

ATTACHMENT I TO IPN-88-051

PROPOSED TECHNICAL SPECIFICATION CHANGES
RELATED TO
APPLICABILITY OF MISSED SURVEILLANCE REQUIREMENTS

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

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4 SURVEILLANCE REQUIREMENTS

4.1 OPERATIONAL SAFETY REVIEW

Applicability

Applies to items directly related to safety limits and limiting conditions for operation. Performance of any surveillance test outlined in these specifications is not required if the plant condition is the same as the condition into which the plant would be placed by an unsatisfactory result of that test. Failure to perform a surveillance requirement within the allowed surveillance interval (including extensions specified in definition 1.12), shall constitute noncompliance with the operability requirements of the limiting conditions for operation (LCOs). The time limits for associated action requirements are applicable at the time it is identified that a surveillance requirement has not been performed. Action requirements may be delayed for up to 24 hours to permit completion of the missed surveillance when the allowable outage time limits of the action requirements are less than 24 hours (i.e. for LCOs of less than 24 hours, a 24 hour delay period is permitted before entering the LCO; for LCOs greater than 24 hours, no delay period is permitted).

Objective

To specify the minimum frequency and type of surveillance to be applied to plant equipment and conditions.

Specification

- A. Calibration, testing, and checking of analog channel and testing of logic channel shall be performed as specified in Table 4.1-1.
- B. Sampling and equipment tests shall be conducted as specified in Table 4.1-2 and 4.1-3, respectively.

Basis

A surveillance test is intended to identify conditions in a plant that would lead to a degradation of reactor safety. Should a test reveal such a condition, then the Technical Specifications require that, either immediately or after a specified period of time, the plant be placed in a condition which mitigates or eliminates the consequences of additional related casualties or accidents. If the plant is already in a condition which would satisfy the failure criteria of the

test, then plant safety is assured and performance of the test yields either meaningless information or information that is not necessary to determine safety limits or limiting conditions for operation of the plant.

Likewise, systems and components are assumed to be operable as defined in paragraph 1.5, and satisfying safety limits or LCOs for a given plant operating condition, when surveillance requirements have been satisfactorily performed within the allowed surveillance interval and extensions as specified in definition 1.12. However, nothing in this provision shall be construed as implying that systems or components are operable when they are found or known to be inoperable although still meeting the surveillance requirements. LCO action requirements associated with operation in a degraded mode are applicable when surveillance requirements have not been completed within the allowed surveillance interval. The time limits of such LCOs apply from the point in time it is identified that a surveillance has not been performed and not at the time the allowed surveillance interval was exceeded.

For a missed surveillance, if the allowable outage time limits of the applicable LCO action requirements are less than 24 hours or a shutdown is required, then a 24-hour delay is permitted in implementing the action requirements. The purpose of the delay is to permit the completion of a missed surveillance before a shutdown or some other remedial measure precludes completion of the surveillance. This allowance of a delay includes consideration of the plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance, and the safety significance of the delay in completing the required surveillance. If a surveillance is not completed within the 24-hour delay, then the time limits of the associated action requirements are applicable at that time. When a surveillance is performed within the 24-hour delay and the Surveillance Requirements are not met (e.g. the system or component is declared inoperable), the time limits of the LCO action requirements are applicable at that time.

Failure to perform the surveillance within the allowed surveillance interval and extension as specified in definition 1.12 is still a violation of the LCO operability requirement subject to enforcement and reportability requirements as may be applicable.

Based on experience in operation of both conventional and nuclear plant systems, when the plant is in operation, the minimum checking frequency of once per shift is deemed adequate for reactor and steam system instrumentation.

Calibration

Calibrations are performed to ensure the presentation and acquisition of accurate information.

The nuclear flux (linear level) channels are calibrated daily against a heat balance standard to account for errors induced by changing rod patterns and core physics parameters.

Other channels are subject only to the "drift" errors induced within the instrumentation itself and, consequently, can tolerate longer intervals between calibration. Process system instrumentation errors induced by drift can be expected to remain within acceptable tolerances if recalibration is performed at intervals of each refueling shutdown.

Substantial calibration shifts within a channel (essentially a channel failure) will be revealed during routine checking and testing procedures.

Thus, minimum calibration frequencies of once-per-day for the nuclear flux (linear level) channels, and once each refueling shutdown for the process system channels is considered acceptable.

Testing

The minimum testing frequency for those instrument channels connected to the safety system is based on an average unsafe failure rate of 2.5×10^{-6} failure/hrs. per channel. This is based on operating experience at conventional and nuclear plants. An unsafe failure is defined as one which negates channel operability and which, due to its nature, is revealed only when the channel is tested or attempts to respond to a bona fide signal.

For a specified test interval W and an M out of N redundant system with identical and independent channels having a constant failure rate λ , the average availability A is given by:

$$A = \frac{W - Q \left(\frac{W}{N-M+2} \right)^{N-M+1}}{W} = 1 - \frac{N!}{(N-M+2)! (M-1)!} (\lambda W)$$

where A is defined as the fraction of time during which the system is functional, and Q is the probability of failure of such a system during a time interval W .

For a 2-out-of-3 system $A = 0.9999968$, assuming a channel failure rate, λ , equal to $2.5 \times 10^{-6} \text{ hr}^{-1}$ and a test interval, W , equal to 720 hrs.

This average availability of the 2-out-of-3 system is high, hence the test interval of one month is acceptable.

Because of their greater degree of redundancy, the 1/3 and 2/4 logic arrays provide an even greater measure of protection and are thereby acceptable for the same testing interval. Those items specified for monthly testing are associated with process components where other means of verification provide additional assurance that the channel is operable, thereby requiring less frequent testing.

ATTACHMENT II TO IPN-88-051

SAFETY EVALUATION

RELATED TO

APPLICABILITY OF MISSED SURVEILLANCE REQUIREMENTS

NEW YORK POWER AUTHORITY
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Section I - Description of Changes

Using the guidance provided by Generic Letter 87-09, this proposed change will clarify applicability of limiting conditions for operation and associated action requirements when a surveillance requirement is not performed within its allowed surveillance interval. It will state that a missed surveillance shall constitute noncompliance with the operability requirements of the related LCOs. It will specify that time limits for required actions for operating in a degraded mode apply at the time it is identified that a surveillance requirement has not been performed.

For allowable outage times that are less than 24 hours, a 24 hour delay period will be added to allow performance of a missed surveillance to satisfy operability requirements before implementing action requirements applicable to operating in a degraded mode.

The basis will be expanded accordingly to ensure the proposed changes for missed surveillance requirements are implemented consistent with the guidance provided in GL 87-09.

Section II - Evaluation of Changes

GL 87-09 was issued June 4, 1987 as part of an effort to implement short-term improvements to the Technical Specifications. It encouraged licensees to propose changes to resolve problems encountered in applying general requirements of LCOs and surveillance requirements in the Standardized Technical Specifications. Review of GL 87-09 determined that only the second specific problem identified in the generic letter was applicable to the nonstandard Technical Specifications of Indian Point 3 (IP-3). Using the NRC provided guidance the above described change was proposed and is evaluated below.

The phrase, "verified by testing and tested at the frequency required by the Technical Specifications" is part of the definition of "Operable" for plant systems and components. To avoid any potential for oversight or misinterpretation, it was felt necessary to add to the description of surveillance applicability the fact that failure to perform a surveillance requirement within the allowed surveillance interval, constitutes a violation of LCO operability requirements. For further clarification the statement that time limits of LCO action requirements begin at the time a missed surveillance is identified was also added to the surveillance section of the Technical Specifications.

Failure to perform a surveillance is primarily a question of not having verified operability and not one of assumed inoperability. In the large majority of cases, performance of a surveillance demonstrates continued operability rather than lack of operability. The satisfactory completion of a missed surveillance before allowable outage time is exceeded then is sufficient to relieve compliance with LCO action requirements for inoperability, since operability is demonstrated maintained before and after the LCO in question could be applied.

Performance of a missed surveillance as soon as possible is the primary concern where a surveillance interval has been exceeded, since the system or component in question is now outside the basis for operability assumed in the Technical Specification analysis. Where allowable outage time for an action requirement is not of sufficient duration to permit the completion of the missed surveillance in a safe and reliable manner, then a delay should be allowed before applying shutdown requirements. This is desirable since it would prevent placing the plant in a transient condition, increasing the potential for a demand on the system or component being tested. It avoids the situation of testing in parallel with plant shutdown, in order to satisfy surveillance requirements and allow return to power. From a standpoint of overall plant safety, if the surveillance showed the system or component to be inoperable, it would be better to attempt restoration of the affected system to an operable status before changing plant condition.

Based on considerations of plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance, as well as the safety significance of the delay in completion of the surveillance, 24 hours would be an acceptable delay before applying action requirements whose time limits are less than 24 hours. Twenty-four hours is sufficient to allow for special circumstance that might require this much time to ensure the surveillance is completed in a safe and adequate manner without undue regard from pressure to comply with LCO action requirements. The 24-hour time limit is an acceptable balance between the risks of delay in LCO compliance to allow test completion against the risks of a plant upset and challenge to safety systems while shutting down to comply with action requirements before a surveillance is completed.

Additional guidance is provided in the basis section of the surveillance requirements to prevent any misconception that the 24-hour delay might be used to extend the required surveillance interval of the Technical Specifications. It ensures that even if a missed surveillance is completed satisfactorily within this delay period, a violation of the Technical Specifications is still recognized.

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 an accident previously evaluated?

Response:

A significant increase in the in the probability or consequences of an accident previously evaluated is not involved. A small increase in risk is associated with delaying the implementation of an LCO for 24 hours to allow completion of a missed surveillance. This risk is offset by a reduction in the possibility of a plant upset and challenge to safety systems. The risk of plant upset is greater if testing to complete a surveillance requirement is in progress at the time plant shutdown is commenced to comply with an LCO. It is preferable to allow time to complete the surveillance and demonstrate operability prior to changing plant status. The increase in safety gained from demonstrating operability during the delay period balances out the risk associated with the delay. In the case where inoperability is determined by testing during this extension, plant safety is enhanced if the affected equipment can be restored to an operable status prior to changing the plant's operating condition.

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

Response:

The proposed change, as analyzed, does not involve a new or different kind of accident, from that previously evaluated. The definition of operability is clarified for the case of a missed surveillance. The application of LCO action requirements is expanded upon in this case and a delay is allowed by this proposed change to complete a missed surveillance before taking required actions. This affects only the impact of surveillance activities on plant operations by providing interpretation to the operator regarding the implementation of associated LCOs. Therefore, the possibility of a new or different kind of accident is not created.

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

Response:

A significant reduction in a margin of safety is not involved. An allowance for testing while operating is incorporated in the design of safety systems provided to prevent plant transients from approaching margins of safety. By allowing the completion of a missed surveillance before applying LCO shutdown requirements, this change will in fact reduce the potential for a challenge to safety systems while they are undergoing required testing.

In the April 6, 1983 Federal Register, Vol. 048, No. 67, Page 14870, the NRC published a list of examples of amendments that are not likely to involve a significant hazards concern. Example (vi) of that list applies to this proposed change to clarify application of LCO action requirements for missed surveillance requirements and states:

(vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

Section 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 or SER Conclusions
- (5) Overall Plant Operations and the Environment

Section V - Conclusions

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.

Section VI - References

- (a) IP-3 FSAR
- (b) IP-3 SER
- (c) GL 87-09