ATTACHMENT I TO IPN-95-029

PROPOSED TECHNICAL SPECIFICATION CHANGES

RELATED TO

INDICATING INSTRUMENT CALIBRATIONS AND 24 MONTH OPERATING CYCLES

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

Channel Description	Check	Calibrate	Test	Remarks
e. Main Steam Lines Process Radiation Monitors (R-62A, R-62B, R-62C, and R-62D)	D	24M	Q	
f. Gross Failed Fuel Detectors (R-63A and R-63B)	D	24M	Q	
16. Containment Water Level Monitoring System:				
a. Containment Sump	N.A.	24M	N.A.	Narrow Range, Analog
b. Recirculation Sump	N.A.	24M	N.A.	Narrow Range, Analog
c. Containment Building Water Level	N.A.	24M	N.A.	Wide Range
17. Accumulator Level and Pressure	S***	18M	N.A.	
18. Steam Line Pressure	S	24M	Q	
19. Turbine First Stage Pressure	S	24M	Q	
20a. Reactor Trip Relay Logic	N.A.	N.A.	TM	
20b. ESF Actuation Relay Logic	N.A.	N.A.	TM	
21. Turbine Trip Low Auto Stop Oil Pressure	N.A.	24M	N.A.	
22. DELETED	DELETED	DELETED	DELETED	
23. Temperature Sensor in Auxiliary Boiler Feedwater Pump Building	N.A.	N.A.	18M	
24. Temperature Sensors in Primary Auxiliary Building				
a. Piping Penetration Area	N.A.	N.A.	24M	
b. Mini-Containment Area	N.A.	N.A.	24M	
c. Steam Generator Blowdown Heat Exchanger Room	N.A.	N.A.	24M	

TABLE 4.1-1 (Sheet 4 of 6)

Channel Description	Check	Calibrate	Test	Remarks
25. Level Sensors in Turbine Building	N.A.	N.A.	24M	
26. Volume Control Tank Level	N.A.	18M	N.A.	
27. Boric Acid Makeup Flow Channel	N.A.	24M	N.A.	
28. Auxiliary Feedwater:				
a. Steam Generator Level	S	24M	Q	Low-Low
b. Undervoltage	N.A.	24M	24M	
c. Main Feedwater Pump Trip	N.A.	N.A.	24M	
29. Reactor Coolant System Subooling Margin Monitor	D	18M	N.A.	
30. PORV Position Indicator	N.A.	N.A.	24M	Limit Switch
31. PORV Position Indicator	D	24M	24M	Acoustic Monitor
32. Safety Valve Position Indicator	D	24M	24M	Acoustic Monitor
33. Auxiliary Feedwater Flow Rate	N.A.	24M	N.A.	
34. Plant Effluent Radioiodine/ Particulate Sampling	N.A.	N.A.	18M	Sample line common with monitor R-13
35. Loss of Power				
a. 480v Bus Undervoltage Relay	N.A.	24M	M	
b. 480v Bus Degraded Voltage Relay	N.A.	18M	M	
c. 480v Safeguards Bus Undervoltage Alarm	N.A.	24M	M	
36. Containment Hydrogen Monitors	D	Q	M	

Amendment No. ~~38~~, ~~44~~, ~~54~~, ~~63~~, ~~67~~, ~~74~~, ~~93~~, ~~125~~, ~~136~~, ~~137~~, ~~142~~, ~~144~~, ~~150~~,

TABLE 4.1-1 (Sheet 5 of 6)

Channel Description	Check	Calibrate	Test	Remarks
37. Core Exit Thermocouples	D	N.A.	18M	
38. Overpressure Protection System (OPS)	D	18M	18M	
39. Reactor Trip Breakers	N.A.	N.A.	TM(1)	1) Independent operation of under-voltage and shunt trip attachments
			24M(2)	2) Independent operation of under-voltage and shunt trip from Control Room manual push-button
40. Reactor Trip Bypass Breakers	N.A.	N.A.	(1)	1) Manual shunt trip prior to each use
			24M(2)	2) Independent operation of under-voltage and shunt trip from Control Room manual push-button
			24M(3)	3) Automatic undervoltage trip
41. Reactor Vessel Level Indication System (RVLIS)	D	18M	N.A.	
42. Ambient Temperature Sensors Within the Containment Building	D	24M	N.A.	
43. River Water Temperature # (installed)	S	18M	N.A.	1) Check against installed instrumentation or another portable device
44. River Water Temperature # (portable)	S (1)	Q (2)	N.A.	2) Calibrate within 30 days prior to use and quarterly thereafter
45. Steam Line Flow	S	24M	Q	Engineered Safety Features circuits only

Amendment No. ~~38~~, ~~54~~, ~~65~~, ~~74~~, ~~78~~, ~~93~~, ~~98~~, ~~107~~, ~~123~~, ~~126~~, ~~137~~, ~~140~~, ~~142~~,

TABLE 4.10-2

SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS			
INSTRUMENTS AND SENSOR LOCATION	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Triaxial Time-History Accelographs			
a. EL 46' -0" VC Base Mat	M*	24M	SA
b. EL 99' -0" VC Wall	M*	24M	SA
2. Triaxial Peak Accelographs			
a. STM GEN #31	NA	24M	NA
b. RC Pump #31	NA	24M	NA
c. Pressurizer	NA	24M	NA
3. Triaxial Response-Spectrum Recorders			
a. EL 46' -0" VC Base Mat**	M	24M	SA

24M - At least once per 24 months

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* Except seismic trigger
** With reactor control room indications.

ATTACHMENT II TO IPN-95-029

SAFETY EVALUATION

RELATED TO

INDICATING INSTRUMENT CALIBRATIONS AND 24 MONTH OPERATING CYCLES

TECHNICAL SPECIFICATION CHANGES

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

Section I - Description of Changes

Starting with cycle nine (that began in August 1992), Indian Point 3 began operating on 24 month cycles, instead of the previous 18 month cycles. This application for amendment to the Indian Point 3 Technical Specifications proposes to change the frequency of Indicating Instrument calibrations to accommodate operation with a 24 month operating cycle. The specific changes include the frequency for calibrating the following instruments:

- containment temperature channels,
- containment water level monitoring system channels,
- seismic instrumentation channels, and
- auxiliary feedwater flow rate channels.

In addition, this application contains a revision to item 37 of Table 4.1-1 concerning testing requirements for the core exit thermocouples.

Section II - Evaluation of Changes

Starting with cycle nine (that began in August 1992), Indian Point 3 began operating on 24 month cycles, instead of the previous 18 month cycles. To avoid either a separate surveillance outage or an extended mid-cycle outage, changes are required to system surveillance test intervals. In evaluating the extension of indicating instrument calibration intervals to be consistent with the length of the operating cycle, the following factors were considered: past equipment performance and the effect on system safety functions, the results of loop accuracy and setpoint calculations (including 30 month uncertainty values), and the effect on the plant's Emergency Operating Procedures (EOPs) and safe plant shutdown. Also considered was the fact that calibration of certain indicating instrument circuits while the plant is on-line is impractical because equipment located inside containment is not readily accessible (an ALARA concern).

Calibration Extension Program

The NRC staff has determined that licensees should address a number of issues to provide an acceptable basis for extending the calibration interval for instruments that are used to perform safety functions. NRC Generic Letter 91-04, Enclosure 2 (Reference 3) specifies the licensee actions to be taken to address these issues. The "actions" include:

1) confirming that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval;

2) confirming that the values of drift for each instrument type (make, model and range) and application have been determined with a high probability and a high degree of confidence; and providing a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data;

3) confirming that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type and application that performs a safety function; and providing a list of the channels by technical specification section that identifies these instrument applications;

4) confirming that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis; providing proposed technical specification changes to update trip setpoints to accommodate larger drift errors, if necessary, and providing a summary of the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded;

5) confirming that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation;

6) confirming that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibrations; and

7) providing a summary description of the program for monitoring and assessing the effects on increased calibration surveillance intervals on instrument drift and its effect on safety.

To satisfy the requirements of Enclosure 2 to Generic Letter 91-04, the general approach taken by the New York Power Authority (NYPA) in evaluating the proposed calibration extensions includes the comparison and analysis of actual versus theoretical instrument performance, the statistical projection of actual field drift values to arrive at maximum expected future drift values over a 30 month interval, and when necessary, updating loop accuracy/setpoint calculations to accommodate postulated increases in drift. The indicating loop component Instrument Drift Analysis (Reference 4) assesses actual past and predicted future instrument drift, and addresses Actions 1, 2, and 3 listed above. The loop accuracy/setpoint calculations address Actions 4, 5, and 6 of Enclosure 2 to Generic Letter 91-04 (where applicable). The monitoring program established in response to Action 7 is described briefly later in this evaluation. The Indicating Instruments Surveillance Test Extensions report (Reference 5) brings the results of the drift analysis and the loop accuracy/setpoint calculations together, to complete the requirements of items 3, 4, and 6. The report evaluates the results, identifies the technical specification changes required, and presents/documents justification for the proposed extensions. Brief descriptions of the instrument drift analysis and the loop accuracy/setpoint calculations are presented below.

<u>Instrument Drift Analysis</u>

An instrument drift analysis (IDA) was performed for all of the indicating loop components that are currently calibrated once every 18 months. The purpose of the IDA (Reference 4) is to assess extending the calibration intervals from the current 18 months to a maximum of 30 (24 + 25%) months. The analysis (1) compares past instrument performance to acceptance limits (the vendor drift allowance or calibration tolerance), and (2) predicts future drift by statistically extrapolating the derived drift data to arrive at a bounding value for a 30 month interval.

The Authority recently submitted proposed technical specification changes for extending reactor protection system (RPS) calibrations to accommodate a 24 month cycle (Reference 6). Attachment III of that submittal was an Instrument Drift Analysis for the reactor protection system, including a summary description of the methodology used in preparing the IDA. A similar drift analysis (Reference 4) was performed for the indicating instruments covered by the enclosed proposed technical specification changes. The RPS drift analysis is representative of the drift analyses performed to support the 24 month cycle project, including the IDA for the indicating loop components.

Loop Accuracy/Setpoint Calculations

Setpoint calculations establish channel uncertainties for indication circuits used in the EOPs. These calculations show that projected instrument errors caused by drift and other uncertainties are acceptable for control of plant parameters to effect a safe shutdown. Reference 6, Attachment II, described the use of drift information in setpoint calculations. The only notable difference between the methodology presented previously and the IDA for the indicating loop components is the maximum expected drift is not specified at 95% probability and 95% confidence level in all the indicating loop analyses. Rather, instruments with limited calibration data were evaluated at a lower confidence level and future drift was predicted based on statistical extrapolation, engineering judgement, and the relative importance of the setting for safe shutdown.

The following technical specification change evaluations identify when EOP setpoints changes are required to accommodate larger uncertainties.

Drift Monitoring Program

In accordance with Generic Letter 91-04, a program to monitor future calibration data was established to assess the effect a longer calibration interval has on instrument drift. The intent of the program is to confirm that future drift values are within the projected limits calculated in the instrument drift analyses (IDAs). The drift monitoring program was described further in Reference 6, Attachment II.

The Authority's 24 month cycle program, including drift analyses, setpoint calculations, and drift monitoring was discussed at a February 23, 1993 meeting with NRC staff members. (See Reference 7.)

Specific Technical Specification Changes

Calibration of Containment Temperature Channels

The operator utilizes containment temperature detectors to monitor the containment atmosphere temperature. Containment temperature is sensed by five detectors, each located by the inlet of a recirculation fan-cooler unit. The average of the temperature devices is displayed on a single indicator in the Control Room. Indication of containment temperature is not required for accident mitigation, and is used in the Emergency Operating Procedures (EOPs) as an indication to the operator of adverse conditions in the containment.

In accordance with Generic Letter 91-04, extension of the calibration interval to support the longer operating cycle must consider: past instrument performance, projected instrument performance, and confirmation that projected instrument drift is consistent with the setpoint and accident analyses.

An assessment of past instrument drift was performed to determine whether calibration results were within allowable limits. Instrument drift for containment temperature instruments was established by comparing "as found" channel conditions to the previous calibration's "as-left" conditions. There were only a limited number of calibration data points for both the RTD circuits and the temperature indicator; however, the calibration results were within the specified calibration tolerance 100% of the time.

Future instrument drift was predicted with a 95% probability and high confidence level using field calibration data. The maximum expected drift for 30 months (MED30) was calculated for the Foxboro RTD circuits (TE-1416-1 through TE-1416-5) at a 95% confidence level. Projected calibration results for the temperature indicator are predicted at a lower confidence level since they are based on only 2 data points. However, vendor literature for the indicator does not identify any significant time dependent uncertainties. Further assurances of indicator operability are provided by the containment temperature channel check, required by Technical Specifications to be done daily. Significant drift of the indicator or circuit failures would be detected at this time.

The loop accuracy calculations for the containment temperature circuits were revised using larger uncertainty values for the indicator than previously assumed in the calculations. Additional revisions to the loop accuracy calculations (for example, rack drift) were not required since MED30 for the RTD circuit is less than the value originally assumed in the calculations. The revised calculations show that postulated increases in drift associated with the longer operating cycle will have a negligible effect on the EOPs and consequent plant shutdown.

The calibration of the containment temperature loops can be safely extended with the longer operating cycle because: 1) a review of past instrument performance shows that actual instrument drift has been within the required tolerance band 100% of the time, 2) loop accuracy calculations were revised as applicable using postulated drift and uncertainties associated with the longer calibration interval, and 3) the Technical Specification required channel checks would detect significant drift or circuit failure. In addition, in order to keep the radiation dose to plant personnel "as low as reasonably achievable," calibration of the RTD circuit should only be performed when the reactor is shutdown.

Calibration of Containment Water Level Monitoring System Channels

Continuous indication of containment water level during and after an accident is provided by the following three level measuring systems:

- Containment sump (EL. 38'3") level,
- Recirculation sump (EL. 34'0") level, and
- Containment building (EL. 46'0") level.

Each level measuring system is comprised of two redundant loops; each loop consists of a sensor and a transmitter located inside the containment building, and a recorder and power supply at the control room.

The Residual Heat Removal (RHR) pumps take suction from the containment sump and discharge through the RHR heat exchangers into the RCS cold legs. Containment sump level is monitored by narrow range level transmitters (LT-1255 and LT-1256) located at the 38'3" elevation in containment. These level components continuously indicate level from 0' to 10' and provide water level inventory information to ensure that sufficient water exists for recirculation.

The recirculation pumps take suction from the recirculation sump and discharge through the RHR heat exchangers into the RCS cold legs via the accumulator feed lines. The recirculation sump level is continuously monitored by transmitters (LT-1251 and LT-1252, narrow range), located at the 34'0" elevation of the containment building. These level components (1) check that a water inventory for the operation of the Emergency Core Cooling System exists, and (2) can be used for identifying leaks within containment.

Wide range containment level transmitters (LT-1253 and 1254), located at the 46'0" elevation, ensure that sufficient water exists to satisfy the recirculation and RHR pump Net Positive Suction Head (NPSH) requirements, in addition to monitoring the water level to prevent it from exceeding the design flood level. Containment level monitoring (wide range) is required by Regulatory Guide 1.97 as Type A, Category 1 instrumentation. The L1253 and L1254 indicating loops provide post-accident containment water level indication to the control room to ensure that plant safety functions are being accomplished.

The narrow range Barton transmitters (LT-1251, 1252, 1255, and 1256) were recently replaced (in 1990 and 1992) with more accurate Foxboro electronic transmitters with Barton sealed reference legs. Both wide range Barton transmitters were also replaced in 1990. These modifications improved overall channel accuracy for both the wide and narrow range. Future instrument drift for the narrow range Foxboro transmitters could not be statistically predicted because of lack of data points. Although a credible drift analysis could not be completed for the containment and recirculation sump level instrumentation, the calibration interval for these channels can be safely extended with the longer operating cycle. These instruments are required by Regulatory Guide 1.97 as Type B instrumentation (i.e., backup indication). Containment sump and recirculation sump level are not relied upon in the EOPs for accident mitigation. Rather, the EOPs rely on the wide range recorders to provide level information. As a result, postulated increases in drift will have no affect on accident mitigation or safe plant shutdown for design basis accidents.

The containment building water level (wide range) instrumentation is designated by RG 1.97 as Type A, Category 1, and are relied on in the EOPs for accident mitigation. Future instrument drift was predicted with a 95% probability at a high confidence level. The maximum expected drift for 30 months (MED30) was calculated for the level transmitters at a 95% confidence level.

The loop accuracy calculations for containment building water level (wide range) were revised using the larger uncertainty values. The revised calculations show that postulated increases in drift result in slightly larger loop inaccuracies. These inaccuracies are accommodated with a slight increase in the EOP setpoint for transfer to cold leg recirculation during an adverse containment condition. No changes are required to the other EOP steps which rely on containment water level.

The calibration interval for the containment sump, recirculation sump and containment building level components can be extended to a maximum of 30 months because conservative projections of instrument drift have been applied to the setpoint analyses. The resultant EOP setting change ensures that postulated drift will not affect the operators' ability to mitigate the consequences of an accident or evaluate post-accident conditions. In addition, in order to keep the radiation dose to plant personnel "as low as reasonably achievable," calibration of these devices should only be performed when the reactor is shutdown.

Calibration of Seismic Instrumentation Channels

The Technical Specifications require that operability of the seismic instrumentation be demonstrated to ensure that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of plant safety features. Table 4.10-2 of the Technical Specifications requires that seismic monitoring instrumentation be calibrated once per 18 months. Below is an evaluation of extending the calibration intervals to accommodate the 24 month cycle for each type of instrument listed in Table 4.10-2.

a) Triaxial Time-History Accelographs (Table 4.10-2, item 1)

Two Kinemetrics strong motion accelographs are installed in the containment building. One at the 46'0" elevation on the containment base mat and one on the containment structure wall at the 99'0" elevation directly above the lower unit. These units are designed to detect and record earth vibrations in three directions; one channel in the vertical plane, and two channels (transverse and longitudinal) in the horizontal plane. The signals from the system are recorded on a magnetic tape cassette in the control room. The strong motion accelograph system is comprised of one playback unit, two recorders and two transducers.

Instrument drift was evaluated to determine whether the calibration interval for the Kinemetrics components could be safely extended to a maximum of 30 months (24 months + 25%). Overall, past performance of these components tend to be within the calibration tolerance (CT). In some cases, however, past performance exceeded the CT, but discussions with Kinemetrics (the manufacturer) confirmed that this drift has a negligible effect on overall instrument system performance. During these conversations, the manufacturer stated that the strong motion accelographs should not experience unacceptable drift during an extended calibration interval, provided monthly channel checks and semi-annual functional tests are performed. Monthly channel checks and semi-annual functional tests of these seismic instruments are required by Tech. Spec. Table 4.10-2. The monthly channel check verifies that the "Event Indicator" is reading as required; the channel functional test performs all channel checks, tests frequency and damping of all sensor units, and performs a visual inspection of all accessible units. In summary, on-line testing provides assurance that the instruments are functioning as required and should detect any obvious instrumentation failures.

b) Triaxial Peak Accelographs (Table 4.10-2, item 2)

One Engdahl peak acceleration recorder is installed on each of the following pieces of equipment: one steam generator, one reactor coolant pump, and the pressurizer. These self-contained, passive devices (they require no external power or control connections) sense and record peak accelerations tri-axially. Permanent records are scribed by a diamond stylus on replaceable metal plates. Acceleration data is obtained from the recorder plate by measuring the displacement of the scratched record from the zero line.

The refueling surveillance for the peak acceleration recorder includes: 1) visually inspecting the recorder for physical damage, contamination and corrosion, 2) performing a damping calibration, and 3) checking the acceleration sensitivity of the three sensors.

A review of past calibration data (1985 to 1992) shows physical damage, contamination, and corrosion have not been a concern and that the damping and acceleration sensitivity for the peak acceleration recorder has always been within acceptable limits. A comparison between "as-found" and "as-left" damping calibration data confirms that instrument drift has been negligible and instrument performance is not time dependent. As a result, extension of the calibration interval to a maximum of 30 months can be accommodated.

The peak acceleration recorder is a completely self-contained device of generally simple design, and therefore very reliable. Failures of these instruments due to the longer calibration interval are not expected.

c) Triaxial Response-Spectrum Recorders (Table 4.10-2, item 3)

Three Engdahl peak shock recorders are installed in a triaxial mount at the 46'0" elevation on the base mat. They are completely self-contained, passive devices covering the range of 2 to 25 Hertz in 1/3 octave increments. Twelve reeds of different lengths and weights, one for each frequency, are fabricated from spring steel. A diamond-tipped stylus is attached to the free end of each reed to inscribe a permanent record of its deflection on one of twelve record plates. A calibration sheet for each recorder lists the resonant frequency and "g"-sensitivity of each reed. These units are always in operation and energize the appropriate alarm lights on the peak shock annunciator in the control room. Following a seismic event, the record plates are removed and the etches measured to determine the force exerted on the containment base mat.

The refueling surveillance test for the three peak shock recorders includes: 1) visually inspecting the annunciator for proper mounting, identification and appearance, 2) verifying that all the lamps on the peak shock annunciator illuminate as required, 3) measuring and recording the frequency, damping, and acceleration sensitivity of each of the twelve reeds in each sensor, 4) measuring and recording "g" levels of switch activation, and 5) making necessary adjustments, if possible, to components which exceed manufacturer's specifications.

A review of past calibration data (1985 through 1992) for the three peak shock recorders (PSRs) shows that the damping and frequency of the PSRs have always been within acceptance criteria. In addition, switch settings for the PSRs have always been within tolerance and no adjustments were required. This evaluation confirms that instrument drift associated with these recording devices has been negligible.

In addition to the refueling interval channel calibration, the Technical Specifications also require a monthly channel check and a semi-annual channel functional test. The monthly test checks the function of the red and amber lights on the peak shock annunciator. This test provides an immediate check that the annunciator is functioning correctly and should detect failures of the relays to energize.

Surveillance testing of the seismic instrumentation (all three types) can be safely extended with the longer operating cycle because: 1) a review of past calibration data confirm that instrument drift has been generally negligible, and test results do not appear to be time dependent, and 2) on-line testing provides assurance that the strong motion accelographs and peak shock recorders are functioning as required. In addition, in order to keep the radiation dose to plant personnel "as low as reasonably achievable," calibration of these devices should only be performed when the reactor is shutdown.

Calibration of Auxiliary Feedwater Flow Rate Channels

Auxiliary Feedwater (AFW) flow to the steam generators is monitored by a flow element, a flow transmitter and a flow indicator for each steam generator auxiliary feedwater line. These components, along with the steam generator wide range water level indicators, are used by the operators to maintain the level in steam generators to guarantee secondary heat sink. The flow indicator is located in the Control Room. Indication of AFW flow rate is required by the Technical Specifications, and is used in the EOPs to confirm flow to the steam generators. Auxiliary feedwater flow monitoring is also required by Regulatory Guide 1.97 as Type D, Category 2 instrumentation (i.e., indicates operation of a safety system).

An assessment of past instrument drift was performed to determine whether calibration results were within allowable limits. Instrument drift for AFW flow components was established by comparing "as-found" channel conditions to the previous calibration "as-left" conditions. The results of this analysis show that past performance of the transmitters was within theoretical uncertainties specified by the vendor, except on rare occasions. In addition, past performance of the flow indicators was routinely within the calibration tolerance.

Field calibration data was used to predict future instrument drift with a 95% probability and a 95% confidence level. The maximum expected drift for 30 months (MED30) was determined from the average and standard deviation of actual calibration data. Future drift for the flow components is expected to be within MED30 (4.1% span for the transmitters and 2.4% span for the indicators). Generic Letter 91-04 requires that projections of instrument drift for increased calibration intervals be consistent with the values of drift errors used in loop accuracy calculations. MED30 values were incorporated into the loop accuracy calculations for the Auxiliary Feedwater flow transmitters and indicators. The results of the calculation revisions indicate that postulated drift and uncertainties associated with the longer calibration interval will increase normal channel inaccuracies. This increase can be accommodated provided that the EOP setting for the minimum AFW flow required for heat removal is changed. The revised setting will still be within the rating of the motor driven Auxiliary Boiler Feed pumps (400 gpm), so the revised setting has a negligible effect.

The calibration interval for AFW flow components can be extended to a maximum 30 month interval because conservative projections of instrument drift have been applied to the setpoint and accident analyses. The resultant EOP setting changes will ensure that postulated drift will not affect the operators' ability to mitigate the consequences of an accident or evaluate post accident conditions.

The AFW flow components can be tested at power. However, past calibration results, as well as the fact that postulated future performance can be accommodated through EOP setpoint changes, provide adequate assurance that the channel calibration can be safely extended. Extending the calibration interval will decrease the overall burden of testing.

Testing of Core Exit Thermocouples

There are 65 incore thermocouples to monitor temperatures above the exit flow end of the fuel assemblies. Of the 65 thermocouples, 10 per train have been assigned as a qualified core exit thermocouple system. The core exit thermocouple system is designed to function under all plant normal, abnormal and accident conditions.

The qualified core exit thermocouple system is used to meet the requirements of Regulatory Guide 1.97 to monitor the reactor core temperature and is used in the EOPs. The Technical Specifications do not currently require testing of the core exit thermocouple system, but require the system to be operable. This operability criteria is met by a qualified core exit thermocouple functional test which is divided into four major sections. Operability criteria is met if:

1.) The difference between the highest and lowest "as-found" thermocouple readings (in each train) of the RVLIS local display is less than or equal to 10°F.

2.) The difference between the "as-found" thermocouple indications on the RVLIS local display and the corresponding QSPDS reading does not exceed 20°F.

3.) The difference between the "as-found" RTD indications at the thermocouple reference junction box and the RVLIS local display does not exceed 5°F.

4.) The difference between the tabulated "as-found" RTD indications and the manufacturers R vs. T curves does not exceed 5°F.

This application proposes to revise item 37 of Table 4.1-1 to require a core exit thermocouple test every 18 months to ensure operability of the system. As a result of the instrument drift evaluation findings, a 24 month testing interval is not being pursued at this time. Past performance of the core exit thermocouple instrumentation system does not meet the Authority's criteria for extension of testing.

Instrument Calibrations Remaining at an 18 Month Frequency

As a result of the instrument drift evaluation findings, extension of the calibration interval for the following indicating instrument channels is not being pursued at this time:

- RCS subcooling margin monitor indication, and
- reactor vessel level indication system (RVLIS).

Section III - No Significant Hazards Evaluation

Consistent with the criteria 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 evaluated. The proposed changes extend the calibration frequency (to 24 months) for the:

- containment temperature channels,
- containment water level monitoring system channels,
- seismic instrumentation channels, and
- auxiliary feedwater flow rate channels.

These changes are being made to accommodate a 24 month operating cycle. The proposed changes in the calibration frequencies do not involve any plant hardware changes, nor do they change the way the systems function.

Extension of the calibration and surveillance test intervals in question were evaluated and the results documented in Reference 5. An Instrument Drift Analysis for the indicating instruments (Reference 4) was performed to evaluate past and future instrument drift. The results of these evaluations and analyses indicate that the calibrations in question can safely be extended to accommodate the 24 month operating cycle.

For containment temperature, auxiliary feedwater flow and seismic instrumentation, past instrument drift has generally been within acceptable limits. Some drift exceeding the calibration tolerance did occur for the triaxial time-history accelographs, but on-line testing should ensure that instrument drift over the longer cycle does not degrade system performance. For containment water level systems (except containment building level), new electronic transmitters were recently installed. Due to the lack of data, an instrument drift analysis was not performed. However, the new containment water level transmitters improved the overall channel accuracy.

Future instrument drift was predicted and used to update existing loop accuracy calculations, with the following results. (1) For the containment temperature channels, the loop accuracy calculations were revised to incorporate the larger channel uncertainties. Postulated drift over 30 months should have a negligible effect on the EOPs and plant shutdown. (2) For the containment system sump water levels, future drift is not a concern because the containment building water level is used post accident. The larger uncertainties can safely be accommodated by changing the EOP setpoint for transfer to cold leg recirculation. (3) For the seismic instrumentation, past drift was negligible, and future drift is not expected to be cycle length dependent. (4) For the auxiliary feedwater flow rate channels, the larger uncertainties can be safely accommodated by changing the EOP setting for the minimum AFW flow required for heat removal.

For the containment temperature and seismic instrumentation, on-line testing provides added assurance that the instrumentation is functioning as required.

(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 do not create the possibility of a new or different kind of accident from any previously evaluated. The proposed changes extend the calibration frequency (to 24 months) for the:

- containment temperature channels,
- containment water level monitoring system channels,
- seismic instrumentation channels, and
- auxiliary feedwater flow rate channels.

These changes are being made to accommodate a 24 month operating cycle. The proposed changes in the calibration frequencies do not involve any plant hardware changes, nor do they change the way the systems function.

Extension of the calibration and surveillance test intervals in question were evaluated and the results documented in Reference 5. An Instrument Drift Analysis for the indicating instruments (Reference 4) was performed to evaluate past and future instrument drift. The results of these evaluations and analyses indicate that the calibrations in question can safely be extended to accommodate the 24 month operating cycle. For the containment temperature and seismic instrumentation, on-line testing provides added assurance that the instrumentation is functioning as required.

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

Response:

The proposed changes do not involve a significant reduction in a margin of safety. The proposed changes extend the calibration frequency (to 24 months) for the:

- containment temperature channels,
- containment water level monitoring system channels,
- seismic instrumentation channels, and
- auxiliary feedwater flow rate channels.

These changes are being made to accommodate a 24 month operating cycle. The proposed changes in the calibration frequencies do not involve any plant hardware changes, nor do they change the way the systems function.

For containment temperature, auxiliary feedwater flow and seismic instrumentation, past instrument drift has generally been within acceptable limits. Some drift exceeding the calibration tolerance did occur for the triaxial time-history accelographs, but on-line testing should ensure that instrument drift over the longer cycle does not degrade system performance. For containment water level systems (except containment building level), new electronic transmitters were recently installed. Due to the lack of data, an instrument drift analysis was not performed. However, the new containment water level transmitters improved the overall channel accuracy.

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 significantly 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) NRC Generic Letter 91-04, Enclosure 2, "Guidance for Addressing the Effect of Increased Surveillance Intervals on Instrument Drift and Safety Analysis Assumptions," dated April 2, 1991.
4) NYPA report no. IP3-RPT-MULT-00407, entitled "Instrument Drift Analysis for Indicating Loops," April 1993.
5) NYPA report no. IP3-RPT-MULTI-00424, entitled "Indicating Instruments Surveillance Test Extensions," May 1993.
6) NYPA letter, R.E. Beedle to the NRC Document Control Desk, concerning extending Reactor Protection System test and calibration intervals, dated February 18, 1993 (IPN-93-007).
7) NRC Meeting Minutes (dated March 17, 1993) for February 23, 1993 meeting (with the New York Power Authority) to discuss extension of Reactor Protection System surveillance intervals required for a 24-month refueling cycle.

ATTACHMENT III TO IPN-95-029

NYPA COMMITMENTS

RELATED TO

INDICATING INSTRUMENT CALIBRATIONS AND 24 MONTH OPERATING CYCLES

TECHNICAL SPECIFICATION CHANGES

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

COMMITMENTS ASSOCIATED WITH IPN-95-029

Commitment Number	Commitment	Due Date
IPN-95-029-01	For the containment building water level instruments (wide range), the EOP setpoint for transfer to cold leg recirculation during an adverse containment condition will be changed.	See note (1).
IPN-95-029-02	For the auxiliary feedwater flow instrument, the EOP setpoint for minimum AFW flow required for heat removal will be changed.	See note (1).
IPN-95-029-03	Calibrate the containment building ambient temperature sensors at least once per 24 months.	See note (1). [It is a current Tech. Spec. requirement to calibrate these instruments at least once per 18 months.]
IPN-95-029-04	Calibrate the containment water level monitoring system instruments at least once per 24 months.	See note (1). [It is a current Tech. Spec. requirement to calibrate these instruments at least once per 18 months.]
IPN-95-029-05	Calibrate the auxiliary feedwater flow rate channels at least once per 24 months.	See note (1). [It is a current Tech. Spec. requirement to calibrate these instruments at least once per 18 months.]
IPN-95-029-06	Calibrate the seismic monitoring instrumentation channels (triaxial time-history accelographs, triaxial peak accelographs, and triaxial response-spectrum recorders) at least once per 24 months.	See note (1). [It is a current Tech. Spec. requirement to calibrate these instruments at least once per 18 months.]
IPN-95-029-07	Test the core exit thermocouples at least once per 18 months.	See note (1).

NOTE (1): These commitments will be implemented within 30 days of the approval of this amendment application.