Attachment A

Technical Specification
Page Revisions

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
DECEMBER, 1989

1.0 DEFINITIONS

The following terms are defined for uniform interpretation of the specifications.

1.1 a. RATED POWER

A steady state reactor thermal power of 2758 MWT.

b. THERMAL POWER

The total core heat transfer rate from the fuel to the coolant.

1.2 REACTOR OPERATING CONDITIONS

1.2.1 Cold Shutdown Condition

When the reactor is subcritical by at least 1% $\Delta k/k$ and Tavg is $\leq 200^{o}F$.

1.2.2 Hot Shutdown Condition

When the reactor is subcritical, by an amount greater than or equal to the margin as specified in Technical Specification 3.10 and T_{avg} is $> 200^{o}F$ and $\leq 555^{o}F$.

1.2.3 Reactor Critical

When the neutron chain reaction is self-sustaining and $k_{eff} = 1.0$.

1.2.4 Power Operation Condition

When the reactor is critical and the neutron flux power range instrumentation indicates greater than 2% of rated power.

1.2.5 Refueling Operation Condition

Any operation involving movement of core components when the vessel head is completely unbolted.

1.3 OPERABLE-OPERABILITY

A system, subsystem, train, component or device shall be operable or have operability when it is capable of performing its intended safety function(s). Implicit in this definition shall be the assumption that necessary instrumentation, controls, electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its safety function(s) are also capable of performing their related support functions.

1.4 PROTECTIVE INSTRUMENTATION LOGIC

1.4.1 Analog Channel

An arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. An analog channel loses its identity where single action signals are combined.

1.4.2 Logic Channel

A group of relay contact matrices which operate in response to the analog channels signals to generate a protective action signal.

1.5 DEGREE OF REDUNDANCY

The difference between the number of operable channels and the number of channels which when tripped will cause an automatic system trip.

1.6 INSTRUMENTATION SURVEILLANCE

1.6.1 Channel Check

A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination shall include, where possible, comparison of the channel with other independent channels measuring the same variable.

1.6.2 Channel Functional Test

Injection of a simulated signal into the channel to verify that it is operable, including alarm and/or trip initiating action.

1.6.3 Channel Calibration

Adjustment of channel output such that it responds, with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including alarm or trip, and shall be deemed to include the channel functional test.

1.6.4 Source Check

A Source Check is the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.

1.7 CONTAINMENT INTEGRITY

Containment integrity is defined to exist when:

a. All non-automatic containment isolation valves which are not required to be open during accident conditions, except those required to be open for normal plant operation or testing as identified in Specification 3.6.1, are closed and blind flanges are installed where required.

b. The equipment door is properly closed.

c. At least one door in each personnel air lock is properly closed.

d. All automatic containment isolation valves are either operable or in the closed position, or isolated by a closed manual valve or flange that meets the same design criteria as the isolation valve.

e. Containment leakage has been verified in accordance with the surveillance requirements of Specifications 4.4, and the requirements of Specifications 3.3.D are being satisfied.

1.8 QUADRANT POWER TILT RATIO

The quadrant power tilt ratio shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater. With one excore detector inoperable, the remaining three detectors shall be used for computing the average.

1.9 SURVEILLANCE INTERVALS

Unless otherwise noted in an individual surveillance requirement, surveillance intervals are defined in Table 1-1. Extension of all surveillance intervals is permitted consistent with the requirements of 4.0.1.

1.10 Deleted

1.11 PRESSURE BOUNDARY LEAKAGE

Pressure Boundary Leakage shall be leakage (except steam generator tube leakage) through a non-isolatable fault in a Reactor Coolant System component body, pipe wall or vessel wall.

1.12 IDENTIFIED LEAKAGE

Identified Leakage shall be:

a. Reactor coolant system leakage into closed systems such as pump seal or valve packing leaks that are captured and conducted to a collecting tank, or

b. Reactor coolant system leakage through a steam generator to the secondary system, or

c. Reactor coolant system leakage through the RCS/RHR pressure isolation valves, or

d. Reactor coolant system leakage into the containment free volume from sources that are both specifically located and known either not to interfere with the operation of required leakage detection systems or not to be pressure boundary leakage.

1.13 UNIDENTIFIED LEAKAGE

Unidentified Leakage shall be all reactor coolant system leakage which is not identified leakage.

1.14 DOSE EQUIVALENT I-131

The Dose Equivalent I-131 is that concentration of I-131 which would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134 and I-135 actually present. The thyroid conversion factors shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites".

1.15 GASEOUS RADWASTE TREATMENT SYSTEM

A Gaseous Radwaste Treatment System is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

1.16 MEMBER(S) OF THE PUBLIC

Member(s) of the Public includes all persons who are not occupationally associated with the site. This category does not include employees of either utility, their contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries.

1.17 OFFSITE DOSE CALCULATION MANUAL (ODCM)

The Offsite Dose Calculation Manual shall contain the current methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints, and in the conduct of the environmental radiological monitoring program.

1.18 PROCESS CONTROL PROGRAM (PCP)

The Process Control Program (PCP) is a manual containing and/or referencing selected operational information concerning the solidification of radioactive wastes from liquid systems.

1.19 PURGE - PURGING

Purge or Purging is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

1.20 SITE BOUNDARY

The Site Boundary is that line beyond which the land is neither owned, leased, nor otherwise controlled by either site licensee.

1.21 SOLIDIFICATION

Solidification is the conversion of wet wastes into a form that meets shipping and burial ground requirements.

1.22 UNRESTRICTED AREA

An Unrestricted Area is any area at or beyond the Site Boundary access to which is not controlled by either site licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

1.23 VENTILATION EXHAUST TREATMENT SYSTEM

A Ventilation Exhaust Treatment System is any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmosphere cleanup systems are not considered to be ventilation exhaust treatment system components.

1.24 VENTING

Venting is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required.

TABLE 1-1

Frequency Notation

Notation	Test Frequency/Requirements	Surveillance Interval
Shift (S)	At least twice per calendar day	N.A.
Daily (D)	At least once per calendar day	N.A.
Weekly (W)	At least once per week	7 days
Monthly (M)	At least once per month	31 days
Quarterly (Q)	At least once per three months	92 days
Semi-Annually (SA)	At least once per six months	6 months
Annually (A)	At least once per 12 months	12 months
Refueling (R)	At least once per 18 months	18 months
S/U	Prior to each reactor startup	--
P	Completed prior to each release	--
N.A.	Not Applicable	--

4.0 SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Interval Extension

Unless otherwise noted, each surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified interval. Excluded from this provision are the following surveillances whose intervals are solely defined by the applicable Technical Specification paragraphs and cannot be extended.

4.2.1 Inservice Testing - Those tests with a current two year interval whose basis is 10 CFR 50, Appendix J.

4.4A Integrated Leakage Rate

4.4B Sensitive Leakage Rate

4.4C Containment Isolation Valves.

Basis

Specification 4.0.1 establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance; e.g., transient conditions or other ongoing surveillance or maintenance activities. It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with an 18 month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for surveillances that are not performed during refueling outages. The limitation of Specification 4.0.1 is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.

4.1 OPERATIONAL SAFETY REVIEW

Applicability

Applies to items directly related to safety limits and limiting conditions for operation.

Objective

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

Specifications

a. Calibration, testing and checking of analog channels, and testing of logic channels shall be performed as specified in Table 4.1-1.

b. Sampling and equipment tests shall be conducted as specified in Tables 4.1-2 and 4.1-3, respectively.

c. Performance of any surveillance test outlined in these specifications is not immediately 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. Such tests will be performed before the plant is removed from the subject condition that has precluded the immediate need to run the test. If the test provisions require that a minimum higher system condition must first be established, the test will be performed promptly upon achieving this minimum condition. The following surveillance tests, however, must be performed without the above exception:

- o Table 4.1-1 Items 3 and 19
- o Table 4.1-2 Items 1, 2, and 10
- o Table 4.1-3 Items 2 and 6

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, 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 satisfies the failure criteria of the test, then plant safety is not compromised and performance of the test yields information that is not necessary to determine safety limits or limiting conditions for operation of the plant. The surveillance test need not be performed, therefore, as long as the plant remains in this condition. However, this surveillance test should be performed prior to removing the plant from the subject condition that has precluded the immediate need to run the test. In the situation in which the test provisions specify that the test must be performed at some minimum system condition, this condition will first be achieved and the test will be performed promptly thereafter prior to proceeding to a higher system condition.

a. CHECK

Failures such as blown instrument fuses, defective indicators, faulted amplifiers which result in "upscale" or "downscale" indication can be easily recognized by simple observation of the functioning of an instrument or system. Furthermore, such failures are, in many cases, revealed by alarm action, and a Check supplements this type of built-in surveillance.

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

b. 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.

c. 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:

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

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 2.5×10^{-6} 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 B

Safety Assessment

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
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Description of Change

The proposed Technical Specifications contained in Attachment A have been prepared to conform with the guidance contained in Generic Letter 89-14, "Line-Item Improvements in Technical Specifications - Removal of the 3.25 Limit on Extending Surveillance Intervals".

The guidance forwarded in Generic Letter 89-14 is tailored to the Standard Technical Specifications. The Indian Point Unit 2 Technical Specifications differ in format from the Standard Technical Specifications. Therefore a comparison between the two documents was conducted to identify those surveillances which are unique to Indian Point, or otherwise constrained, and to exclude them from the extended surveillance clause. Those so identified are as follows:

Section 4.2.1 Inservice Testing

Those tests whose interval is predicated upon 10 CFR 50 Appendix J are excluded from interval extension.

Section 4.4 Containment Tests

A. Integrated Leakage Rate

The surveillance interval is established within the specification pursuant to 10 CFR 50, Appendix J. Therefore, the 25% interval extension does not apply.

B. Sensitive Leakage Rate

The surveillance interval is established within the specification pursuant to 10 CFR 50, Appendix J for Type B Tests. Therefore, the 25% interval does not apply.

C. Containment Isolation Valves

The surveillance interval is established within the specification pursuant to 10 CFR 50, Appendix J for Type C Tests. Therefore the 25% interval extension does not apply.

All other surveillances contained within the provisions of Section 4. "Surveillance Requirements" of the Indian Point Unit 2 Technical Specification have been determined to fall within the scope of Generic Letter 89-14 and their surveillance intervals would be subject to the proposed amendment.

Evaluation

The Technical Specifications require a number of surveillance tests to be performed approximately once every 18 months during a refueling outage. The Technical Specifications also include a provision which permits any surveillance interval to be extended by 25%, provided that over three consecutive cycles the total time interval does not exceed 3.25 times the specified surveillance.

The 18 month refueling surveillance interval is based upon what was once perceived to be the expected fuel cycle. There appears to be no documented basis for an 18 month surveillance interval nor for the 3.25% limit except for the expected fuel cycle. However, in previous I.P.-2 operating cycles, extended outages due to unplanned events and fuel cycles extended due to low power operation have tended to distort the 18 month fuel cycle. In 1987, an exemption to the 3.25 limit was sought due to the cumulative effects realized in previous fuel cycles. Prior to this, an earlier identical exemption was sought and granted.

Presently, fuel is available which permits an operating cycle several months in excess of the original 18 month cycle. This development further negates the basis for the original 18 month refueling surveillance cycle. In consideration of the other factors which may extend an operating cycle, compliance with the 18 month cycle with the 3.25 limitation is only practical if surveillances are performed on a twelve month cycle rather than eighteen months. This results in increased expense in terms of resources and radiation exposure with no concomitant increase in safety. The alternative approach would be to seek Technical Specification relief pursuant to Generic Letter 83-27 on a continuous basis.

Relaxation of the 3.25 limitation is also justified for other surveillances which are not based on a refueling cycle, in certain instances. In those cases where plant conditions, such as equipment out of service for maintenance, could lead to an increased risk to safety, extension of the nominal surveillance interval is justifiable, regardless of past surveillance schedule history. Application of the 3.25 limitation would be arbitrary. Aversion of unwarranted reactor trips or unnecessary challenges to safety related equipment outweigh the slight risk that might arise from an extended interval.

By permitting the 1.25 extension, the NRC has acknowledged the acceptability of the extended surveillance concept. Analyses performed in support of previous 3.25 exemptions indicated that those equipment failures detected by surveillances would not render the Indian Point Unit 2 plant outside its design basis. This is due to redundancy in plant design and/or the degree of conservatism employed in the test acceptance criteria. In no reportable event has any significance been given to whether a surveillance was performed on an 18 month basis or a 22.5 month basis.

Based on the foregoing, it is concluded that deleting the 3.25 limitation for three successive refueling surveillances and modification of its applicability for surveillances performed at other frequencies does not represent a significant decrease in the margin of safety.

Basis for No Significant Hazards Consideration Determination

The Commission has provided guidance concerning the application of the standards for determining whether a significant hazards consideration exists by providing certain examples (51 FR 7744). Example (vi) of those involving no significant hazards considerations discusses a change which may reduce a safety margin but where the results are clearly within all acceptable criteria with respect to the system or component. The proposed change to extend the surveillance interval to 1.25 times the nominal valve is in a less restrictive direction and would appear to reduce a safety margin, however not to the extent where a significant hazard is deemed to exist, based upon the following considerations:

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

   The proposed surveillance interval extension does not involve any physical change in plant equipment and would not affect the capability of current instrumentation and components, as they exist at I.P.-2, to perform their intended functions and, as such, has no effect on the cause mechanism or the consequences of an accident.

   Under present circumstances extension of a surveillance interval by 25% is acceptable for two out of three consecutive surveillance cycles. There has been no perceptible compromise of safety noticed by implementing 25% surveillance interval extensions. Extension of the surveillance interval during operation can be of benefit if plant status is not conducive to the surveillance. Since many surveillances render the equipment inoperable during the period of the surveillance test, there is a decrease in redundancy should other trains be out of service for maintenance. Therefore it is concluded that the proposed change will not increase the probability or consequences of an accident.

2. Does the change create the possibility of a new or different kind of accident from any accident previously analyzed?

   Based on experience, implementation of an extended surveillance interval is not expected to impose a significant risk in terms of equipment reliability. Other periodic tests, such as channel checks, have in the past provided adequate assurance of instrumentation availability. The implementation of the extended surveillance interval has not resulted in an increase in multiple failures. Where equipment has not passed the surveillance test criteria, sufficient redundancy has existed in terms of redundancy and backup systems such that the plant has never been rendered outside of its design basis in terms of ability to recover from a hypothetical accident. Since there are no expected physical modifications stemming from this amendment or alteration in method of plant operation, it is concluded that the possibility of a new or different type of accident from that previously evaluated does not exist.