

ATTACHMENT I TO IPN-88-057

PROPOSED TECHNICAL SPECIFICATIONS RELATED TO
ISOLATION VALVE SEAL WATER SYSTEM AND
WELD CHANNEL AND PENETRATION PRESSURIZATION SYSTEM

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

8901110036 881230
PDR ADOCK 05000286
P PNU

<u>Section</u>	<u>Title</u>	<u>Page</u>
3.10	Control Rod and Power Distribution Limits	3.10-1
	Shutdown Reactivity	3.10-1
	Power Distribution Limits	3.10-1
	Quadrant Power Tilt Limits	3.10-4
	Rod Insertion Limits	3.10-5
	Rod Misalignment Limitations	3.10-6
	Inoperable Rod Position Indication Channels	3.10-6
	Inoperable Rod Limitations	3.10-7
	Rod Drop Time	3.10-7
	Rod Position Monitor	3.10-8
	Notification	3.10-8
3.11	Movable In-Core Instrumentation	3.11-1
3.12	River Level	3.12-1
3.13	Shock Suppressors (Snubbers)	3.13-1
3.14	Fire Protection and Detection Systems	3.14-1
4	Surveillance Requirements	4.1-1
4.1	Operational Safety Review	4.1-1
4.2	Primary System Surveillance	4.2-1
4.3	Reactor Coolant System Integrity Testing	4.3-1
4.4	Containment Tests	4.4-1
	Integrated Leakage Rate	4.4-1
	Sensitive Leakage Rate	4.4-3
	Air Lock Tests	4.4-3
	Containment Isolation Valves	4.4-4
	Containment Modifications	4.4-5
	Report of Test Results	4.4-5
	Annual Inspection	4.4-5
	Residual Heat Removal System	4.4-6
4.5	Tests for Engineered Safety Features and Air Filtration Systems	4.5-1
	System Tests	4.5-1
	Safety Injection System	4.5-1
	Containment Spray System	4.5-2
	Hydrogen Recombiner System	4.5-2
	Containment Air Filtration System	4.5-3
	Control Room Air Filtration System	4.5-4
	Fuel Handling Building Air Filtration System	4.5-5
	Component Tests	4.5-7
	Pumps	4.5-7
	Valves	4.5-7
4.6	Emergency Power System Periodic Tests	4.6-1
	Diesel Generators	4.6-1
	Station Batteries	4.6-2
4.7	Main Steam Stop Valves	4.7-1
4.8	Auxiliary Feedwater System	4.8-1

C. Isolation Valve Seal Water System (IVSWS)

1. The reactor shall not be brought above cold shutdown unless the following requirements are met:
 - a. The IVSW System shall be operable.
 - b. The IVSW System tank shall be maintained at a minimum pressure of 45 psig and contain a minimum of 144 gallons of water.
2. The requirements of 3.3.C.1 may be modified to allow any one of the following components to be inoperable at any one time:
 - a. Any one header of the IVSWS may be inoperable for a period not to exceed 7 consecutive days.
 - b. Any valve required for the functioning of the system during and following accident conditions provided it is restored to an operable status within 7 days and all valves in the system that provide a duplicate function are demonstrated to be operable.
3. If the IVSW System is not restored to an operable status within the time period specified, then:
 - a. If the reactor is critical, it shall be brought to the hot shutdown condition utilizing normal operating procedures. The shutdown shall start no later than at the end of the specified time period.
 - b. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.
 - c. In either case, if the IVSW System is not restored to an operable status within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48 hour period.

D. Weld Channel and Penetration Pressurization System
(WC & PPS)

1. The reactor shall not be brought above cold shutdown unless:
 - a. All required portions of the four WC & PPS zones are pressurized above 41 psig.
 - b. The uncorrected air consumption for the WC & PPS is less than or equal to 0.2% of the containment volume per day.
2. The requirements of 3.3.D.1 may be modified as follows:
 - a. Any one of the four WC & PPS zones may be inoperable for a period not to exceed seven consecutive days.
 - b. The uncorrected air consumption for the WC & PPS may not be in excess of 0.2% of the containment volume per day except for a period not to exceed seven consecutive days. If at any time it is determined that this limit is exceeded, repairs shall be initiated immediately.
3. If the WC & PP System is not restored to an operable status within the time period specified, then:
 - a. If the reactor is critical, it shall be brought to the hot shutdown condition utilizing normal operating procedures. The shutdown shall start no later than at the end of the specified time period.
 - b. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.
 - c. In either case, if the WC & PP System is not restored to an operable status within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48 hour period.

The seven day out of service period for the Weld Channel and Penetration Pressurization System and the Isolation Valve Seal Water System is consistent with W Standardized Technical Specifications. This is allowable because no credit has been taken for operation of these systems in the calculation of off-site accident doses should an accident occur. No other safeguards systems are dependent on operation of these systems. (11) The minimum pressure settings for the IVSWS and WC & PPS during operation assures effective performance of these systems for the maximum containment calculated peak accident pressure of 40.6 psig. (12) A WC & PPS zone is considered that portion of piping downstream of the air receiver discharge check valve up to the last component pressurized by that system portion.

The Component Cooling System is not required during the injection phase of a loss-of-coolant accident. The component cooling pumps are located in the Primary Auxiliary Building and are accessible for repair after a loss-of-coolant accident. (6) During the recirculation phase following a loss-of-coolant accident, only one of the three component cooling pumps is required for minimum safeguards. (7)

A total of six service water pumps are installed, only two of the set of three service water pumps on the header designated the essential header are required immediately following a postulated loss-of-coolant accident. (8) During the recirculation phase of the accident, two service water pumps on the non-essential header will be manually started to supply cooling water for one component cooling system heat exchanger, one control room air conditioner, and one diesel generator; the other component cooling system heat exchanger, the other control room air conditioner, the two other diesel generators and remaining safety related equipment are cooled by the essential service water header. (14)

Two full rated recombination systems are provided in order to control the hydrogen evolved in the containment following a loss-of-coolant accident. Either system is capable of preventing the hydrogen concentration from exceeding 2% by volume within the containment. Each of the systems is separate from the other and is provided with redundant features. Power supplies for the blowers and ignitors are separate, so that loss of one power supply will not affect the remaining system. Hydrogen gas is used as the externally supplied fuel. Oxygen gas is added to the containment atmosphere through a separate containment feed to prevent depletion of oxygen in the air below the concentration required for stable operation of the combustor (12%).

The containment hydrogen monitoring system consists of two safety related hydrogen concentration measurement cabinets with sample lines which pass through the containment penetrations to each containment fan cooler unit plenum. Two of the five sampling lines (from containment fan cooler units nos. 32 and 35) are routed to a common source line and then to a hydrogen monitor. The other three sample lines (from containment fan cooler units nos. 31, 33 and 34) are likewise headered and routed to the other hydrogen monitor. Each monitor has a separate return line. The design hydrogen concentration for operating the recombiner is established at 2% by volume. Conservative calculations indicate that the hydrogen content within the containment will not reach 2% by volume until 12 days after a loss-of-coolant accident. (10) There is, therefore, no need for immediate operation of the recombiner following an accident, and the quantity of hydrogen fuel stored at the site will be only for periodic testing of the recombiners.

Auxiliary Component Cooling Pumps are provided to deliver cooling water for the two Recirculation Pumps located inside the containment. Each recirculation pump is fed by two Auxiliary Component Cooling Pumps. A single Auxiliary Component Cooling Pump is capable of supplying the necessary cooling water required for a recirculation pump during the recirculation phase following a loss-of-coolant accident.

The control room ventilation is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage.

The OPS has been designed to withstand the effects of the postulated worst case Mass Input (i.e., single safety injection pump) without exceeding the 10 CFR 50, Appendix G curve. Curve III on Figure 3.1.A-3 provides the setpoint curve of the OPS PORVs which is sufficiently below the Appendix G curve such that PORVs overshoots would not exceed the allowable Appendix G pressures. Therefore, only one safety injection pump can be available to feed water into the RCS when the OPS is operable. The other pumps must be prevented from injecting water into the RCS. This may be accomplished, for example, by placing the SI pump switches in the trip pull-out position, or by closing and locking (if manual) or de-energizing (if motor operated) at least one valve in the flow path from these pumps to the RCS.

For conditions when the OPS is inoperable, additional restrictions are imposed on the RCS temperature, and pressurizer pressure and level. See Specification 3.1.A.6.b. (3).

References

- | | |
|------------------------|---|
| 1) FSAR Section 9 | 8) FSAR Section 9.6.1 |
| 2) FSAR Section 6.2 | 9) FSAR Section 14.3 |
| 3) FSAR Section 6.2 | 10) FSAR Section 6.8 |
| 4) FSAR Section 6.3 | 11) FSAR Section 6.5 |
| 5) FSAR Section 14.3.5 | 12) Response to Question
14.6, FSAR Volume 7 |
| 6) FSAR Section 1.2 | 13) FSAR Appendix 14C |
| 7) FSAR Section 8.2 | 14) Response to Question
9.35, FSAR Volume 7 |

d. Closure of the containment isolation valves for the purpose of the test shall be accomplished by the means provided for normal operation of the valves.

2. Acceptance Criteria

The measured leakage rate shall be less than $0.75 L_a$ where L_a is equal to 0.1 w/o per day of containment steam air atmosphere at 40.6 psig and 263°F, which are the peak accident pressure and temperature conditions.

3. Frequency

A set of three leakage rate tests shall be performed (during plant shutdown), at approximately equal intervals during each 10-year service period. The third test of each set shall be conducted when the plant is shutdown for the 10-year plant in service inspection.

B. DELETED

C. Sensitive Leakage Rate

1. Test

A sensitive leakage rate test shall be conducted with the containment penetrations, weld channels, and certain double gasketed seals and isolation valve interspaces at a minimum pressure of 41 psig and with the containment building at atmospheric pressure.

2. Acceptance Criteria

The test shall be considered satisfactory if the leak rate for the containment penetrations, weld channel and other pressurized zones is equal to or less than 0.2% of the containment free volume per day.

3. Frequency

A sensitive leakage rate test shall be performed at a frequency of at least every other refueling but in no case at intervals greater than 3 years.

D. Air Lock Tests

1. The containment air locks shall be tested at a minimum pressure of 40.6 psig and at a frequency of every 6-months. The acceptance criteria is included in E.2a. The equipment hatch is to be leak rate tested after every reinsertion prior to requiring containment integrity.

2. Whenever containment integrity is required, verification shall be made of proper repressurization to at least 41 psig of the double-gasket air lock door seal upon closing an air lock door.

ATTACHMENT II TO IPN-88-057

SAFETY EVALUATION OF PROPOSED
TECHNICAL SPECIFICATIONS
RELATED TO WELD CHANNEL AND
PENETRATION PRESSURIZATION SYSTEM

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

I. Description of Change

This application seeks to amend Section 3.3 and Section 4.4 of Appendix A to the Operating License by revising the Limiting Condition for Operation (LCO) for the Weld Channel and Penetration Pressurization System (WC&PPS) and the Isolation Valve Seal Water System (IVSWS) to more closely reflect the system design. The proposed LCO changes will apply to the four independent zones of the WC&PPS and the individual station headers of the IVSWS, rather than to the supply headers of these systems. Consistent with the Westinghouse Standard Technical Specifications the allowable out-of-service time for one individual zone or station header of these systems will be seven days. The proposed change will also relocate an LCO from the Surveillance Requirements, Section 4.4 to Section 3.3.

II. Evaluation of Change

WELD CHANNEL AND PENETRATION PRESSURIZATION SYSTEM:

The WC&PPS serves two functions. The WC&PPS prevents leakage from the containment to the environment during an accident by providing a regulated supply of air to the containment penetrations and inner liner welds at a pressure in excess of the calculated peak accident pressure. The WC&PPS also provides a mechanism for determining containment leak tightness by continuously recording the air consumption required to maintain the WC&PPS at the specified pressure.

The WC&PPS is provided a regulated supply of compressed air at 100 psig by the instrument air system (primary source) or by the station air system (secondary source) or by nitrogen (tertiary backup source). The common header, which supplies the WC&PPS with either instrument air or station air, is subdivided into four zones. The containment penetrations and liner welds are grouped into four independent zones to simplify the process of locating leaks during operation.

In the event that all normal and backup air supplies are lost, each of the four pressurization system zones continues to be supplied with air from its respective air receivers. If the receivers are exhausted before the primary and backup air supplies can be restored, each of the four pressurization zones will be supplied from a nitrogen storage facility. The nitrogen is supplied to each of the zones by a header which connects downstream of the air receivers.

Downstream of the air receiver and the nitrogen header connection, a pressure control valve maintains the downstream pressure at 45 psig, which is approximately 4 psi greater than the calculated peak accident pressure. The air makeup flow to

each zone is recorded. Continuous leak detection of penetrations and weld channels supplied by the WC&PPS is provided by the sum of all four makeup recordings. Technical Specification 4.4.B establishes an upper limit for this leakage at .2% containment volume/day of uncorrected air consumption by the pressurization system. Exceeding this limit requires immediate repair to correct leakage. Shutdown is required after 7 days if leakage cannot be corrected. This operability requirement and LCO are being relocated to the WC&PPS Sections 3.3.D.1 and 3.3.D.2 to maintain consistency with the Appendix A current LCO format.

Technical Specification 3.3.D.1 requires that the electrical and mechanical penetrations and liner weld channels be continuously pressurized above 41 psig when the reactor is above cold shutdown. Technical Specification 3.3.D.2 modifies this requirement to allow any one header of the nitrogen or air pressurization system to be inoperable for a period not to exceed four consecutive days. This LCO can be misinterpreted to mean that all three sources of air/nitrogen be capable of supplying proper pressure where the intent of 3.3.D.2 was to allow temporary relief from maintaining pressure above 41 psig (as required by 3.3.D.1) at the penetrations and weld channels supplied by any one individual header (or zone) of the WC&PPS system. Therefore, the wording of Technical Specifications 3.3.D.1 and 3.3.D.2 will be revised to explicitly apply to the piping and components of each individual zone. Page 3.3-18 of the Basis will also be revised to reflect this applicability. These proposed word changes will still encompass an operability requirement on the nitrogen or air supplies. That is, the supply headers would be considered inoperable if they could not be pressurized by either air or nitrogen, which would in turn render the zones inoperable.

Consistent with the Westinghouse Standard Technical Specifications, Technical Specification 3.3.D.2 will also be revised to allow one zone of the WC&PPS to be inoperable for a period not to exceed seven consecutive days. The change to a seven day allowable out-of-service (OOS) time for the WC&PPS is acceptable as WC&PPS operation was not assumed in the LOCA offsite dose calculation. This OOS change for the WC&PPS is also consistent with the 7 day OOS for continuous containment leakage which is measured by the WC&PPS makeup air supply rate. Furthermore, no other safeguards systems are dependent on the operation of the WC&PPS.

ISOLATION VALVE SEAL WATER SYSTEM (IVSWS):

This system operates to limit fission product release from containment during accident conditions through injection of seal water (or gas in some cases) to block leakage past the seats of selected containment isolation valves (CIVs). The system consists of one seal water supply tank pressurized to a minimum of 45 psig by its own nitrogen (N₂) cylinder bank. This tank in turn supplies seal water to CIVs (or piping between them) through various branch headers off of four IVSWS stations. A separate header off the N₂ bank supplies N₂ at a pressure above 150 psig to CIVs which could experience higher pressures due to various pump heads of safeguards systems.

Upon actuation by safety injection signal (or by manual means in some cases), the IVSWS injects seal water between the two valve discs of the double disc CIV typical of 3 inch or larger penetration lines. For smaller lines, which are typically isolated by a pair of globe valves, water is injected in the piping segment between the globe valves. Thus, the possibility of leakage from the Containment or Reactor Coolant System past the first isolation point is reduced by assuring that if seat leakage does occur, it will be from the IVSWS into the Containment.

Technical Specification 3.3.C.1 requires the IVSWS to be operable with its supply tank filled to at least 144 gallons at 45 psig. Relaxation from this operability requirement is provided by Technical Specification 3.3.C.2. For any one inoperable header or individual valve required for system functioning, four days are allowed for restoration to operable status before plant shutdown is required. The proposed change to paragraph 3.3.C.2 would extend this out-of-service (OOS) time from four days to seven days.

Adding three days to the OOS time for this LCO will have little or no impact on plant risk. Operability of the IVSWS is not considered in the accident analysis and no other safety system is dependent on its operation. The system does provide additional assurance that containment leak rate, in the event of an accident, will be lower than assumed.

One typographical error related to the acronym, "IVSWS," is corrected.

III. No Significant Hazards Evaluation

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

Response

The proposed change involves a revision in application of the WC&PPS and IVSWS operability requirements to more closely reflect system design and safety function. As the safety function and operability requirement of the WC&PPS is to provide compressed air to containment penetrations and liner weld channels, the LCO is clarified to specifically apply to those system distribution zones which supply this air directly to these penetrations. Neither the clarification in applicability of the LCO or the addition of three days to the out-of-service time allowed by these LCOs should significantly impact the availability of these systems to reduce containment leakage in the event of an accident. Since only a small portion of these systems are allowed to be temporarily out-of-service for a short period of time, there is little change in the probability that the WC&PPS and IVSWS will not be able to, at least in part, to perform their function of reducing isolation valve or penetration leakage, if any should occur. In any event, the operability of these systems is not considered in previous evaluations. Therefore, no significant increase in the probability or consequences of an accident previously evaluated are involved.

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

Response

The proposed change does not involve a physical change to any plant systems, structures or components. The proposed change does not adversely affect the manner in which the plant is operated. Hence, the proposed change 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?

Response

The LOCA offsite dose calculations, which do not assume WC&PPS and IVSWS operations, demonstrate that the calculated offsite doses are well within the 10 CFR Part 100 limits. Therefore, the margin of safety between the calculated offsite dose and the regulatory acceptable limits remains unchanged. However, operation of these systems assures that the containment leak rate is lower than that calculated by an uncalculated amount. This represents an additional assurance that the margin of safety remains unchanged. The revision of LCO applicability and out-of-service time for these systems will not significantly impact this additional assurance that containment leakage will be lower than that calculated. Since postulated LOCA assumptions remain unchanged and the proposed change does not involve a physical change to the WC&PPS and IVSWS, a significant reduction in the original margin of safety is not involved.

IV. Impact of Change

This change will not adversely impact the following:

- 1) ALARA Program
- 2) Security and Fire Protection Programs
- 3) Emergency Plan
- 4) FSAR and SER Conclusions
- 5) Overall Plant Operations and the Environment

V. Conclusion

The incorporation of 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 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.

VI. References

1. IP-3 FSAR
2. IP-3 SER