ATTACHMENT I TO IPN-87-024
PROPOSED TECHNICAL SPECIFICATION CHANGES
RELATED TO THE FUEL STORAGE BUILDING
EMERGENCY VENTILATION SYSTEM

NEW YORK POWER AUTHORITY
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
DPR-64

In addition to the above safeguards, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The 120-hour decay time following the subcritical condition and the 23 feet of water above the top of the reactor pressure vessel flange is consistent with the assumptions used in the dose calculation for the fuel-handling accident.

The waiting time of 162 hours required following plant shutdown before unloading more than one region of fuel from the reactor assures that the maximum pool water temperature will be within design objectives as stated in the FSAR. The calculations confirming this are based on an inlet river temperature of 92°F, service water flow to the component cooling heat exchangers of 7000 gpm (FSAR) and component cooling flow to the Spent Fuel Pit heat exchanger of 2800 gpm (FSAR).

The requirement for the fuel storage building emergency ventilation system to be operable is established in accordance with standard testing requirements to assure that the system will function to reduce the offsite dose to within acceptable limits in the event of a fuel-handling accident. The fuel storage building emergency ventilation system must be operable whenever irradiated fuel is being moved. However, if the irradiated fuel has had a continuous 45 day decay period, the fuel storage building emergency ventilation system is not technically necessary, even though the system is required to be operable during all fuel handling operations. Fuel Storage Building isolation is actuated upon receipt of a signal from the area high activity alarm or by manual operation. The emergency ventilation bypass assembly is manually isolated, using manual isolation devices, prior to movement of any irradiated fuel. This ensures that all air flow is directed through the emergency ventilation HEPA filters and charcoal adsorbers. The ventilation system is tested prior to all fuel handling activities to ensure the proper operation of the filtration system.

When fuel in the reactor is moved before the reactor has been subcritical for at least 365 hours, the limitations on the containment vent and purge system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal absorbers prior to discharge to the atmosphere.

The limit to have at least two means of decay heat removal operable ensures that a single failure of the operating RHR System will not result in a total loss of decay heat removal capability. With the reactor head removed and 23 feet of water above the vessel flange, a large heat sink is available for core cooling. Thus, in the event of a single component failure, adequate time is provided to initiate diverse methods to cool the core.

The minimum spent fuel pit boron concentration and the restriction of the movement of the spent fuel cask over irradiated fuel were specified in order to minimize the consequences of an unlikely sideways cask drop.

Fuel assemblies whose initial enrichment is greater than 3.5 w/o U-235 but less than or equal to 4.3 w/o can be stored in the spent fuel pool providing they are placed in a checkerboard array with fuel whose initial enrichment and burnup are sufficient to ensure that K_{eff} is less than 0.95 with no soluble boron present. This is ensured by categorizing the fuel whose initial enrichment is greater than 3.5 w/o U-235 but less than or equal to 4.3 w/o and whose burnup is below the curve of Figure 3.8-1 as Category 2. This fuel can be stored by checkerboarding with Category 1 fuel which is defined as fuel whose initial enrichment and burnup, place it on or above and to the left of the curve in Figure 3.8-1. Category 3 fuel which is less than or equal to 3.5 w/o U-235 and below the curve of Figure 3.8-1 cannot be used in the checkerboard with Category 2 fuel. Any Category 1 or 3 fuel can continue to be stored on a repeating x-y array with other non-fuel material or empty locations can be utilized in place of Category 1 fuel.

When the spent fuel cask is being placed in or removed from its position in the spent fuel pit, mechanical stops incorporated in the bridge rails make it impossible for the bridge of the crane to travel further north than a point directly over the spot reserved for the cask in the pit. Thus, it will be possible to handle the spent fuel cask with the 40-ton hook and to move new fuel to the new fuel elevator with a 5-ton hook, but it will be impossible to carry any object over the spent fuel storage area with either the 40 or 5-ton hook of the fuel storage building crane.

Dead load test and visual inspection of the the hoists and cranes before handling irradiated fuel provide assurance that the hoists or cranes are capable of proper operation.

<u>References</u>

(1) FSAR - Section 9.5.2
(2) FSAR - Table 3.2.1-1

(1) The charcoal shall have a methyl iodine removal efficiency $\geq$ 90% at $\pm$20% of the accident design flow rate, 0.05 to 0.15 mg/m^3 inlet methyl iodine concentration, $\geq$ 95% relative humidity and $\geq$ 125^{o}F.

(2) A halogenated hydrocarbon (freon) test on charcoal adsorbers at $\pm$20% of the accident design flow rate and ambient conditions shall show $\geq$ 99% halogenated hydrocarbon removal.

(3) A locally generated DOP test of the HEPA filters at $\pm$20% of the accident design flow rate and ambient conditions shall show $\geq$ 99% DOP removal.

6. <u>Fuel Storage Building Emergency Ventilation System</u>

a. The fuel storage building emergency ventilation system fan shall be operated for a minimum of 15 minutes every month when there is irradiated fuel in the spent fuel pit.

b. Prior to handling of irradiated fuel, the following conditions shall be demonstrated before the system can be considered operable:

(1) The pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at ambient conditions and accident design flow rates.

(2) Using either direct or indirect measurements, the flow rate of the system fans shall be shown to be at least 90% of the accident design flow rate.

(3) the filtration system bypass assembly shall be isolated and leak tested to assure that it is properly sealed.

c. Prior to handling of irradiated fuel or at any time fire, chemical releases or work done on the filters could alter their integrity or after 720 hours of charcoal adsorber use since the last test, the following conditions shall be demonstrated before the system can be considered operable:

(1) Charcoal shall have a methyl iodine removal efficienty $\gtrsim$ 90% at ±20% of the accident design flow rate, 0.05 to 0.15 mg/m^3 inlet methyl iodine concentration, $\gtrsim$ 95% relative humidity and $\gtrsim 125^oF$.

(2) A halogenated hydrocarbon (freon) test on charcoal adsorbers at ±20% of the accident design flow rate and ambient conditions shall show $\gtrsim$ 99% halogenated hydrocarbon removal.

(3) A locally generated DOP test of the HEPA filters at ±20% of the accident design flow rate and ambient conditions shall show $\gtrsim$ 99% DOP removal.

(4) Visual inspection in accordance with the applicable sections of ANSI N 510 (1975) of filter installations.

slave relay coil circuits are continuously verified by a built-in monitoring circuit. In addition, the active components (pumps and valves) are to be tested monthly to check the operation of the starting circuits and to verify that the pumps are in satisfactory running order. The test interval of one month is based on the judgement that more frequent testing would not significantly increase the reliability (i.e., the probability that the component would operate when required), yet more frequent testing would result in increased wear over a long period of time.

Other systems that are also important to the emergency cooling function are the accumulators, the Component Cooling System, the Service Water System, and the containment fan coolers. The accumulators are a passive safeguard. In accordance with Specification 4.1, the water volume and pressure in the accumulators are checked periodically. The other systems mentioned operate when the reactor is in operation, and by these means are continuously monitored for satisfactory performance.

The charcoal portion of the containment air recirculation system is a passive safeguard which is isolated from the cooling air flow during normal reactor operation. Hence, the charcoal should have a long useful lifetime. The filter frames that house the charcoal are stainless steel and should also last indefinitely. However, the visual inspection specified in Section A.4(a) of this specification will be performed to verify that this is, in fact, the case. The iodine removal efficiency cannot be measured with the filter cells in place. Therefore, at periodic intervals a representative sample of charcoal is to be removed and tested to verify that the efficiencies for removal of methyl iodide are obtained. [2] The fuel storage building air treatment system is designed to filter the discharge of the fuel storage building atmosphere to the facility vent during normal conditions. As required by Specifications 3.8.A.12 and 3.8.C.6, the fuel storage building emergency ventilation system must be operable whenever irradiated fuel is being moved. However, if the irradiated fuel has had a continuous 45-day decay period, the fuel storage building emergency ventilation system is not technically necessary, even though the system is required to be operable during all fuel handling operations. The emergency ventilation fan is automatically started upon high radiation signal and since the bypass assembly is sealed by manually operated isolation devices, air flow is directed through the emergency ventilation HEPA filters and charcoal adsorbers.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of these adsorbers for all emergency air treatment systems. The charcoal adsorbers are installed to reduce the potential release of radio-iodine to the environment. The in-place test results should indicate a system leak tightness of less than or equal to one percent leakage for the charcoal adsorbers and a HEPA efficiency of greater than or equal to 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a methyl iodide removal efficiency of greater than or equal to 90 percent on the fuel handling system samples, and greater than or equal to 85 percent on the containment system samples for expected accident conditions. With the efficiencies of the HEPA filters and charcoal adsorbers as specified, further assurance is provided that the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed.

The control room air treatment system is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room air treatment system is designed to automatically start upon control room isolation.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to similarly prevent clogging of these adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radio-iodine by control room personnel. The in-place test results should indicate a system leak tightness of less than or equal to one percent leakage for the charcoal adsorbers and a HEPA filter efficiency of greater than or equal to 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a methyl iodide removal efficiency of greater than or equal to 90 percent for expected accident conditions.

ATTACHMENT II TO IPN-87-024
SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES RELATED TO THE FUEL STORAGE BUILDING EMERGENCY VENTILATION SYSTEM

NEW YORK POWER AUTHORITY
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO . 50-286
DPR-64

I. Description of Changes

This application seeks to amend Sections 3.8 and 4.5 of the Indian Point 3 Technical Specifications to clarify the operation of the Fuel Storage Building (FSB) Emergency Ventilation System. The upper and lower bypass dampers are being replaced by manual isolation devices to enhance isolation of the FSB Emergency Ventilation System during fuel handling operations.

II. Evaluation of Changes

The FSB Emergency Ventilation System currently consists of two air supply units and one exhaust unit. The exhaust unit plenum chamber contains a bank of roughing and HEPA filters, a charcoal filter unit with face and outlet dampers and bypass dampers to isolate it from the air flow and the exhaust fan. The bypass damper in the exhaust system allows the air from the FSB to bypass the charcoal filters prior to discharge to the atmosphere during normal operation. Upon receipt of a signal from the area high activity alarm in the FSB, the bypass damper is automatically closed in order to ensure that all of the contaminated air is discharged through the charcoal filters.

As a result of normal plant surveillance activities, the Authority has determined that the amount of leakage through the bypass dampers in the isolated mode is unacceptable. Therefore, to enhance system operation and to ensure a proper seal, the Authority is replacing the existing upper and lower bypass dampers with manual isolation devices bolted to the existing damper frame assembly. The isolation devices will be installed during all fuel handling operations to preclude any air leakage around the charcoal filters to the atmosphere. The Indian Point 3 procedures will be revised to reflect this operation.

The isolation devices will be constructed of aluminum plate, reinforced with stiffeners, which is compatible with the existing damper design. All hardware used for the plates is structural steel which is also compatible with the existing support steel and framing. All assemblies will be designed and installed to Seismic Category I criteria.

III. No Significant Hazards Evaluation

In accordance with the requirements of 10 CFR 50.92, the application has been determined to involve no significant hazards based on the following:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

<u>Response</u>

The probability of a fuel handling accident is not affected by this proposed change. However, the probability and consequences of a release to the atmosphere due to a fuel handling accident are in fact reduced. Air from the FSB Emergency Ventilation System will be discharged through the HEPA filters and charcoal adsorbers during all fuel handling operations, or other evolutions that could result in a radioactive release from irradiated fuel, thereby ensuring no direct release to the atmosphere.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

<u>Response</u>

Automatic isolation of the bypass assembly is required to protect against a potential fission product release to the atmosphere during a fuel handling accident. However, with the installation of these manual isolation devices the need for automatic isolation is no longer required. With these isolation devices installed, air flow is directed through the HEPA filters and charcoal adsorbers, thus ensuring no direct release to the atmosphere. Therefore, with the proper procedural controls, which the Authority is incorporating into IP-3's procedures, the need for automatic isolation of the bypass assembly is precluded. This proposed amendment, therefore, does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

<u>Response</u>

The proposed amendment does not involve a significant reduction in a margin of safety. The margin of safety is actually increased as a result of the proposed amendment since air from the FSB Emergency Ventilation System will be discharged through the HEPA filters and charcoal adsorbers at all times during fuel handling operations. Since the fuel handling accident analysis in the FSAR does not credit the existence of charcoal adsorbers, the change in no way reduces the safety margin established by current accident analysis.

IV. IMPACT OF CHANGE

This change will not impact the following:

- ALARA Program
- Fire Protection Program
- Emergency Plan
- FSAR or SER Conclusions
- Overall Plant Operations

V. CONCLUSION

This change: a) will not increase the probability nor the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the Safety Analysis Report; b) will not increase the possibility for an accident or malfunction of a different type than evaluated previously in the Safety Analysis Report; c) will not reduce the margin of safety as defined in the basis for any Technical Specification; d) does not constitute an unreviewed safety question as defined in 10 CFR 50.59; e) involves no significant hazards considerations as defined in 10 CFR 50.92.

VI. REFERENCES

a) IP-3 FSAR
b) IP-3 SER