrative and equipment precautions, a spill were to occur within the Primary Auxiliary Building, the liquid would be diverted via the floor drains to the waste holdup tank and the resin beads are amenable to cleanup. For a spill outside the building, liquid would be retained by 6" dams erected for this purpose. Any gaseous release would be insignificant both inside and outside the Building.

50. Temporary RHR Letdown Lineup With Non-Regenerative Heat Exchanger Isolated

During reactor shutdown, when the water level in the reactor cavity is above the reactor coolant pump (RCP) seals, seal injection flow comes from RHR through to the non-regenerative heat exchanger. To enable work to be performed on the non-regenerative heat exchanger, this temporary modification permits flow to bypass this heat exchanger and be directed to the excess letdown line to the Volume Control Tank. This was accomplished by means of a steel hose which has a pressure rating in excess of the shutoff head of the purification booster pump.

The primary safety concern was the possibility of draining the reactor coolant system due to a hose rupture. However, this was not considered credible due to the small size (3/4") of the hose and the long period of time available for operator action to terminate the leak.

51. Increase in Individual Leakage Rate Limits for Isolation Valve Seal Water System Sealed Containment Isolation Valves.

The Isolation Valve Seal Water System (IVSWS) is an added backup to the Containment barrier. Without the IVSWS the overall containment leakage rate is required to be less than 0.1% of the containment volume over a 24 hour period. The Technical Specifications stipulate a maximum overall IVSWS leakage of 14,700 c.c./hr. to assure a 30 day supply inventory.

Within the FSAR an individual valve leakage rate is stated as 50cc/hr-in. Over the years of operation some Containment Isolation Valves have exhibited leakages approaching the FSAR limit. Insofar as increasing the individual valve leakage limit does not impact the overall IVSWS leakage limit, the individual permissible leakage of IVSWS water into a valve was increased to 25cc/min. This is below the limit which would indicate pending valve failure.

52. Steam Generator/Pressurizer Modification

This modification to the steam generator and pressurizer manways involved machining of the manways if corrosion were present and installation of an insert to retain clearances. The inserts also contain a modification to include quarter turn fasteners to replace the existing machine screws used to hold the flexitallic gasket in place during manway cover installation. Insert material was changed to INCONEL to provide compatibility with existing material.

This modification:

1. Lessens the probability of an accident.
2. Does not degrade the design pressure retaining capability.
3. Improves the integrity of the system by removing corrosion and repairing the manway pads.
4. Improves the reliability of gaskets.

53. Installation of a Modified Traveling Screen in Bay #26

As part of an agreement between Consolidated Edison, The New York Power Authority and the State of New York, a Ristroph type traveling screen and its associated equipment have been installed in circulating water bay #26. The screen is used to collect fish and carry them back to the river. The screen is not a safety related item and its operation in no way interfaces with a safety related system.

54. Temporary Shielding of Plant Systems

Various types of shielding material are utilized and supported by piping systems and other overhead structures. The purpose of this program was to develop a generic schedule to ensure that the load carrying capacity of these structures was not exceeded.

To ensure non-interaction with safety systems all shielding will conform to seismic requirements and be physically restrained. Material compatibility questions are to be considered in all applications as well as temperature compatability. All shielding applications are to be such that the function of the supporting system remains unaffected during the time the temporary shielding is in place.

55. Dewatering of Service Water Bay.

A temporary procedure was prepared for the partial or full dewatering of the Service Water inlet bays for the purposes of inspection and maintenance. The procedure was evaluated to assure that no safety concern would exist during the dewatering process.

Adequate margin and an approved procedure exists to ensure that forced flow decay heat removal via the service water system under dewatering conditions is re-established to prevent exceeding spent fuel pit design water temperature objectives or the cavity water temperature requirements for cold shutdown. Diesel generators and service water pumps are locked out from automatic starting during dewatering conditions (partial dewatering will have one running pump) to preclude the possibility of damage to these multiple components concurrently. In addition, since the diesel generators and forced flow decay heat removal systems can be restored to satisfy safety requirements well within the available time period, they are considered "operable" and under manual control throughout the dewatering processes. Since the dewatering operations will be conducted during cold shutdown but not during "refueling operations", they will not involve any technical specifications. If fuel is in the reactor vessel, the reactor coolant temperature requirements of the technical specifications will still be met.

56. Cycle 6/7 Refueling - Cycle 7 Reactor Operation.

A report entitled "Reload Safety Evaluation, Indian Point Nuclear Plant, Unit 2, Cycle 7" was prepared by Westinghouse Electric Corporation.

The report presented an evaluation for Cycle 7 which demonstrated that the core reload did not adversely affect the safety of the plant. All incidents analyzed and reported in the FSAR which could potentially be affected by the fuel reload were reviewed for the Cycle 7 design. The results of new analyses were included, and the justification for the applicability of previous results for the remaining analyses was presented. It was concluded that the Cycle 7 design does not cause previously acceptable safety limits for any incident to be exceeded. This conclusion was based on the assumptions that: (1) Cycle 6 Operation is terminated at 12,750 ± 500 MWD/MTU, (2) cycle 7 burnup is limited to the end-of-full power capability plus 500 MWD/MTU for power coastdown and (3) there is adherence to plant operation limitations as given in the Technical Specifications.

Cycle 7 is the third cycle into the transition from HIPAR to LOPAR. The LOPAR-HIPAR mixed core has been previously shown to be compatible. LOPAR fuel assemblies are mechanically and hydraulically compatible with existing HIPAR assemblies, control rods and reactor internals interfaces.

The Cycle 7 design has a low leakage loading pattern similar to that of Cycle 6. In addition, both the HIPAR and LOPAR fuel assemblies satisfy the Indian Point Unit 2 design bases. Also, operation with either type of fuel will satisfy the safety limits and licensing requirements.

The only item relating to reload not specifically addressed in the report involves storage and handling of the Region 9 fuel. The IP#2 fuel storage pool design was based upon a fuel enrichment of 3.5 % U-235. As stated above, the Region 9 fuel has a nominal enrichment of 3.44 % U-235, i.e., below the design value, and does not therefore, raise any concerns relating to the Technical Specification limitation of k_{eff} (0.95). Since the exterior lateral dimensions and configuration of the fuel assemblies are unchanged, they fit properly into the present fuel racks. Additionally, the nominal fuel assembly total weight for Region 9 is approximately the same as that for Region 8. As a result, the Cycle 6/7 reload does not degrade the fuel handling and storage system's seismic design or normal load bearing capability.

During refueling, soluble boron concentration of 2000 ppm is sufficient to maintain subcriticality by the required 10% k/k.

57. Replacement of Two Pneumatically Operated Service Water Sluice Gates.

The service water sluice gates isolate the service water bay from the circulating water bay. The previous gates were inoperable and were replaced with new manually actuated gates in order to retain the isolation function for possible future use. The previous design concept called for the gates to be in the closed position and to open automatically in the case of an accident. The new gates will be locked in the open position.

The replacement gate design is the same as the present gates with the exception of new bronze seal facings and wedges and bronze lined tongue and groove guides. The material change was made to prevent binding of the gate and guides. The new design is seismic I.

58. Use of Reactor Coolant System (RCS) Nozzle Dam on Steam Generators (S/Gs)

The installation of the dams in the RCS nozzles of the S/Gs involved the use of a three legged, self-centering, self-locking structure (anchor) which presses against the stainless steel cladding of the RCS nozzle to provide the holding force for the dams. The maximum pressure to be exerted by the anchor mechanism is within the code allowable limits for the S/Gs.

To prevent emptying the cavity (and the connected spent fuel pool) during fuel movement, two seals were provided, an inflatable primary seal and a backup static seal, both of which can provide leak tight capability at operating pressures. The dams and seals were designed to function under the worst anticipated chemical and temperature conditions encountered during refueling. For the hot and cold leg nozzles of SG#24 and the cold leg nozzle of SG#22 an independent restraint beam would hold the nozzle dam in place should the anchor mechanism fail. This would preclude a rapid draindown and emptying of the reactor cavity/spent fuel pool while fuel movement is underway.

For the other five SG nozzles where the independent restraint beam was not used, other backup protection (temporary manway covers) was provided.

Murray Selman
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Ave.
Buchanan, NY 10511
Telephone (914) 737-8116

January 3, 1986

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 1984 as required by 10 CFR 50.59(b).

Very truly yours,

Murray Selman

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

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 38
Buchanan, N.Y. 10511

IE01