ATTACHMENT I TO IPN-92-050

PROPOSED TECHNICAL SPECIFICATION CHANGES

RELATED TO

VENTILATION SYSTEM TESTING TO ACCOMMODATE A 24 MONTH OPERATING CYCLE

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

4. Containment Air Filtration System

a. Visual inspection of the filter installations shall be performed in accordance with ANSI N 510 (1975) every six months for the first two years and at least once per 24 months thereafter, or at any time fire, chemical releases or work done on the filters could alter their integrity.

b. At least once per 24 months, 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 charcoal filter isolation valves shall be tested to verify operability.

c. At least once per 24 months or at any time fire, chemical releases or work done on the filters could alter their integrity or after every 720 hours of charcoal adsorber use since the last test, the following conditions shall be demonstrated before the system can be considered operable:

(1) Impregnated activated charcoal from each of the five units shall have a methyl iodine removal efficiency $\geq$ 85% $\pm$ 20% of the accident design flow rate, 5 to 15 mg/m^3 inlet methyl iodine concentration, $\geq$ 95% relative humidity and $\geq$ 250°F. In addition, ignition shall not occur below 300°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.

*Dioctylphthalate Particles

5. Control Room Air Filtration System

a. Visual inspection of the filter installations shall be performed in accordance with ANSI N 510 (1975) every six months for the first two years and at least once per 24 months thereafter, or at any time fire, chemical releases or work done on the filters could alter their integrity.

b. The charcoal filtration system shall be operated for a minimum of 15 minutes every month.

c. At least once per 24 months, 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 accident design flow rate.

d. At least once per 24 months or at any time fire, chemical releases or work done on the filters could alter their integrity or after every 720 hours of charcoal adsorber use since the last test, the following conditions shall be demonstrated before the system can be considered operable:

(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°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.

4.13 Containment Vent and Purge System

Applicability

This specification applies to the surveillance requirements of the containment vent and purge system during normal operations and when reactor fuel is anticipated to be moved before the reactor has been subcritical for at least 365 hours.

Objective

To verify the operability of the containment vent and purge system.

Specification

The following surveillance shall be performed as stated.

A. Isolation Valves

1. Each month verify that the containment purge supply and exhaust isolation valves are closed during operation above cold shutdown.

2. At least once per 24 months verify that the mechanical stops on the containment vent isolation valve (PCV-1190, -1191, -1192) actuator is limited to the valve opening angle to 60° (90° = full open).

B. HEPA Filters and Charcoal Absorbers

If fuel movement is to take place before the reactor has been subcritical for at least 365 hours, the containment vent and purge system shall be demonstrated operable as follows:

1. Within 18 months prior to fuel movement and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank within 18 months prior to fuel movement, or (2) after structural maintenance on the HEPA filter or charcoal adsorber housing within 18 months prior to fuel movement, which could effect system operation:

   a. Verify that the charcoal adsorbers remove $\geq$ 99% of halogenated hydrocarbon refrigerant test gas when they are tested in-place while operating the ventilation system at the operating flow $\pm$ 10%.

   b. Verifying that the HEPA filter banks remove $\geq$ 99% of the DOP when they are tested in-place while operating the ventilation system at the operating flow rate $\pm$ 10%.

2. Within 18 months prior to fuel movement and after every 720 hours of system operation, subject a representative sample of carbon from the charcoal adsorbers to a laboratory analysis and verify within 31 days a removal efficiency of $\geq$ 90% for radioactive methyl iodine at an operating air flow velocity $\pm$ 20% per test 5.b in Table 2 of Regulatory Guide 1.52, March 1978.

Amendment No. 30, 62, 125,

Basis

The containment purge supply and exhaust isolation valves are required to be closed during plant operation above cold shutdown. Containment purge supply or exhaust isolation valve closure may be verified by way of the position indication lights, the weld channel and penetration pressurization system or visual means. The maximum opening angle of the containment vent isolation valves is being limited as an analysis demonstrates valve operability against accident containment pressures provided the valves are limited to an opening angle of 60°.

The operability of the HEPA filter and charcoal absorber system and the resulting iodine removal capacity are consistent with accident analyses. The representative carbon sample will be two inches in diameter with a length equal to the thickness of the bed.

ATTACHMENT II TO IPN-92-050

SAFETY EVALUATION

RELATED TO

VENTILATION SYSTEM TESTING TO ACCOMMODATE A 24 MONTH OPERATING CYCLE

TECHNICAL SPECIFICATION CHANGES

NEW YORK POWER AUTHORITY
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
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Section I - Description of Changes

This application for amendment to the Indian Point 3 Technical Specifications proposes to change the frequency of ventilation system testing to accommodate operation with a 24 month operating cycle.

Starting with cycle nine (that started in August, 1992), Indian Point 3 began operating on 24 month cycles, instead of 18 month cycles. The specific Technical Specifications that will be changed by this application are:

- Containment Fan Cooler Unit Filtration System operability test.
- Central Control Room Filtration System operability test.
- Containment Vent Isolation Valve Mechanical Stops verification.

Section II - Evaluation of Changes

Starting with cycle nine (that started in August, 1992), Indian Point 3 began operating on 24 month cycles, instead of 18 month cycles. To avoid either an 18 month surveillance outage or an extended mid-cycle outage, changes are required to the ventilation system surveillance test intervals. In order to justify extending surveillance intervals to be consistent with the length of the operating cycle, the following factors were considered: the importance of the refueling tests (i.e., does on-line testing demonstrate operability, or are failures only being detected during the refueling tests?), past equipment performance (and the effect on system safety functions), and the burden of performing tests during power operation. In general, the filtration tests are performed 1) after any major system modification or repair, 2) at least once each operating cycle, and 3) following painting, fire, or chemical release in any ventilation zone communicating with the system.

Background

Since the requirements for ventilation systems rely heavily on recommendations made in ANSI N510, the following is a brief discussion of this standard:

ANSI N510-1989, "Testing of Nuclear Air Treatment Systems," provides a basis for field testing of Engineered Safety Features (ESF) and other high efficiency air cleaning systems. The following portions of this standard are applicable to surveillance and acceptance testing at Indian Point 3.

1. Visual Inspection of Filters, Mounting Frames and Housing - A visual inspection is made before each test to ensure that the filters, their holding devices, gaskets, the housing and all associated components (e.g. fan, dampers, controls) have no apparent deficiencies.

2. Air Flow Capacity and Distribution Test - Obtains measurements necessary to determine whether an air supply, exhaust, or filtration system is functioning in accordance with design capacity. This test verifies that a) the specified volume flowrate of air can be achieved with the fan as furnished under actual field conditions at maximum and minimum filter pressure drop and b) the airflow

distribution across each filter or adsorber in each stage is reasonably uniform, relative to the average flowrate in the total system.

3. In-Place Leak Test, high efficiency particulate air (HEPA) Filter Bank - In this test a DOP aerosol is injected upstream of the HEPA filters and concentration measurements are made upstream and downstream of the filters. The percent leakage is then calculated from the ratio of DOP concentrations in the filtered air (downstream reading) and the unfiltered air (upstream reading). The in-place leak test for the HEPA filter bank verifies that a) HEPA filters have been installed properly, b) they have not been damaged, c) there are no leaks in the mounting frame or between the mounting frame and the housing and d) the system contains no bypassing which would compromise the function of the filters.

4. In-Place Leak Test, Adsorber Stage - In this test, a refrigerant tracer gas is injected upstream of the adsorber bank and concentration measurements are made downstream and upstream of the bank. The percent penetration (percent leakage) is then calculated from the ratio of the tracer gas concentrations in the filtered air (downstream reading) and the unfiltered air (upstream reading). The in-place leak test for the adsorber bank verifies that a) the adsorber stage filters have been installed properly, b) they have not been damaged, c) there are no leaks in the mounting frames or between the mounting frame and the housing and d) the system contains no bypassing which would compromise the function of the filters.

5. Laboratory Testing of Adsorbent - This test ensures that a representative charcoal sample is taken for the Methyl Iodide laboratory test. A test is made of a sample of charcoal before it is loaded into the adsorbers to establish the initial point for comparison of future surveillance test results and to verify the suitability of the adsorbent actually used. Tests are then made of samples withdrawn periodically from the adsorbers of the installed system to establish the condition of the adsorbent.

Surveillance Tests

Below is an evaluation for each technical specification that this application proposes to change.

Containment Fan Cooler Unit Filtration System Operability Test

The reactor containment fan cooler units (FCUs) remove heat from the containment building during normal operation and in the event of a loss of coolant accident (LOCA). Each unit consists of a motor, a fan, cooling coils, moisture separators, HEPA filters, carbon filters with fire detection and spray protection, roughing filters, dampers, moisture and condensation drainage, air distribution system, instrumentation and controls.

During normal operation, air is drawn from the containment through the normal flow inlet dampers and into the roughing filter plenum. The air is then drawn through the cooling coils and discharged by the fan into the common distribution header. Branch ducts from this header proportionally distribute air throughout the containment.

During the post-LOCA operating mode, the entering air flow is split into two separate paths. A portion of the flow passes through a filtration train which consists of a moisture separator, HEPA filters and carbon filter assembly. The remainder of the flow bypasses this section of the unit via a damper and passes through the cooling coils where it mixes with the filtration flow.

Air enters the filtration section by a blow-in door which in turn is opened by a predetermined pressure differential across the filtration housing (or on loss of air pressure to its pneumatic operator). Air flow through the filtration train is then discharged through the accident flow outlet dampers into the cooling coil plenum, where it mixes with the bypass damper flow. This mixture then flows over the cooling coils.

The purpose of this once per refueling outage test is to verify the integrity and operability of the containment FCU filtration systems. Surveillance and acceptance testing of the containment FCU filtration system are in accordance with the requirements of ANSI N510. This test also verifies the operability of the charcoal filter isolation valves.

A review of surveillance test records (1986 - 1990) showed satisfactory test results for the tests conducted on August 20, 1987, June 10, 1989 and November 28, 1990. In addition, these results did not indicate any decrease in system efficiency over time. A review of operating occurrence reports did not reveal any problems with the FCU filtration systems.

In addition to the surveillance tests performed once every refueling, an inspection of the containment FCU filtration system is conducted periodically with the fans operational. This inspection consists of: 1) measuring the pressure drop across the HEPA filter and across the charcoal bank, 2) visually inspecting inside the system for excessive dirt, moisture build-up and door seals and 3) inspecting the motor, fan and belts to be sure they are in proper operating condition. This inspection would reveal any clogging of HEPA filters or charcoal banks and other anticipated conditions that could affect system operability. Therefore, the importance of the refueling cycle test is to check for leaks, filter bypassing, and charcoal adsorption capability.

This test can be safely extended with the longer operating cycle because:

1. Postulated increases in leakage past the FCU HEPA and charcoal filters do not increase the possibility of post-accident radiological releases. The FCU filtration system is entirely located within the vapor containment and can be considered a "kidney" system. For this configuration, a leak tight filtration system is not as critical because containment air can only leak back into the containment.

   Industry standards recognize this and do not require in-place leak testing of HEPA and charcoal filters for the containment FCU filtration system. ANSI N510-1989 says, "Periodic in-place leak tests of systems located within reactor containments and used for 100% recirculation are not necessary."

2. ANSI N510 recommends sampling and laboratory testing the charcoal adsorbers "once each operating cycle," or following 720 hours of charcoal operation. During normal operation, the air flow of the containment FCU system does not pass through the filtration train, thereby, extending adsorber life. As a result, the 720 hour requirement will not be exceeded for the duration of the longer operating cycle.

3. Surveillance test records confirm that the past performance of the containment FCU filtration system has been satisfactory.

Central Control Room Filtration System Operability Test

The Central Control Room (CCR) Ventilation System provides three modes of operation:

1. Normal - Outside air is drawn through a damper and distributed through the control room and computer equipment room. The air is cooled by either of two water cooled air conditioners or heated by steam heating coils. One of two full capacity exhaust fans then returns the air to the outside.

2. 10% Incident Mode - Provides 1,000 cfm of outside air. This outside air combines with 1,000 cfm of CCR return air so that 2,000 cfm of air is routed through the filter unit. 8,500 cfm of CCR return air goes directly to the air conditioning units. The filter unit consists of casing, roughing filters, HEPA filters and charcoal filters.

3. 100% Recirculation - No air is drawn in from outside. 20% of the recirculated air is passed through the filter banks before returning to the Control Room.

Any operating mode may be selected manually by the operator. An automatic or manual safety injection signal, or a high radiation alarm from the control room area radiation monitor R-1 will cause the ventilation system to automatically shift into partial recirculation mode. The system will continue to operate in this mode until the actuation signal is cleared, or the operator selects 100% recirculation mode. The recirculation mode is used whenever the toxic chemical monitors indicate hazardous concentrations of ammonia, carbon dioxide, or chlorine.

The purpose of this test is to verify the integrity and operability of the CCR filtration system. Surveillance and acceptance testing of the CCR filtration system are in accordance with ANSI N510.

In addition to the surveillance tests performed once every refueling, every month the CCR air filtration system is operated for a minimum of 15 minutes to ensure that all dampers, lights and fans function properly. This functional test verifies equipment operability and ensures that the system operates properly. Therefore, the importance of the refuel cycle test is to check for leaks, filter bypassing, and charcoal adsorption capability.

ANSI N510 recommends a frequency for in-place leak tests of the HEPA and charcoal filters as once each operating cycle (defined as 18 months), or after any major system modification or repair. In general, increases in leakage are only expected after filter replacements or system modifications due to improper seating of gaskets and mounting frame leakage. Increasing the operating cycle an additional 6 months will not cause a corresponding increase in bypass leakage around the filters. However, if the filters are replaced during the operating cycle, then in-place leak testing will be performed.

Additionally, ANSI N510 recommends sampling and laboratory testing the charcoal adsorbers once each operating cycle or following 720 hours of charcoal operation. During normal operation,

the charcoal filters are isolated from the CCR ventilation system. Assuming the CCR ventilation system is tested in emergency mode (i.e. with the charcoal filters open to system flow) once a month for 15 minutes, the 720 hour requirement will not be exceeded for the duration of the longer operating cycle [30 months x 0.25 hours/month = 7.5 hours].

A review of surveillance test records for a five year period have shown satisfactory test results for the tests conducted on May 9, 1987, May 31, 1989 and December 6, 1990. In addition, these results did not indicate any decrease in system efficiency over time.

This test may be safely extended for the longer operating cycle, since 1) the longer test interval does not increase system leakage or filter bypass, 2) charcoal adsorber will still be tested every 720 hours, 3) surveillance test records confirm that past performance of the CCR filtration system has been satisfactory, and 4) monthly functional tests ensure mechanical operability of the CCR air filtration system.

Containment Vent Isolation Valve Mechanical Stops

Technical Specification (4.13.A.2) requires verification that mechanical stops on valve actuators PCV-1190, 1191, 1192 are limited to the valve opening angle of 60°.

The ASME Section XI requires local observation of valve stroking every two years. This field verification ensures proper operation of the mechanical stops through observation of the valve actuator position. Local observation for the containment isolation valves is currently conducted during every refueling outage.

In addition to the refueling tests, a quarterly test provides verification of valve stroke times. This test indirectly confirms that the valve opening angle of 60° has not changed significantly.

This test can be extended for the longer operating cycle, since the longer test interval is consistent with ASME Section XI and quarterly testing indirectly detects a significant change in the 60° valve opening angle for containment vent isolation valves.

Section III - No Significant Hazards Evaluation

Consistent with the requirements of 10 CFR 50.92, the enclosed application is judged to involve no significant hazards based on the following information:

(1) Does the proposed license amendment involve a significant increase in the probability or consequences of any accident previously evaluated?

Response:

The proposed changes do not involve a significant increase in the probability or consequences of any accident previously analyzed. These changes propose extending the surveillance intervals for ventilation system testing. The changes do not involve any physical changes to the plant, nor do they alter the way any

equipment functions. An evaluation of past equipment performance and other system testing (e.g., quarterly tests) provides assurance that the longer surveillance intervals will not degrade system performance. Regarding the probability of equipment malfunctions:

- These tests can be safely extended with the longer fuel cycle because a review of surveillance test records and a review of operating occurrence reports substantiates the reliability of these systems. Also, since filtration systems are generally operated intermittently, the operating time between tests would not be increased significantly with the longer operating cycle. With the exception of the containment FCU filtration system, the other filtration systems are inspected or tested monthly to ensure that each system is operating according to specifications. The FCU filtration system may be inspected only during cold shutdown with the fans operational.

- The Technical Specifications require that any time fire, chemical releases or work done on the filters could alter their integrity or after 720 hours of charcoal adsorber use since their last test, the CCR filtration system parameters must be demonstrated to meet the required specifications. The Technical Specifications also require each of these systems to be operated for 15 minutes each month.

- In addition, the Technical Specifications (4.13.A.2) require that the operability of the mechanical stops on the containment vent isolation valves be verified each refueling outage. This is accomplished by local observation of stroke testing (currently required by ASME Section XI every 2 years) and quarterly verification of valve stroke times.

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

Response:

The proposed changes extend surveillance test intervals. The proposed changes do not change the manner in which the ventilation systems function. An evaluation of past equipment performance and a study of on-line testing show the longer surveillance test intervals will not degrade ventilation system equipment. Therefore, the proposed changes do not create any new failure modes or a new accident.

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

Response:

The proposed changes do not reduce the margin of safety as defined in the basis for any Technical Specification. The proposed changes extend surveillance test intervals. Evaluation of the past performance of the equipment indicates that the effects of extending the surveillance test intervals would not involve a significant reduction in the margin of safety.

Section IV - Impact of Changes

These changes will not adversely impact the following:

ALARA Program
Security and Fire Protection Programs
Emergency Plan
FSAR and SER Conclusions
Overall Plant Operations and the Environment

Section V - Conclusions

The incorporation of these changes: 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 any evaluated previously in the Safety Analysis Report; c) will not reduce the margin of safety as defined in the bases for any technical specification; d) does not constitute an unreviewed safety question; and e) involves no significant hazards considerations as defined in 10 CFR 50.92.

Section VI - References

1) IP3 SER
2) IP3 FSAR
3) ANSI N510-1975, "Testing of Nuclear Air-Cleaning Systems"
4) ANSI N510-1989, "Testing of Nuclear Air Treatment Systems"