October 2, 1996

Mr. William J. Cahill Jr.
Chief Nuclear Officer
Power Authority of the State of New York
123 Main Street
White Plains, NY 10601

SUBJECT: ISSUANCE OF AMENDMENT FOR JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. M94638)

Dear Mr. Cahill:

The Commission has issued the enclosed Amendment No. 233 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated January 25, 1996.

The amendment would extend the instrumentation surveillance test intervals to support 24-month operating cycles. These proposed changes would eliminate the mid-cycle outages to perform the TS surveillance requirements.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

/S/
Karen R. Cotton, Acting Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosures: 1. Amendment No. 233 to DPR-59
2. Safety Evaluation

cc w/encls: See next page

DOCUMENT NAME: G:\FITZ\FIT94638.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	LA:PDI-1	E	PM:PDI-1	E	D:PDI-1		OGC			
NAME	SLittle		KCotton/rsl		SBajwa					
DATE	09/ 17/96		09/30/96		10/ 2/96		09/ 19/96		09/ /96	

Official Record Copy

NFO1

100092

DATED: October 2, 1996

AMENDMENT NO. 233 TO FACILITY OPERATING LICENSE NO. DPR-59-FITZPATRICK

Docket File
PUBLIC
PDI-1 Reading
S. Varga, 14/E/4
S. Bajwa
S. Little
K. R. Cotton
OGC
G. Hill (2), T-5 C3
C. Grimes, 013-H15
ACRS
C. Cowgill, Region I
S. Rhow

cc: Plant Service list

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 2, 1996

Mr. William J. Cahill, Jr.
Chief Nuclear Officer
Power Authority of the State of New York
123 Main Street
White Plains, NY 10601

SUBJECT: ISSUANCE OF AMENDMENT FOR JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. M94638)

Dear Mr. Cahill:

The Commission has issued the enclosed Amendment No. 233 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated January 25, 1996.

The amendment would extend the instrumentation surveillance test intervals to support 24-month operating cycles. These proposed changes would eliminate the mid-cycle outages to perform the TS surveillance requirements.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly <u>Federal Register</u> notice.

Sincerely,

Karen R. Cotton

Karen R. Cotton, Acting Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosures: 1. Amendment No. 233 to DPR-59
2. Safety Evaluation

cc w/encls: See next page

William J. Cahill, Jr.
Power Authority of the State
of New York

James A. FitzPatrick Nuclear
Power Plant

cc:

Mr. Gerald C. Goldstein
Assistant General Counsel
Power Authority of the State
of New York
1633 Broadway
New York, NY 10019

Resident Inspector's Office
U. S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093

Mr. Harry P. Salmon, Jr.
Resident Manager
James A. FitzPatrick Nuclear
Power Plant
P.O. Box 41
Lycoming, NY 13093

Ms. Charlene D. Faison
Director Nuclear Licensing
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Supervisor
Town of Scriba
Route 8, Box 382
Oswego, NY 13126

Mr. Robert G. Schoenberger,
Vice President
and Chief Operating Officer
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. F. William Valentino, President
New York State Energy, Research,
and Development Authority
2 Rockefeller Plaza
Albany, NY 12223-1253

Mr. Richard L. Patch, Director
Quality Assurance
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Mr. Gerard Goering
28112 Bayview Drive
Red Wing, MN 55066

Mr. James Gagliardo
Safety Review Committee
708 Castlewood Avenue
Arlington, TX 76012

Mr. Arthur Zaremba, Licensing
Manager
James A. FitzPatrick Nuclear
Power Plant
P.O. Box 41
Lycoming, NY 13093

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 233
License No. DPR-59

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Power Authority of the State of New York (the licensee) dated January 25, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 233, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Bajwa

S. Singh Bajwa, Acting Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 2, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 233

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages	Insert Pages
5	5
30g	30g
37	37
38	38
46	46
47	47
49	49
60	60
60a	60a
70	70
77f	77f
77g	77g
77h	77h
77i	77i
77j	77j
77k	77k
77l	77l
77m	77m
77n	77n
77o	77o
80	80
82	82
83	83
84	84
84a	84a
86	86
86a	86a
112	112
113	113
115	115
121	121
132	132
183	183
185	185
222c	222c
226	226
238	238
239	239

1.0 (cont'd)

opened to perform necessary operational activities.

2. At least one door in each airlock is closed and sealed.

3. All automatic containment isolation valves are operable or de-activated in the isolated position.

4. All blind flanges and manways are closed.

N. Rated Power - Rated power refers to operation at a reactor power of 2,436 MWt. This is also termed 100 percent power and is the maximum power level authorized by the operating license. Rated steam flow, rated coolant flow, rated nuclear system pressure, refer to the values of these parameters when the reactor is at rated power.

O. Reactor Power Operation - Reactor power operation is any operation with the Mode Switch in the Startup/Hot Standby or Run position with the reactor critical and above 1 percent rated thermal power.

P. Reactor Vessel Pressure - Unless otherwise indicated, reactor vessel pressures listed in the Technical Specifications are those measured by the reactor vessel steam space sensor.

Q. Refueling Outage - Refueling outage is the period of time between the shutdown of the unit prior to refueling and the startup of the Plant subsequent to that refueling.

R. Safety Limits - The safety limits are limits within which the reasonable maintenance of the fuel cladding integrity and the reactor coolant system integrity are assured. Violation of such a limit is cause for unit shutdown and review by the Nuclear Regulatory Commission before resumption of unit operation. Operation beyond such a limit may not in itself result in serious consequences but it indicates an operational deficiency subject to regulatory review.

S. Secondary Containment Integrity - Secondary containment integrity means that the reactor building is intact and the following conditions are met:

1. At least one door in each access opening is closed.

2. The Standby Gas Treatment System is operable.

3. All automatic ventilation system isolation valves are operable or secured in the isolated position.

T. Surveillance Frequency Notations / Intervals

The surveillance frequency notations / intervals used in these specifications are defined as follows:

Notations	Intervals	Frequency
D	Daily	At least once per 24 hours
W	Weekly	At least once per 7 days
M	Monthly	At least once per 31 days
Q	Quarterly or every 3 months	At least once per 92 days
SA	Semiannually or every 6 months	At least once per 184 days
A	Annually or Yearly	At least once per 366 days
18M	18 Months	At least once per 18 months (550 days)
R	Operating Cycle	At least once per 24 months (731 days)
S/U		Prior to each reactor startup
NA		Not applicable

3.1 LIMITING CONDITIONS FOR OPERATION

3.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the instrumentation and associated devices which initiate the reactor scram.

Objective:

To assure the operability of the Reactor Protection System.

Specification:

A. The setpoints and minimum number of instrument channels per trip system that must be operable for each position of the reactor mode switch, shall be as shown in Table 3.1-1.

4.1 SURVEILLANCE REQUIREMENTS

4.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective:

To specify the type of frequency of surveillance to be applied to the protection instrumentation.

Specification:

A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1-1 and 4.1-2 respectively.

The response time of the reactor protection system trip functions listed below shall be demonstrated to be within its limit once per 24 months. Neutron detectors are exempt from response time testing. Each test shall include at least one channel in each trip system. All channels in both trip systems shall be tested within two test intervals.

1. Reactor High Pressure (02-3PT-55A, B, C, D)
2. Drywell High Pressure (05PT-12A, B, C, D)
3. Reactor Water Level-Low (L3) (02-3LT-101A, B, C, D)
4. Main Steam Line Isolation Valve Closure (29PNS-80A2, B2, C2, D2) (29PNS-86A2, B2, C2, D2)
5. Turbine Stop Valve Closure (94PNS-101, 102, 103, 104)
6. Turbine Control Valve Fast Closure (94PS-200A, B, C, D)
7. APRM Fixed High Neutron Flux
8. APRM Flow Referenced Neutron Flux

4.1 BASES (cont'd)

For the APRM System, drift of electronic apparatus is not the only consideration in determining a calibration frequency. Change in power distribution and loss of chamber sensitivity dictates a calibration every 7 days. Calibration on this frequency assures plant operation at or below thermal limits.

The frequency of calibration of the APRM flow biasing network has been established as once per 24 months. The flow biasing network is functionally tested at least once every three months and, in addition, cross calibration checks of the flow input to the flow biasing network can be made during the functional test by direct meter reading. There are several instruments which must be calibrated and it will take several days to perform the calibration of the entire network. While the calibration is being performed, a zero flow signal will be sent to half of the APRM's resulting in a half scram and rod block condition. Thus, if the calibration were performed during operation, flux shaping would not be possible. Based on plant specific evaluation of drift over a 24 month operating cycle, it was determined that drift of instrumentation used in the flow biasing network is not significant. Therefore, to avoid spurious scrams, a calibration frequency of once per 24 months is established.

The measurement of response time provides assurance that the Reactor Protection System trip functions are completed within the time limits assumed in the transient and accident analyses.

In terms of the transient analysis, the Standard Technical Specifications (NUREG-0123, Rev.3) define individual trip function response time as "the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids." The individual sensor response time defined as "operating time" in General Electric (GE) design specification data sheet 22A3083AJ, note (8), is "the maximum allowable time from when the variable being measured just exceeds the trip setpoint to opening of the trip channel sensor contact during a transient." A transient is defined in note (4) of the same data sheet as "the maximum expected rate of change of the variable for the accident or the abnormal operating condition which is postulated in the safety analysis report.

4.1 BASES (cont'd)

The individual sensor response time may be measured by simulating a step change of the particular parameter. This method provides a conservative value for the sensor response time, and confirms that the instrument has retained its specified electromechanical characteristics. When sensor response time is measured independently, it is necessary to also measure the remaining portion of the response time in the logic train up to the time at which the scram pilot valve solenoids de-energize. The channel response time must include all component delays in the response chain to the ATTS output relay plus the design allowance for RPS logic system response time. A response time for the RPS logic relays in excess of the design allowance is acceptable provided the overall response time does not exceed the response time limits specified in the UFSAR. The basis for excluding the neutron detectors from response time testing is provided by NRC Regulatory Guide 1.118, Revision 2, section C.5.

Two instrument channels in Table 4.1-1 have not been included in Table 4.1-2. These are: mode switch in shutdown and manual scram. All of the devices or sensors associated with these scram functions are simple on-off switches and, hence, calibration during operation is not applicable.

B. The MFLPD is checked once per day to determine if the APRM scram requires adjustment. Only a small number of control rods are moved daily and thus the MFLPD is not expected to change significantly and thus a daily check of the MFLPD is adequate.

The sensitivity of LPRM detectors decreases with exposure to neutron flux at a slow and approximately constant rate. This is compensated for in the APRM system by calibrating twice a week using heat balance data and by calibrating individual LPRM's every 1000 effective full power hours, using TIP traverse data.

TABLE 4.1-2

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION
MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration	Frequency (2)
IRM High Flux	C	Comparison to APRM on Controlled Shutdowns	W
APRM High Flux Output Signal	B	Heat Balance	D
Flow Bias Signal	B	Internal Power and Flow Test with Standard Pressure Source	R
LPRM Signal	B	TIP System Traverse	Every 1000 effective full power hours
High Reactor Pressure	B	Standard Pressure Source	(Note 6)
High Drywell Pressure	B	Standard Pressure Source	(Note 6)
Reactor Low Water Level	B	Standard Pressure Source	(Note 6)
High Water Level in Scram Discharge Instrument Volume	A	Water Column (Note 5)	R (Note 5)
High Water Level in Scram Discharge Instrument Volume	B	Standard Pressure Source	Q
Main Steam Line Isolation Valve Closure	A	(Note 4)	(Note 4)
Turbine First Stage Pressure Permissive	B	Standard Pressure Source	(Note 6)

Amendment No. ~~42, 43, 62, 75, 89, 136, 183, 207~~, 233

TABLE 4.1-2 (Cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION
MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration	Frequency (2)
Turbine Control Valve Fast Closure Oil Pressure Trip	A	Standard Pressure Source	R
Turbine Stop Valve Closure	A	(Note 4)	(Note 4)

NOTES FOR TABLE 4.1-2

1. A description of three groups is included in the Bases of this Specification.
2. Calibration test is not required on the part of the system that is not required to be operable, or is tripped, but is required prior to return to service.
3. Deleted
4. Actuation of these switches by normal means will be performed once per 24 months.
5. Calibration shall be performed utilizing a water column or similar device to provide assurance that damage to a float or other portions of the float assembly will be detected.
6. Sensor calibration once per 24 months. Master/slave trip unit calibration once per 6 months.

3.2 LIMITING CONDITIONS FOR OPERATION

3.2 INSTRUMENTATION

Applicability:

Applies to the plant instrumentation which either (1) initiates and controls a protective function, or (2) provides information to aid the operator in monitoring and assessing plant status during normal and accident conditions.

Objective:

To assure the operability of the aforementioned instrumentation.

Specifications:

A. Primary Containment Isolation Functions

When primary containment integrity is required, the limiting conditions of operation for the instrumentation that initiates primary containment isolation are given in Table 3.2-1.

4.2 SURVEILLANCE REQUIREMENTS

4.2 INSTRUMENTATION

Applicability:

Applies to the surveillance requirement of the instrumentation which either (1) initiates and controls protective function, or (2) provides information to aid the operator in monitoring and assessing plant status during normal and accident conditions.

Objective:

To specify the type and frequency of surveillance to be applied to the aforementioned instrumentation.

Specifications:

A. Primary Containment Isolation Functions

Instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-1. System logic shall be functionally tested as indicated in Table 4.2-1.

The response time of the main steam isolation valve actuation instrumentation isolation trip functions listed below shall be demonstrated to be within their limits once per 24 months. Each test shall include at least one channel in each trip system. All channels in both trip systems shall be tested within two test intervals.

1. MSIV Closure - Reactor Low Water Level (L1) (02-3LT-57A,B and 02-3LT-58A,B)
2. MSIV Closure - Low Steam Line Pressure (02PT-134A,B,C,D)
3. MSIV Closure - High Steam Line Flow (02DPT-116A-D, 117A-D, 118A-D, 119A-D)

3.2 BASES (cont'd)

The remote/alternate shutdown capability at FitzPatrick is provided by a remote shutdown panel (25RSP) and five alternate safe shutdown panels (25ASP-1, 25ASP-2, 25ASP-3, 25ASP-4, and 25ASP-5). These panels are used in conjunction with the Automatic Depressurization System (ADS) relief valve control panel (02ADS-71) adjacent to 25RSP, the emergency diesel generator (B & D) control panels (93EGP-B and 93EGP-D) opposite 25ASP-3, the reactor building vent and cooling panel (66HV-3B) near 25ASP-1, instrument rack 25-51, and instrument rack 25-6 opposite 25RSP. All of these locations are linked by communications and are provided with emergency lighting.

This Remote Shutdown capability provides the necessary instrumentation and controls to place and maintain the plant in a safe shutdown condition from a location other than the control room in the event the control room becomes inaccessible due to a fire or other reason.

This specification ensures the operability of the remote shutdown instrumentation and control circuits. Operability of components such as pumps and valves, which are controlled from these panels, is covered by other specifications. This specification does not impose conditions on plant operation which are more restrictive than those already imposed by other specifications. For example, Specification 3.7.D includes provisions for continued operation with one or more containment isolation valves inoperable. The 30 day time limitation imposed by 3.2.J would not apply in this situation, provided that the actions taken for the inoperable valve(s) to satisfy 3.7.D are also consistent with the safety function(s) required for fire protection.

Not all instruments, controls, and necessary transfer switches are located at the remote/alternate shutdown panels. Some controls and transfer switches will have to be operated locally at the switchgear, motor control centers, or other local stations.

Operability of the remote shutdown instrumentation and control functions ensure that there is sufficient information available on selected plant parameters to place and maintain the plant in a shutdown condition should the control room become inaccessible. The instrumentation and controls installed on the remote/alternate shutdown panels are listed in Table 3.2-10. This table only includes those isolation/transfer switches that do not have an associated control switch. Operability of isolation/transfer switches that have an associated control switch will be demonstrated when the control functions are tested as required by Surveillance Requirement 4.2.J.

The remote shutdown instruments and control circuits covered by this LCO do not need to be energized to be considered operable. This LCO is intended to ensure that the instruments and control circuits will be operable if plant conditions require the use of the remote shutdown capability. Performance of the instrument check once every 31 days ensures that a gross failure of instrumentation has not occurred and is intended to ensure that the instrumentation continues to operate properly between each instrument channel calibration.

As specified in the surveillance requirements, an instrument check is only required for those instruments that are normally energized. Performance of this surveillance provides assurance that undetected outright instrument failure is limited to 31 days. The surveillance frequency is based upon plant operating experience which indicates that channel failure is rare.

3.2 BASES (cont'd)

Surveillance Requirement 4.2.J requires that each remote shutdown transfer / isolation switch and control circuit be periodically tested to demonstrate that it is capable of performing its intended function. The requirements of this section apply to each remote shutdown control circuit on the panels listed in Table 3.2-10. This demonstration is performed from the remote shutdown panel and locally, as appropriate. This will ensure that if the control room becomes inaccessible, the plant can be placed and maintained in a shutdown condition from the remote shutdown panel and the local control stations.

Three channels of the Reactor Vessel Water Level - High instrumentation are provided as input to a two-out-of-three initiation logic that trips the two feedwater pump turbines and the main turbine. An event involving excessive feedwater flow results in a rising reactor vessel water level, which upon reaching the reactor vessel water level trip setpoint, results in a trip of both feedwater pump turbines, and the main turbine. The feedwater pump turbine trip under these conditions limits further increase in the reactor vessel water level due to feedwater flow. A trip of the main turbine protects the turbine from damage due to excessive water carryover.

TABLE 3.2-2 (cont'd)

CORE AND CONTAINMENT COOLING SYSTEM INITIATION AND CONTROL INSTRUMENTATION OPERABILITY REQUIREMENTS

Item No.	Minimum No. of Operable Instrument Channels Per Trip System (Notes 1 and 2)	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Remarks
26	(1 per 4kV bus) (Note 9)	4kV Emergency Bus Undervoltage Relay (Degraded Voltage)	110.6 ± 0.8 secondary volts	2	Initiates both 4kV Emergency Bus Undervoltage Timers. (Degraded Voltage LOCA and non-LOCA) (Notes 4 and 6)
27	(1 per 4kV bus) (Note 9)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage LOCA)	8.96 ± 0.55 sec.	2	(Note 5)
28	(1 per 4kV bus) (Note 9)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage non-LOCA)	43.8 ± 2.8 sec.	2	(Note 5)
29	(1 per 4kV bus) (Note 9)	4kV Emergency Bus Undervoltage Relay (Loss of Voltage)	85 ± 4.81 secondary volts	2	Initiates 4kV Emergency Bus Undervoltage Loss of Voltage Timer. (Notes 4 and 7)
30	(1 per 4kV bus) (Note 9)	4kV Emergency Bus Undervoltage Timer (Loss of Voltage)	2.50 ± 0.11 sec.	2	(Note 5)
31	2	Reactor Low Pressure	285 to 335 psig	4	Permits closure of recirculation pump discharge valve.

Amendment No. ~~3, 48, 227,~~ 233

TABLE 3.2-10

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL		PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
1.	RHR Service Water Flow (Loop B) (10FI-134)	25RSP	M	R	NA
2.	RHR Service Water Pump Control (10P-1B)	25RSP	NA	NA	R
3.	RHR Service Water Heat Exchanger Outlet Valve Control (10MOV-89B)	25RSP	NA	NA	R
4.	RHR Service Water to RHR Cross-Tie Valve Control (10MOV-148B)	25ASP-1	NA	NA	R
5.	RHR Service Water to RHR Cross-Tie Valve Control (10MOV-149B)	25ASP-1	NA	NA	R
6.	RHR Flow (Loop B) (10FI-133)	25RSP	M	R	NA
7.	RHR Discharge Pressure (Pump D) (10PI-279)	25RSP	M	R	NA
8.	RHR Pump Control (10P-3D)	25RSP	NA	NA	R
9.	RHR Heat Exchanger Bypass Valve Control (10MOV-66B)	25RSP	NA	NA	R

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
10. RHR Inboard Injection Valve Control (10MOV-25B)	25RSP	NA	NA	R
11. RHR Heat Exchanger Steam Inlet Valve Control (10MOV-70B)	25ASP-1	NA	NA	R
12. RHR Heat Exchanger Vent Valve Control (10MOV-166B)	25ASP-1	NA	NA	R
13. RHR Heat Exchanger Outlet Valve Control (10MOV-12B)	25ASP-1	NA	NA	R
14. RHR Pump D Torus Suction Valve Control (10MOV-13D)	25ASP-2	NA	NA	R
15. RHR Pump D Shutdown Cooling Suction Valve Control (10MOV-15D)	25ASP-2	NA	NA	R
16. RHR Pump B Minimum Flow Valve Control (10MOV-16B)	25ASP-2	NA	NA	R
17. RHR Heat Exchanger Inlet Valve Control (10MOV-65B)	25ASP-2	NA	NA	R
18. RHR Outboard Injection Valve Control (10MOV-27B)	25ASP-2	NA	NA	R

Amendment No. ~~216~~, 233

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
19. RHR Heat Exchanger Discharge to Torus Valve Control (10MOV-21B)	25ASP-2	NA	NA	R
20. Torus Cooling Isolation Valve Control (10MOV-39B)	25ASP-2	NA	NA	R
21. DW Spray Outboard Valve Control (10MOV-26B)	25ASP-3	NA	NA	R
22. ADS & Safety Relief Valve A Control (02RV-71A)	02ADS-71	NA	NA	R
23. ADS & Safety Relief Valve B Control (02RV-71B)	02ADS-71	NA	NA	R
24. ADS & Safety Relief Valve C Control (02RV-71C)	02ADS-71	NA	NA	R
25. ADS & Safety Relief Valve D Control (02RV-71D)	02ADS-71	NA	NA	R
26. ADS & Safety Relief Valve E Control (02RV-71E)	02ADS-71	NA	NA	R
27. ADS & Safety Relief Valve G Control (02RV-71G)	02ADS-71	NA	NA	R

Amendment No. ~~216~~, 233

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
28. ADS & Safety Relief Valve H Control (02RV-71H)	02ADS-71	NA	NA	R
29. Safety Relief Valve F Control (02RV-71F)	02ADS-71	NA	NA	R
30. Safety Relief Valve J Control (02RV-71J)	02ADS-71	NA	NA	R
31. Safety Relief Valve K Control (02RV-71K)	02ADS-71	NA	NA	R
32. Safety Relief Valve L Control (02RV-71L)	02ADS-71	NA	NA	R
33. Main Steam Line Drain Outboard Isolation Valve Control (29MOV-77)	25ASP-2	NA	NA	R
34. Drywell Temperature (68TI-115)	25RSP	M	R	NA
35. Torus Water Temperature (27TI-101)	25RSP	M	R	NA
36. Torus Water Level (23LI-204)	25RSP	M	R	NA

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS

[Refer to Notes on Page 77o]

	INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
37.	Reactor Vessel Pressure (02-3PI-60B)	Rack 25-6	M	R	NA
38.	Reactor Vessel Water Level (02-3LI-58A)	Rack 25-6	M	R	NA
39.	Reactor Vessel Water Level (02-3LI-93)	Rack 25-51	M	R	NA
40.	HPCI Steam Supply Outboard Isolation Valve Control (23MOV-16)	25RSP	NA	NA	R
41.	HPCI Outboard Isolation Bypass Valve Control (23MOV-60)	25ASP-2	NA	NA	R
42.	HPCI Minimum Flow Valve Control (23MOV-25)	25ASP-2	NA	NA	R
43.	CAD B Train Inlet Valve Control (27AOV-126B)	25RSP	NA	NA	R
44.	Nitrogen Instrument Header Isolation Valve Control (27AOV-129B)	25RSP	NA	NA	R
45.	Reactor Water Cleanup Outboard Isolation Valve Control (12MOV-18)	25ASP-2	NA	NA	R

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
46. Emergency Service Water Pump B Control (46P-2B)	25ASP-3	NA	NA	R
47. ESW Loop B Supply Header Isolation Valve Control (46MOV-101B)	25ASP-3	NA	NA	R
48. ESW Pump B Test Valve Control (46MOV-102B)	25ASP-3	NA	NA	R
49. Bus 11600 Supply Breaker Control (71-11602)	25RSP	NA	NA	R
50. EDG B & EDG D Tie Breaker Control (71-10604)	25ASP-3	NA	NA	R
51. Bus 10400-10600 Tie Breaker Control (71-10614)	25ASP-3	NA	NA	R
52. Unit Substation L16 & L26 Feeder Breaker Control (71-10660)	25ASP-3	NA	NA	R
53. Bus 12600 Supply Breaker Control (71-12602)	25ASP-3	NA	NA	R
54. Breaker 71-10614 Synchronizing Check Control	25ASP-3	NA	NA	R
55. EDG B Control Room Metering Check Control	25ASP-3	NA	NA	R

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL	PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
56. EDG B Engine Start/Stop Control	25ASP-3	NA	NA	R
57. EDG D Control Room Metering Check Control	25ASP-3	NA	NA	R
58. EDG D Engine Start/Stop Control	25ASP-3	NA	NA	R
59. EDG B Governor Switch	93EGP-B	NA	NA	R
60. EDG B Synchronizing Switch	93EGP-B	NA	NA	R
61. EDG B Load Breaker Control (71-10602)	93EGP-B	NA	NA	R
62. EDG B Motor Control	93EGP-B	NA	NA	R
63. EDG B Frequency Meter (93FM-1B)	93EGP-B	NA	R	NA
64. EDG B Voltage Control	93EGP-B	NA	NA	R
65. EDG B Emergency Bus Meter (71VM-600-1B)	93EGP-B	M	R	NA
66. EDG B Incoming Bus Meter (93VM-12B)	93EGP-B	NA	R	NA
67. EDG B Running Bus Meter (93VM-11B)	93EGP-B	NA	R	NA
68. EDG D Governor Switch	93EGP-D	NA	NA	R
69. EDG D Synchronizing Switch	93EGP-D	NA	NA	R

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS

[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL		PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
70.	EDG D Load Breaker Control (71-10612)	93EGP-D	NA	NA	R
71.	EDG D Motor Control	93EGP-D	NA	NA	R
72.	EDG D Frequency Meter (93FM-1D)	93EGP-D	NA	R	NA
73.	EDG D Voltage Control	93EGP-D	NA	NA	R
74.	EDG D Emergency Bus Meter (71VM-600-1D)	93EGP-D	M	R	NA
75.	EDG D Incoming Bus Meter (93VM-12D)	93EGP-D	NA	R	NA
76.	EDG D Running Bus Meter (93VM-11D)	93EGP-D	NA	R	NA
77.	Reactor Head Vent Isolation Switch (02AOV-17)	25RSP	NA	NA	R
78.	Outboard MSIV A Isolation Switch (29AOV-86A)	25ASP-4	NA	NA	R
79.	Outboard MSIV B Isolation Switch (29AOV-86B)	25ASP-4	NA	NA	R
80.	Outboard MSIV C Isolation Switch (29AOV-86C)	25ASP-4	NA	NA	R

Amendment No. ~~216~~, 233

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS
[Refer to Notes on Page 77o]

INSTRUMENT OR CONTROL		PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
81.	Outboard MSIV D Isolation Switch (29AOV-86D)	25ASP-4	NA	NA	R
82.	East Crescent Area Unit Cooler B,D,F (66UC-22B, 22D, 22F) Isolation Switch	66HV-3B	NA	NA	R
83.	East Crescent Area Unit Cooler H,K (66UC-22H, 22K) Isolation Switch	66HV-3B	NA	NA	R
84.	ADS & Safety Relief Valve A Isolation Switch (02RV-71A)	25ASP-5	NA	NA	R
85.	ADS & Safety Relief Valve B Isolation Switch (02RV-71B)	25ASP-5	NA	NA	R
86.	ADS & Safety Relief Valve C Isolation Switch (02RV-71C)	25ASP-5	NA	NA	R
87.	ADS & Safety Relief Valve D Isolation Switch (02RV-71D)	25ASP-5	NA	NA	R
88.	ADS & Safety Relief Valve E Isolation Switch (02RV-71E)	25ASP-5	NA	NA	R
89.	Safety Relief Valve F Isolation Switch (02RV-71F)	25ASP-5	NA	NA	R

TABLE 3.2-10 (cont'd)

REMOTE SHUTDOWN CAPABILITY INSTRUMENTATION AND CONTROLS

INSTRUMENT OR CONTROL		PANEL OR LOCATION	INSTRUMENT CHECK	INSTRUMENT CALIBRATION	FUNCTIONAL TEST
90.	ADS & Safety Relief Valve G Isolation Switch (02RV-71G)	25ASP-5	NA	NA	R
91.	ADS & Safety Relief Valve H Isolation Switch (02RV-71H)	25ASP-5	NA	NA	R
92.	Safety Relief Valve J Isolation Switch (02RV-71J)	25ASP-5	NA	NA	R
93.	Safety Relief Valve K Isolation Switch (02RV-71K)	25ASP-5	NA	NA	R
94.	Safety Relief Valve L Isolation Switch (02RV-71L)	25ASP-5	NA	NA	R

NOTES FOR TABLE 3.2-10

1. Minimum required number of divisions for all instruments and controls listed is 1.

TABLE 4.2-2

CORE AND CONTAINMENT COOLING SYSTEM INSTRUMENTATION TEST AND CALIBRATION REQUIREMENTS

	Instrument Channel	Instrument Functional Test	Calibration Frequency	Instrument Check (Note 4)
1)	Reactor Water Level	Q (Note 5)	SA / R (Note 15)	D
2a)	Drywell Pressure (non-ATTS)	Q	Q	NA
2b)	Drywell Pressure (ATTS)	Q (Note 5)	SA / R (Note 15)	D
3a)	Reactor Pressure (non-ATTS)	Q	Q	NA
3b)	Reactor Pressure (ATTS)	Q (Note 5)	SA / R (Note 15)	D
4)	Auto Sequencing Timers	NA	18M	NA
5)	ADS - LPCI or CS Pump Disch.	Q	Q	NA
6)	Trip System Bus Power Monitors	Q	NA	NA
7)	Core Spray Sparger d/p	Q	Q	D
8)	HPCI & RCIC Suction Source Levels	Q	Q	NA
9)	4kV Emergency Bus Under-Voltage (Loss-of-Voltage, Degraded Voltage LOCA and non-LOCA) Relays and Timers.	R	R	NA
10)	LPCI Cross Connect Valve Position	R	NA	NA

NOTE: See notes following Table 4.2-5.

TABLE 4.2-3

CONTROL ROD BLOCK INSTRUMENTATION TEST AND CALIBRATION REQUIREMENTS

	Instrument Channel	Instrument Functional Test (Note 5)	Calibration	Instrument Check (Note 4)
1)	APRM - Downscale	Q	Q	D
2)	APRM - Upscale	Q	Q	D
3)	IRM - Upscale	S/U (Note 2)	Q (Notes 3 & 6)	D
4)	IRM - Downscale	S/U (Note 2)	Q (Notes 3 & 6)	D
5)	IRM - Detector Not in Startup Position	S/U (Note 2)	NA	NA
6)	RBM - Upscale	Q	Q	D
7)	RBM - Downscale	Q	Q	D
8)	SRM - Upscale	S/U (Note 2)	Q (Notes 3 & 6)	D
9)	SRM - Detector Not in Startup Position	S/U (Note 2)	NA	NA
10)	Scram Discharge Instrument Volume - High Water Level (Group B Instruments)	Q	Q	D

NOTE: See notes following Table 4.2-5.

Amendment No. ~~3, 89, 93, 227~~, 233

TABLE 4.2-5

MINIMUM TEST AND CALIBRATION FREQUENCY FOR DRYWELL LEAK DETECTION

	Instrument Channel	Instrument Functional Test	Calibration Frequency	Instrument Check (Note 4)
1)	Equipment Drain Sump Flow Integrator	(Note 1)	Q	D
2)	Floor Drain Sump Flow Integrator	(Note 1)	Q	D

NOTE: See notes following Table 4.2-5.

NOTES FOR TABLES 4.2-1 THROUGH 4.2-5

1. Initially once every month until acceptance failure rate data are available; thereafter, a request may be made to the NRC to change the test frequency. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instruments operate in a environment similar to that of JAFNPP.

2. Functional tests are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed within seven (7) days prior to each startup.

3. Calibrations are not required when these instruments are not required to be operable or are tripped. Calibration tests shall be performed within seven (7) days prior to each startup or prior to a pre-planned shutdown.

4. Instrument checks are not required when these instruments are not required to be operable or are tripped.

5. This instrumentation is exempt from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.

6. These instrument channels will be calibrated using simulated electrical signals once every three months.

7. Simulated automatic actuation shall be performed once per 24 months.

8. Reactor low water level, and high drywell pressure are not included on Table 4.2-1 since they are listed on Table 4.1-2.

9. The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

10. (Deleted)

11. Perform a calibration once per 24 months using a radiation source. Perform an instrument channel alignment once every 3 months using a current source.

12. (Deleted)

13. (Deleted)

14. (Deleted)

15. Sensor calibration once per 24 months. Master/slave trip unit calibration once per 6 months.

16. The quarterly calibration of the temperature sensor consists of comparing the active temperature signal with a redundant temperature signal.

TABLE 4.2-6

FEEDWATER PUMP TURBINE AND MAIN TURBINE TRIP INSTRUMENTATION TEST AND CALIBRATION REQUIREMENTS

Instrument Channel	Instrument Functional Test Frequency (Note 2)	Logic System Functional Test Frequency	Calibration Frequency	Instrument Check Frequency
Reactor Vessel Water Level - High	Note 1	R	R	D

NOTES FOR TABLE 4.2-6

1. Perform the instrument functional test:

   a. Once per 24 months during each refueling outage, and

   b. Each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 92 days.

2. This instrumentation is exempt from the instrument channel functional test definition. The functional test will consist of injecting a simulated electrical signal into the instrument channel as close to the sensor as practicable.

TABLE 4.2-8

MINIMUM TEST AND CALIBRATION FREQUENCY FOR ACCIDENT MONITORING INSTRUMENTATION

	Instrument	Instrument Functional Test	Calibration Frequency	Instrument Check
1.	Stack High Range Effluent Monitor	18M	18M	D
2.	Turbine Building Vent High Range Effluent Monitor	18M	18M	D
3.	Radwaste Building Vent High Range Effluent Monitor	18M	18M	D
4.	Containment High Range Radiation Monitor	R	R	D
5.	Drywell Pressure (narrow range)	N/A	R	D
6.	Drywell Pressure (wide range)	N/A	R	D
7.	Drywell Temperature	N/A	R	D
8.	Torus Water Level (wide range)	N/A	R	D
9.	Torus Bulk Water Temperature	N/A	R	D
10.	Torus Pressure	N/A	R	D
11.	Primary Containment Hydrogen/Oxygen Concentration Analyzer	N/A	Q	D
12.	Reactor Vessel Pressure	N/A	R	D
13.	Reactor Water Level (fuel zone)	N/A	R	D
14.	Reactor Water Level (wide range)	N/A	R	D

TABLE 4.2-8 (cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCY FOR ACCIDENT MONITORING INSTRUMENTATION

	Instrument	Instrument Functional Test	Calibration Frequency	Instrument Check
15.	Core Spray Flow	N/A	R	D
16.	Core Spray Discharge Pressure	N/A	R	D
17.	LPCI (RHR) Flow	N/A	R	D
18.	RHR Service Water Flow	N/A	R	D
19.	Safety/Relief Valve Position Indicator (Primary and Secondary)	R	N/A	M
20.	Torus Water Level (narrow range)	N/A	R	D
21.	Drywell-Torus Differential Pressure	N/A	R	D

3.5 LIMITING CONDITIONS FOR OPERATION

3.5 CORE AND CONTAINMENT COOLING SYSTEMS

Applicability:

Applies to the operational status of the Emergency Core Cooling Systems, the suppression pool cooling, and containment spray modes of the Residual Heat Removal (RHR) System.

Objective:

To assure operability of the Core and Containment Cooling Systems under all conditions for which this cooling capability is an essential response to plant abnormalities.

Specification:

A. Core Spray System and Low Pressure Coolant Injection (LPCI) Mode of the RHR System

1. Both Core Spray Systems shall be operable when ever irradiated fuel is in the reactor vessel and prior to reactor startup from a cold condition, except as specified below:

4.5 SURVEILLANCE REQUIREMENTS

4.5 CORE AND CONTAINMENT COOLING SYSTEMS

Applicability:

Applies to periodic testing of the Emergency Core Cooling Systems, the suppression pool cooling and containment spray mode of the Residual Heat Removal (RHR) System.

Objective:

To verify the operability of the Core and Containment Cooling Systems under all conditions for which operability is essential.

Specification:

A. Core Spray System and Low Pressure Coolant Injection (LPCI) Mode of the (RHR) System

1. Surveillance of the Core Spray System shall be performed as follows:

Item	Frequency
a. Simulated Automatic Actuation Test	Refer to Table 4.2-2

3.5 (cont'd)

4.5 (cont'd)

b.	Flow Rate Test - Core spray pumps shall deliver at least 4,265 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure.	Once/3 months
c.	Pump Operability	Once/month
d.	Motor Operated Valve	Once/month
e.	Core Spray Header ▲p Instrumentation	
	Check	Once/day
	Calibrate	Once/3 months
	Test	Once/3 months
f.	Logic System Functional Test	Refer to Table 4.2-2
g.	Testable Check Valves	Tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 31 days.

3.5 (cont'd)

b. When the reactor water temperature is greater than 212°F, the motor operator for the RHR cross-tie valve (10MOV-20) shall be maintained disconnected from its electric power source. It shall be maintained chain-locked in the closed position. The manually operated gate valve (10RHR-09) in the cross-tie line, in series with the motor operated valve, shall be maintained locked in the closed position.

4. a. The reactor shall not be started up with the RHR System supplying cooling to the fuel pool.

b. The RHR System shall not supply cooling to the spent fuel pool when the reactor coolant temperature is above 212°F.

4.5 (cont'd)

b. The power source disconnect and chain lock to motor operated RHR cross-tie valve (10MOV-20), and lock on manually operated gate valve (10RHR-09) shall be inspected once per month to verify that both valves are closed and locked.

3.5 (Cont'd)

E. Reactor Core Isolation Cooling (RCIC) System

1. The RCIC System shall be operable whenever there is irradiated fuel in the reactor vessel and the reactor pressure is greater than 150 psig and reactor coolant temperature is greater than 212°F except from the time that the RCIC System is made or found to be inoperable for any reason, continued reactor power operation is permissible during the succeeding 7 days unless the system is made operable earlier provided that during these 7 days the HPCI System is operable.

2. If the requirements of 3.5.E cannot be met, the reactor shall be placed in the cold condition and pressure less than 150 psig within 24 hours.

3. Low power physics testing and reactor operator training shall be permitted with inoperable components as specified in 3.5.E.2 above, provided that reactor coolant temperature is ≤212°F.

4. The RCIC system is not required to be operable during hydrostatic pressure and leakage testing with reactor coolant temperatures between 212°F and 300°F and irradiated fuel in the reactor vessel provided all control rods are inserted.

4.5 (Cont'd)

E. Reactor Core Isolation Cooling (RCIC) System

1. RCIC System testing shall be performed as follows provided a reactor steam supply is available. If steam is not available at the time the surveillance test is scheduled to be performed, the test shall be performed within ten days of continuous operation from the time steam becomes available.

	Item	Frequency
a.	Simulated Automatic Actuation (and Restart*) Test	Once per 24 Months
b.	Pump Operability	Once/month
c.	Motor Operated Valve Operability	Once/month
d.	Flow Rate	Once/3 months
e.	Testable Check Valves	Tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 31 days.
f.	Logic System Functional Test	Once per 24 Months

* Automatic restart on a low water level signal which is subsequent to a high water level trip.

Amendment No. ~~40, 107, 130, 179~~, 233

4.5 BASES

The testing interval for the Core and Containment Cooling Systems is based on a quantitative reliability analysis, industry practice, judgement, and practicality. The Emergency Core Cooling Systems have not been designed to be fully testable during operation. For example, the core spray final admission valves do not open until reactor pressure has fallen to 450 psig; thus, during operation even if high drywell pressure were simulated, the final valves would not open. In the case of the HPCI, automatic initiation during power operation would result in pumping cold water into the reactor vessel which is not desirable.

The systems will be automatically actuated once per 24 months. In the case of the Core Spray System, condensate storage tank water will be pumped to the vessel to verify the operability of the core spray header. To increase the availability of the individual components of the Core and Containment Cooling Systems the components which make up the system i.e., instrumentation, pumps, valve operators, etc. are tested more frequently. The instrumentation is functionally tested each month. Likewise, the pumps and motor-operated valves are also tested each month to assure their operability. The combination automatic actuation test and monthly tests of the pumps and valve operators is deemed to be adequate testing of these systems.

With components or subsystems out-of-service, overall core and containment cooling reliability is maintained by verifying the operability of the remaining cooling equipment. Consistent with the definition of operable in Section 4.0.C, demonstrate means conduct a test to show; verify means that the associated surveillance activities have been satisfactorily performed within the specified time interval.

The RCIC flow rate is described in the UFSAR. The flow rates to be delivered to the reactor core for HPCI, the LPCI mode of RHR, and CS are based on the SAFER/GESTR LOCA analysis. The flow rates for the LPCI mode of RHR and CS are modified by a 10 percent reduction from the SAFER/GESTR LOCA analysis. The reductions are based on a sensitivity analysis (General Electric MDE-83-0786) performed for the parameters used in the SAFER/GESTR analysis.

The CS surveillance requirement includes an allowance for system leakage in addition to the flow rate required to be delivered to the reactor core. The leak rate from the core spray piping inside the reactor but outside the core shroud is assumed in the UFSAR and includes a known loss of less than 20 gpm from the 1/4 inch diameter vent hole in the core spray T-box connection in each of the loops, and in the B loop, a potential additional loss of less than 40 gpm from a clamshell repair whose structural weld covers only 5/6 of the circumference of the pipe. Both of these identified sources of leakage occur in the space between the reactor vessel wall and the core shroud. Therefore flow lost through these leak sources does not contribute to core cooling.

The surveillance requirements to ensure that the discharge piping of the core spray, LPCI mode of the RHR, HPCI, and RCIC Systems are filled provides for a visual observation that wa- flows from a high point vent. This ensures that

3.7 (cont'd)

2. From and after the date that one circuit of the Standby Gas Treatment System is made or found to be inoperable for any reason, the following would apply:

   a. If in Start-up/Hot Standby, Run or Hot Shutdown mode, reactor operation or irradiated fuel handling is permissible only during the succeeding 7 days unless such circuit is sooner made operable, provided that during such 7 days all active components of the other Standby Gas Treatment Circuit shall be operable.

   b. If in Refuel or Cold Shutdown mode, reactor operation or irradiated fuel handling is permissible only during the succeeding 31 days unless such circuit is sooner made operable, provided that during such 31 days all active components of the other Standby Gas Treatment Circuit shall be operable.

3. If Specifications 3.7.B.1 and 3.7.B.2 are not met, the reactor shall be placed in the cold condition and irradiated fuel handling operations and operations that could reduce the shutdown margin shall be prohibited.

4.7 (cont'd)

e. Once per 24 months, manual operability of the bypass valve for filter cooling shall be demonstrated.

f. Standby Gas Treatment System Instrumentation Calibration:

differential pressure switches	Once per 24 Months

2. When one circuit of the Standby Gas Treatment System becomes inoperable, the operable circuit shall be verified to be operable immediately and daily thereafter.

3. Intentionally Blank

3.7 (cont'd)

D. Primary Containment Isolation Valves

1. Whenever primary containment integrity is required per 3.7.A.2, containment isolation valves and all instrument line excess flow check valves shall be operable, except as specified in 3.7.D.2. The containment vent and purge valves shall be limited to opening angles less than or equal to that specified below:

Valve Number	Maximum Opening Angle
27AOV-111	40°
27AOV-112	40°
27AOV-113	40°
27AOV-114	50°
27AOV-115	50°
27AOV-116	50°
27AOV-117	50°
27AOV-118	50°

4.7 (cont'd)

c. Secondary containment capability to maintain a 1/4 in. of water vacuum under calm wind conditions with a filter train flow rate of not more than 6,000 cfm, shall be demonstrated once per 24 months prior to refueling.

D. Primary Containment Isolation Valves

1. The primary containment isolation valves surveillance shall be performed as follows:

a. Once per 24 months, the operable isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and for closure time.

b. Once per 24 months, the instrument line excess flow check valves shall be tested for proper operation.

c. At least once per quarter:

(1.) All normally open power-operated isolation valves (except for the main stream line and Reactor Building Closed Loop Cooling Water System (RBCLCWS) power-operated isolation valves) shall be fully closed and reopened.

3.9 (cont'd)

3. From and after the time both power supplies are made or found inoperable the reactor shall be brought to cold condition within 24 hours.

G. REACTOR PROTECTION SYSTEM ELECTRICAL PROTECTION ASSEMBLIES

Two RPS electrical protection assemblies for each inservice RPS MG set and inservice alternate source shall be operable except as specified below:

1. With one RPS electrical protection assembly for an inservice RPS MG set or an inservice alternate power supply inoperable, restore the inoperable channel to operable status within 72 hours or remove the associated RPS MG set or alternate power supply from service.

2. With two RPS electrical protection assemblies for an inservice RPS MG set or an inservice alternate power supply inoperable, restore at least one to operable status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

4.9 (cont'd)

G. REACTOR PROTECTION SYSTEM ELECTRICAL PROTECTION ASSEMBLIES

The RPS electrical protection assemblies instrumentation shall be determined operable by:

1. Performing a channel functional test each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 6 months.

2. Once per 24 months, demonstrating the operability of over-voltage, under-voltage and under-frequency protective instrumentation by performance of a channel calibration including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints:

	RPS MG SET SOURCE
OVER-VOLTAGE	≤132V ≤4 second Time Delay
UNDER-VOLTAGE	≥112.3V ≤4 second Time Delay
UNDER-FREQUENCY	≥57Hz ≤4 second Time Delay

(continued on page 222d)

4.9 BASES (cont'd)

D. Not Used

E. Battery System

Measurements and electrical tests are conducted at specified intervals to provide indication of cell condition and to determine the discharge capability of the batteries. Performance and service tests are conducted in accordance with the recommendations of IEEE 450-1995.

The battery service (duty cycle) test demonstrates the capacity of the battery to meet the system design requirements. When a service test is used on a regular basis, it will reflect maintenance practices. The FitzPatrick design duty cycle loads are determined by a LOCA concurrent with a loss of normal and reserve power.

The performance (discharge) test is a test of the constant current capacity of a battery and can be conducted with the battery in an as-found condition after being subjected to an equalizing charge. If performance testing is to be used to reflect baselined battery trending capacity, then special conditions (including equalizing) are required to establish the battery in an as known condition prior to the test. If performance testing is to be used to reflect maintenance practices as well as trending, the equalizing charge can be omitted.

The modified performance test is a composite test which envelopes both the service test and performance test requirements. The modified performance test discharge current envelopes the peak duty cycle loads of the service test followed by a constant discharge current (temperature corrected) for the performance test.

The purpose of the modified performance test is to demonstrate the battery has sufficient capacity to meet the system design requirements and to provide trendable performance data to compare the available capacity in the battery to previous capacity test results. The modified performance test may be performed in lieu of the battery service test.

The station batteries are required for plant operation, and performing the station battery service test and performance (or modified performance) test requires the reactor to be shut down.

F. LPCI MOV Independent Power Supply

Measurement and electrical tests are conducted at specified intervals to provide indication of cell condition, to determine the discharge capability of the battery. Performance and service tests are conducted in accordance with the recommendations of IEEE 450-1995.

G. Reactor Protection Power Supplies

Functional tests of the electrical protection assemblies are conducted at specified intervals utilizing a built-in test device and once per 24 months by performing an instrument calibration which verifies operation within the limits of Section 4.9.G.

3.11 (cont'd)

ventilation air supply fan and/or filter may be out of service for 14 days.

2. The main control room air radiation monitor shall be operable whenever the control room emergency ventilation air supply fans and filter trains are required to be operable by 3.11.A.1 or filtration of the control room ventilation intake air must be initiated.

3. The control room emergency ventilation system shall not be out of service for a period exceeding 3 days during normal reactor operation or refueling operations. In the event that the system is not returned to service within 3 days, the reactor shall be in cold shutdown within 24 hours and any handling of irradiated fuel, core alterations, and operations with a potential for draining the reactor vessel shall be suspended as soon as practicable

4. Not Used

4.11 (cont'd)

b. Di-octylphtalate (DOP) test for particulate filter efficiency greater than 99% for particulate greater than 0.3 micron size.

c. Freon-112 test for charcoal filter bypass as a measure of filter efficiency of at least 99.5% for halogen removal.

d. A sample of charcoal filter shall be analyzed once a year to assure halogen removal efficiency of at least 99.5%.

2. Operability of the main control room air intake radiation monitor shall be tested once/3 months.

3. Temperature transmitters and differential pressure switches shall be calibrated once per 24 months.

4. Main control room emergency ventilation air supply system capacity shall be tested once every 18 months to assure that it is ±10% of the design value of 1000 cfm.

3.11 (cont'd)

B. DELETED

C. Battery Room Ventilation

Battery room ventilation shall be operable on a continuous basis whenever specification 3.9.E is required to be satisfied.

1. From and after the date that one of the battery room ventilation systems is made or found to be inoperable, its associated battery shall be considered to be inoperable for purposes of specification 3.9.E.

4.11 (cont'd)

B. DELETED

C. Battery Room Ventilation

Battery room ventilation equipment shall be demonstrated operable once/week.

1. When it is determined that one battery room ventilation system is inoperable, the remaining ventilation system shall be verified operable and daily thereafter.

2. Temperature transmitters and differential pressure switches shall be calibrated once per 24 months.

ATTACHMENT TO LICENSE AMENDMENT NO. 233

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix B as follows:

Remove Pages	Insert Pages
32	32
33	33
38	38
39	39

LIMITING CONDITIONS FOR OPERATION

3.7 OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MIXTURE INSTRUMENTATION

Applicability

Applies to the condenser offgas treatment system recombiner operation.

Objective

To ensure proper conditions for the offgas recombiner to operate at design efficiency in order to prevent an explosive mixture of gases in the charcoal treatment system.

Specifications

a. The concentration of either hydrogen or oxygen in the main condenser offgas treatment system shall be limited to less than or equal to 4% by volume.

b. In lieu of continuous hydrogen or oxygen monitoring, the following instrumentation shall be operational and capable of providing automatic isolation of the offgas

SURVEILLANCE REQUIREMENTS

3.7 OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MIXTURE INSTRUMENTATION

Applicability

Applies to the offgas treatment system instrumentation, whi(monitors the critical operating parameters of the primary recombiner.

Objective

To ensure that instrumentation required for automatic isolation is maintained and calibrated.

Specifications

a. The concentration of either hydrogen or oxygen in the main condenser offgas treatment system shall be determined to be within the limits of Specification 3.7.a by continuously monitoring the waste gases in the main condenser offgas treatment system whenever the main condenser evacuation system is in operation with the hydrogen or oxygen monitors. Operation of the hydrogen or oxygen monitors shall be verified in accordance with Specification 3.7.b.1 and 3.7.b.4.

b. Whenever continuous hydrogen or oxygen monitoring is not available, operation of the explosive gas mixture instruments listed in Specification 3.7.b shall be verified.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
treatment system under the following conditions:	
1. The offgas dilution steam flow instrumentation shall alarm and automatically isolate the offgas recombiner system at a low flow setpoint greater than or equal to 6300 pounds per hour and at a high flow setpoint less than or equal to 7900 pounds per hour.	1. An instrument check shall be performed daily when the offgas treatment system is in operation.
2. The offgas recombiner inlet temperature sensor shall alarm and automatically isolate the offgas recombiner system at a temperature setpoint of greater than or equal to 125°C.	2. An instrument channel functional test of the instrumentation listed in Specification 3.7.b shall be performed once per 24 months.
3. The offgas recombiner outlet temperature sensor shall alarm and automatically isolate the offgas treatment system at a temperature setpoint of greater than or equal to 150°C.	3. An instrument channel calibration of the instrumentation listed in Specification 3.7.b shall be performed once per 24 months.
	4. An instrument channel functional test and calibration of the off-gas hydrogen or oxygen monitors shall be performed once every 3 months.
c. In lieu of continuous hydrogen or oxygen monitoring, the condenser offgas treatment system recombiner effluent shall be analyzed to verify that it contains less than or equal to 4% hydrogen by volume.	c. With condenser offgas treatment system recombiner in service, in lieu of continuous hydrogen or oxygen monitoring, the hydrogen content shall be verified weekly to be less than or equal to 4 % by volume.
d. With the requirements of the above specifications not satisfied, restore the recombiner system to within operating specifications or suspend use of the charcoal treatment system within 48 hours.	In the event that the hydrogen content cannot be verified, operation of this system may continue for up to 14 days.

TABLE 3.10-2

MINIMUM TEST AND CALIBRATION FREQUENCY FOR RADIATION MONITORING SYSTEMS[a]

Instrument Channels	Instrument Check[b]	Instrument Channel Functional Test[i]	Instrument Channel Calibration	Logic System Function Test[f][h]
Main Stack Exhaust Monitors and Recorders	Daily	Quarterly	Quarterly	- -
Refuel Area Exhaust Monitors and Recorders	Daily	Quarterly	Quarterly	- -
Reactor Building Area Exhaust Monitors, Recorders, and Isolation	Daily	Quarterly	Quarterly	Semiannually
Turbine Building Exhaust Monitors and Recorders	Daily	Quarterly	Quarterly	- -
Radwaste Building Exhaust Monitors and Recorders	Daily	Quarterly	Quarterly	- -
SJAE Radiation Monitors/Offgas Line Isolation	Daily	Quarterly	Quarterly	Semiannually
Main Control Room Ventilation Monitor	Daily	Quarterly	Quarterly	- -
Mechanical Vacuum Pump Isolation[g]	- -	- -	- -	Once per 24 Months
Liquid Radwaste Discharge Monitor/ Isolation[c][d][e][f]	Daily When Discharging	Quarterly	Quarterly	Semiannually
Liquid Radwaste Discharge Flow Rate Measuring Devices[d]	Daily	Quarterly	Once per 18 Months	- -
Liquid Radwaste Discharge Radioactivity Recorder [d]	Daily	Quarterly	Once per 18 Months	- -
Normal Service Water Effluent	Daily	Quarterly	Quarterly	- -
SBGTS Actuation	- -	- -	- -	Semiannually

Amendment No. ~~93, 127, 213~~, 233

NOTES FOR TABLE 3.10-2

(a) Functional tests, calibrations and instrument checks need not be performed when these instruments are not required to be operable or are tripped.

(b) Instrument checks shall be performed at least once per day during these periods when the instruments are required to be operable.

(c) A source check shall be performed prior to each release.

(d) Liquid radwaste effluent line instrumentation surveillance requirements need not be performed when the instruments are not required as the result of the discharge path not being utilized.

(e) An instrument channel calibration shall be performed with known radioactive sources standardized on plant equipment which has been calibrated with NBS traceable standards.

(f) Simulated automatic actuation shall be performed once per 24 months. Where possible, all logic system functional tests will be performed using the test jacks.

(g) Refer to Appendix A for instrument channel functional test and instrument channel calibration requirements (Table 4.2-1). These requirements are performed as part of main steam high radiation monitor surveillances.

(h) The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

(i) This instrumentation is excepted from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel. These instrument channels will be calibrated using simulated electrical signals once every three months.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 233 TO FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

1.0 INTRODUCTION

By letter dated January 25, 1996, the Power Authority of the State of New York (the licensee) submitted a request for changes to the James A. FitzPatrick Nuclear Power Plant Technical Specifications (TSs). The amendment would extend the instrumentation surveillance test intervals to support 24-month operating cycles. These proposed changes would eliminate the mid-cycle outages to perform the TS surveillance requirements.

2.0 EVALUATION

The proposed changes involve the following: (1) extension of instrumentation and miscellaneous surveillance test intervals to support 24-month operating cycles: (2) revision of the reactor protection system (RPS) normal supply electrical protection assembly (EPA) undervoltage trip setpoint; and (3) editorial revisions, clarification and Bases changes. The instrumentation subject to this proposal involves the following: RPS, Primary Containment Isolation Systems, Control Rod Blocks, Anticipated Transient Without Scram (ATWS) Recirculation Pump Trip, Accident Monitoring and Remote Shutdown Systems, Radiological Effluent Technical Specification (RETS) monitoring, and safety-related plant ventilation systems.

2.1 Technical Basis

Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate 24-Month Fuel Cycle," provided guidance on the type of analysis and information required to justify a change to instrument calibration intervals. The licensee's approach in evaluating 24-month calibration interval extensions is to discuss the seven specific actions delineated in Generic Letter 91-04. This discussion provides insight to the methodology used by the licensee in evaluating the effects of an increased surveillance test interval (STI) on instrument drift.

The licensee developed Instrument Drift Evaluations (IDEs) to address Issues 1, 2, and 3 of Generic Letter 91-04. The IDEs document past performance and calculations statistically extrapolate the effect of the longer calibration interval on instrument drift. Historical calibration data for components currently calibrated once per 18 months were evaluated to assess the acceptability of extending the calibration interval to 24 months. In general, the IDEs are comprised of two phases. Phase 1 compares past instrument performance to theoretical acceptance limits (Vendor Drift Allowance (VDA) or Calibration Tolerance (CT)). Phase 2 predicts future drift by statistically extrapolating derived drift data to predict maximum expected drift over a 30-month interval (MED30). The historical calibration data is the absolute value of the difference between the "as-found" and previous "as-left" calibration values. The term "drift" as used throughout the IDE actually represents the total instrument calibration uncertainties.

Calibration data is collected and categorized by component type for analysis. The tabulated drift values are then compared to theoretical acceptance limits. Deviations from this criteria are evaluated on a case-by-case basis. Phase 2 of the IDE predicts future instrument performance over a maximum 30-month period (the maximum calibration interval permitted by TS for a 24-month cycle + 25% additional STI) using this Phase 1 data. Field drift data is analyzed, using the square root of the sum of the squares technique, to arrive at a value normalized to a 30-month interval. A value of MED30 is statistically derived from normalized field drift data. The MED30 value bounds hardware performance with a 95% probability at a 95% confidence level. The MED30 value is then compared to the vendor drift allowance extrapolated to a 30-month time period, or CT if vendor performance limits are not available. If MED30 exceeds VDA or CT, then further analysis is performed and loop accuracy and setpoint calculations are updated to include MED30.

Loop accuracy calculations were performed to determine total channel uncertainties by accounting for instrument inaccuracies. Loop accuracy/setpoint calculations are required to show that sufficient margin exists between the analytical limit and the existing field trip setting to confirm that the safety analysis and safety limit assumptions are not exceeded. The calculations verify that TS limits provide sufficient margin over the analytical limit to allow for instrument inaccuracies. If the loop accuracy/setpoint calculation shows that insufficient margin exists, considering 30-month drift uncertainties, one of the following actions is taken: (1) the calibration interval is not extended, (2) new field settings (the setting at which the licensee can place the setpoint which is always more conservative than the setpoint listed in the TS) are calculated and the setpoint is revised (if necessary) to ensure sufficient margin exists, or (3) analysis is performed to establish new TS Trip Level Settings that will ensure that safety actions are initiated consistent with the assumptions of the safety analysis.

2.2 Surveillance Test Interval Extension

2.2.1 Specification 1.0.T (Change 1.A.1)

This specification defines the surveillance frequency notations/intervals used in the TSs. The note in Section 1.0.T clarifies "once per operating cycle," and similar phrases, by relating the interval to the definition of the frequency notation "R." The following changes are proposed to this specification:

The notation "R" is defined as "Operating Cycle" with a frequency of "At least once per 24 months (731 days)."

A new notation, "18M," is defined as "18 Months" with a frequency of "At least once per 18 months (550 days)."

Note 1 to the specification is deleted. Note 1 has been replaced with phrases that specify the required time intervals such as "once per 24 months" and "once per 18 months." These changes eliminate the clarification provided in Note 1. These proposed changes are administrative and show the method by which STIs are presented in the TSs.

2.2.2 Reactor Protection System (RPS) Instrumentation

a. RPS Instrument Response Time Testing - SR 4.1.A (Change 1.A.2)

This surveillance requirement (SR) currently requires that the response time of the RPS trip functions listed in Specification 4.1.A be demonstrated at least once per 18 months. This testing verifies that RPS trip functions are completed within the time limits assumed in the accident and transient analyses. This SR can be extended to support a 24-month STI because of the redundant design of the RPS and adequate on-line testing to detect failures that could affect RPS response times. This conclusion is supported by a review of past surveillance test results which indicate that all required acceptance criteria have consistently been met.

b. Table 4.1-1 - RPS Scram Instrumentation Test Requirements

This SR demonstrates the ability of the reactor mode switch to cause a reactor scram when the switch is placed in "Shutdown" and demonstrates that the time delay for the reset relays is ≥10 seconds. The change in the STI from 18 to 24 months is made by a revision of the Specification 1.0.T definition of "R."

c. Table 4.1-2 - RPS Scram Instrument Calibration (Change 1.A.1, 1.A.3, and 1.A.4)

Item 3 - Flow Bias Signal
Item 5 - High Reactor Pressure
Item 6 - High Drywell Pressure
Item 7 - Reactor Low Water Level
Item 8 - High Water Level in the SDIV (Group A)
Item 10 - MSIV Valve Closure
Item 11 - Turbine First Stage Pressure Permissive
Item 12 - Turbine Control Valve Fast Closure Oil Pressure Trip
Item 13 - Turbine Stop Valve Closure

Table 4.1-2 currently requires a once per operating cycle calibration for the above listed RPS system instrument channels. The review of past performance for Items 5, 6, 7, 8, 11, 12, and 13 confirmed that past drift values were within the specified calibration tolerances. Therefore, this instrumentation has an acceptable past performance record as defined by GL 91-04. Past drift for the APRM Flow Bias Signal (Item 3) flow transmitters (Barton and Foxboro) routinely exceeded the specified calibration tolerance. As a result, they were replaced with Rosemount Transmitters. Square root and summing components of the APRM flow bias loop were found out of procedural tolerance in the past due to a tight CT. New calibration tolerances have been calculated based on past performance and should bound future drift. The main steam isolation valves (MSIV) limit switches (Item 10) have experienced problems during plant operation primarily due to failure of the switches to reset, and slow resets during the periodic MSIV limit switch instrument functional test. The majority of the limit switch failures were related to a reset of the switches, rather than instrument drift. The failure to reset problem has been addressed by installation of modified actuating levers during the Reload 11/Cycle 12 Refueling Outage.

Projected values of future drift were incorporated into loop accuracy calculations for Items 5, 6, 8, 11, and 12. The calculations determined that sufficient margin exists between the field trip setpoints and the analytic limit when the 30-month drift uncertainties are considered. For the APRM flow bias signal transmitters (Item 3), the projected drift based on Rosemount information of the new transmitters is significantly less than the old transmitters evaluated in the drift analysis using past drift data. Therefore, it is acceptable to extend the calibration interval to 24 months for these instruments. Extension of the calibration intervals for Item 7, 10, and 13 require changes to the field settings to ensure that sufficient margin exists between the field setting and the TS setpoint limit. The field setting changes will be completed prior to implementation of the 24-month STI. The staff finds these changes acceptable.

d. RPS EPA Channel Calibration - SR 4.9.G.2 (Change A.1.18)

This SR currently requires a once per operating cycle calibration of the overvoltage (OV), undervoltage (UV) and underfrequency (UF) protective instrumentation. This includes simulated automatic actuation of relays, logic and output breakers.

Extension of the calibration interval for the Normal and Alternate EPA time delays is acceptable because sufficient margin is available between the field settings and the TS trip setpoints to accommodate the projected drift and uncertainties associated with a 30-month calibration interval. The staff finds these changes acceptable.

2.2.3 Primary Containment Isolation System (PCIS) Instrumentation

a. PCIS Instrument Response Time Testing - SR 4.2.A (Change 1.A.5)

This SR currently requires that response times of the MSIV actuation trip functions listed in SR 4.2.A be demonstrated within specified limits once per 18 months. This SR can be extended to support a 24-month operating cycle because of the redundant design of the PCIC, adequate on-line testing to detect failures that could affect PCIC response times, available margin to accommodate potentially slower response times, and a monitoring program to detect failures of these transmitters due to loss of fill-oil. This conclusion is supported by a review of past surveillance results which indicate that all required acceptance criteria have consistently been met.

b. Table 4.2-1 - PCIS Instrumentation Test and Calibration Requirements (Changes 1.A.1, 1.A.10)

Item 2 - Reactor Low-Low-Low Water Level
Item 3 - Main Steam Line Tunnel High Temperature
Item 4 - Main Steam Line High Flow
Item 5 - Main Steam Line Low Pressure
Item 7 - Condenser Low Vacuum
Item 8 - Main Steam Line Tunnel High Radiation
Item 9 - HPCI & RCIC Steam Line High Flow
Item 10 - HPIC & RCIC Steam Line/Area High Temp
Item 11 - HPCI & RCIC Steam Line Low Pressure

Table 4.2-1 currently requires a once per operating cycle sensor calibration of the above listed PCIS system trip functions to ensure that the instruments are properly calibrated and actuation takes place at previously determined setpoints. Analysis of historical surveillance data confirmed that past drift values for all devices associated with these line items were within specified tolerances. Projected values of future drift are incorporated into loop accuracy calculations for each listed PCIS trip function. The calculations determined that the calibration intervals for Items 2, 3, 4, 8, 10, 11, and the RCIC steam line high flow portion of Item 9 can be extended to a 24-month STI because sufficient margin exists between the field trip setpoint and the TS setpoint limit considering 30-month drift uncertainties. Therefore, extension of the calibration intervals for these items to support a 24-month operating cycle is acceptable.

Extension of the calibration interval for Items 5, 7, and the HPCI steam line high flow portion of Item 9 requires a change to the field settings to ensure that sufficient margin exists between the field setting and the TS setpoint limit. Changes to the TS setpoint level settings listed in Table 3.2-1 are not required to support these field setting changes.

c. Table 4.2-1 - PCIS Simulated Automatic Actuation Requirements (Change 1.A.8) I

Item 1 Main Steam Line Isolation Valves, Main Steam Line Drain Valves, and Reactor Water Sample Valves
Item 2 RHR - Isolation Valve Control and Shutdown Cooling Valves
Item 3 Reactor Water Cleanup Isolation
Item 4 Drywell Isolation Valves, TIP Withdrawal, and Atmospheric Control Valves
Item 5 SGT System and Reactor Building Isolation
Item 6 HPCI Subsystem Auto Isolation
Item 7 RCIC Subsystem Auto Isolation

Table 4.2-1 defines the simulated automatic actuation (SAA) requirements for the PCIS. The SAA testing confirms the ability of the PCIS to perform its intended function by confirming proper operation of electrical and mechanical components. The extended STI for SAA testing of the PCIS is acceptable based on the high reliability of system components, the redundant design of the PCIS and existing on-line testing. A review of historical surveillance data supports this conclusion.

2.2.4 Core and Containment Cooling Instrumentation

a. Table 4.2-2 - Core and Containment Cooling System Instrumentation Test and Calibration Requirements (Changes 1.A.1, 1.A.6 and 1.A.10)

Item 1 - Reactor Water Level
Item 2b - Drywell Pressure
Item 3b - Reactor Pressure
Item 4 - Auto Sequencing Timers
Item 9 - 4kV Emergency Bus Undervoltage Relays & Timers
Item 10 - LPCI Cross Connect Valve Position

Table 4.2-2 currently requires a once per operating cycle calibration of Items 1, 2b, 3b, 4, 9, and an instrument functional test for Items 9 and 10 to ensure the instruments are properly calibrated and actuation takes place at previously evaluated setpoints. The calibration interval for Item 4 is not extended at this time because sufficient data is not available to properly evaluate the effects of the longer STI on instrument drift. Calibration of these timers on an 18-month STI will not impact the proposed 24-month operating cycle because the testing can be done with the plant on-line. Therefore, this calibration frequency will be designated as "18M."

The instrument functional test for the LPCI cross-connect valve position indication channel (Item 10) demonstrates that an annunciator alarms when either the LPCI cross-connect valve control room panel keylock switch is in the "Open" position or the LPCI cross-connect valve is not in the full closed position. Review of historical data shows that there have been no recorded failures of this function during testing or operations. These devices are highly reliable and do not exhibit time dependent performance failures. The valve is verified locked closed on a monthly basis. Therefore, the safety function is verified more often than the calibration STI would require, and extension of this test interval to accommodate a 24-month operating cycle is, therefore, acceptable.

Analysis of historical surveillance data for Items 1, 2b, 3b, and 9 confirmed that past drift values for these devices were within the specified tolerances. A review of the 4kV emergency bus undervoltage and degraded voltage relays and timers functional test indicates that all required acceptance criteria have consistently been met. Predicted values of future drift were incorporated into loop accuracy calculations for Items 1, 2b, 3b, and 9. The calculations determined that the STI for Items 1, 2b, and 3b can be extended to support a 24-month operating cycle because sufficient margin currently exists between the field trip setpoint and the TS setpoint limit. The field trip setting and TS setpoint limit need to be changed for Item 9 to account for increased instrument drift. The staff finds these changes acceptable.

b. Table 4.2-2 - Core and Containment Cooling System Instrumentation Test and Calibration Requirements (Change 1.A.8)

Item 1 Core Spray Subsystem
Item 2 Low Pressure Coolant Injection Subsystem
Item 4 HPCI Subsystem
Item 5 ADS Subsystem
Section 4.5 - Core and Containment Cooling Systems Surveillance Requirements (Changes 1.A.12 and 1.A.13)

Table 4.2-2 defines the Logic System Functional Test (LSFT) and SAA requirements for emergency core cooling system (ECCS) logic. The SAA and LSFT requirements of Items 1, 2, and 4 are duplicated in Section 4.5.A.1, 4.5.A.3, and 4.5.C.1 of the Technical Specifications. However, for the LSFT requirements, the surveillance frequency listed in Section 4.5 is once per operating cycle while the frequency listed in Table 4.2-2 is once per six months. To resolve this discrepancy, the LSFT and SAA frequencies listed in Section 4.5 will be revised to reference the SR in Table 4.2-2 (once per six months for LSFT and once per 18 months in Note 7 for SAA). The extension of SAA testing to 24 months for Items 1, 2, 4, and 5 is proposed by a revision of Note 7 of Table 4.2-2. Extension of the SAA testing to a 24-month interval for these systems is acceptable based on the results of a review of historical surveillance data which show high reliability of system components, redundant design of the ECCS, and existing on-line testing capability.

4.5.E.1.a - RCIC Simulated Automatic Actuation Test (Change 1.A.15)
4.5.E.1.f - RCIC LSFT (Change 1.A.15)

SR 4.5.E.1.a and 4.5.E.1.f define the LSFT and SAA requirements for the RCIC system. Based on the results of a review of historical surveillance data which shows the acceptable reliability of system components and existing on-line testing, it is acceptable to extend the STI to 24 months for RCIC system LSFT and SAA testing.

2.2.5 Control Rod Block Instrumentation Test and Calibration Requirements

Table 4.2-3 - Control Rod Block System Logic Check and Simulated Automatic Actuation Requirement (Change 1.A.7)

The control rod block logic is arranged in a "1 of n" configuration in which a rod block signal is generated each time a channel functional test or calibration is performed. Therefore, these tests are equivalent to an SAA because the testing actuates the control rod block circuitry. This adequately demonstrates the control rod block circuit design function. Furthermore, the existing functional testing and calibrations satisfy the requirements of an LSFT. Therefore, the licensee proposes to delete the SAA and LSFT requirements for this function. Deletion of the SAA and LSFT requirements in Table 4.2-3 will also make the periodic test requirements for the control rod block instrumentation consistent with BWR Standard Technical Specifications.

Prior to implementation of the proposed amendment, the licensee will conduct a review of surveillance testing procedures to verify that testing performed on the control rod block logic is consistent with the requirements stated in the BWR Standard Technical Specifications.

2.2.6 ATWS Recirculation Pump Trip Instrumentation

Table 4.2-7 - ATWS Recirculation Pump Trip Instrumentation Test and Calibration Requirements (Change 1.A.1)

Table 4.2-7 currently specifies a once per operating cycle channel calibration, SAA and LSFT for the ATWS instrumentation. The LSFT and SAA testing can be extended to a 24-month STI because the instrumentation used is highly reliable, and there is sufficient on-line testing to verify operability of the system. An analysis of historical calibration data confirmed that past drift values for these instruments were within specified tolerances. Predicted values of future drift were incorporated into loop accuracy calculations for each listed circuit. The calculations determined that the ATWS instrument calibrations can be extended to a 24-month STI because sufficient margin exists between the field trip setpoint and the TS setpoint limit. This extended STI is, therefore, acceptable.

2.2.7 Accident Monitoring Instrumentation

Table 4.2-8 - Minimum Test and Calibration Frequency for Accident Monitoring Instrumentation (Change 1.A.1 and 1.A.11)

Item 4 - Containment High Range Radiation Monitor
Item 5 - Narrow Range Drywell Pressure
Item 6 - Wide Range Drywell Pressure
Item 7 - Drywell Temperature
Item 8 - Wide Range Torus Water Level
Item 9 - Torus Bulk Water Temperature
Item 10 - Torus Pressure
Item 12 - Reactor Vessel Pressure
Item 13 - Fuel Zone Reactor Water Level
Item 14 - Wide Range Reactor Water Level
Item 15 - Core Spray Flow
Item 16 - Core Spray Discharge Pressure
Item 17 - LPCI (RHR) Flow
Item 18 - RHR Service Water Flow
Item 20 - Narrow Range Torus Water Level
Item 21 - Drywell-Torus Differential Pressure

Table 4.2-8 requires a once per operating cycle instrument functional test and calibration for the above accident monitoring instrumentation. Analysis of historical surveillance data confirmed that past drift values for these instruments were within the specified tolerances. Therefore, this instrumentation has an acceptable past performance record as defined by Generic Letter 91-04. Postulated values of future drift were incorporated into loop accuracy calculations for these instruments to maintain sufficient margin between the field trip setpoint and the TS setpoint limit. Therefore, extension of the functional test and calibration frequency to 24 months is acceptable.

2.2.8 Remote Shutdown Instrumentation

Remote Shutdown Capability Instrumentation and Controls (Change 1.A.1)
Table 3.2-10:
Note C - Instrument Calibration for Each Required Instrument Channel
Note D - Demonstrate Control Circuit and Transfer Switches Function

Table 3.2-10 currently requires a once per operating cycle calibration of the remote shutdown instrumentation and demonstration that each control circuit and transfer/isolation switch is capable of performing its intended function. Analysis of historical surveillance data for the remote shutdown instrumentation confirmed that past drift values for all these devices were within specified tolerances. Therefore, this instrumentation has an acceptable past performance record as defined by Generic Letter 91-04. Predicted values of future drift for these instruments were incorporated into loop accuracy calculations to ensure that sufficient margin exists between the field trip setpoint and the TS setpoint limit. Therefore, the instrument calibrations can be extended to a 24-month STI. Also, a review of past performance of the control circuit and transfer switch functional tests show no test failures. Therefore, extension of the functional test STI interval for the control circuit and transfer switch is acceptable.

2.2.9 Miscellaneous Instrumentation Calibrations and Functional Tests

a. Standby Gas Treatment (SGT) System Differential Pressure Switch Calibration - SR 4.7.B.1.f (Change 1.A.16)

This SR currently requires calibration of the SGT system differential pressure switches once per operating cycle. Analysis of past instrument performance confirmed that drift values for these devices were within the specified tolerances. Predicted values of future drift were incorporated into loop accuracy calculations for these circuits. The calculations determined that sufficient margin exists between the field trip setpoint and the TS setpoint limit for the STI extension. Therefore, the proposed extension of the calibration interval to 24 months for the SGT differential pressure instrumentation is acceptable.

b. SR 4.11.A.3 Control Room Ventilation Temperature Transmitter and Differential Pressure Switch Calibration (Change 1.A.19)

This SR currently requires calibration of the temperature transmitters and differential pressure indicating switches (DPIS) for the control room ventilation system once per operating cycle. A review of drift data for the DPIS switches and temperature transmitters indicates that drift values were within the required calibration tolerance. Therefore, the instrumentation has an acceptable performance record as defined in Generic Letter 91-04. Review of past drift data for the normal ventilation supply and exhaust fan differential pressure switches (DPS) indicates that the drift values exceeded specified CT on more than rare occasions. As a result, they have been replaced with new switches. Past drift for the temperature indicating controllers has exceeded the CT on more than rare occasions with four out of the five failures occurring before 1988. Past drift for the emergency trains differential pressure switches has exceeded the CT on more than rare occasions. All these failures were minimally above CT and did not jeopardize the switch design function. New calibration tolerances have been calculated for these instruments based on past performance to bound future drift for the extended interval. Predicted values of future drift were incorporated into loop accuracy calculations for these instruments. New calibration tolerance bands for the DPS, DPIS, and certain temperature instrumentation were calculated based on past instrument performance. The calculations determined that future drift over the longer STI is predicted to remain within the existing or revised calibration tolerance. Sufficient margin is provided between the field trip setpoint and the TS setpoint limit. Based on the above analysis, the proposed extension of the calibration STI to 24 months for this instrumentation is acceptable.

c. SR 4.11.B.2 Crescent Area Unit Cooler Temperature Control Instrumentation Calibrations (Change 1.A.20)

A review of drift data for the fan control temperature switches and the temperature indicating controllers for the crescent area indicates that drift values were within the required calibration tolerance. Therefore, the instrumentation has an acceptable past performance record as defined in Generic Letter 91-04. Predicted values of future drift for these instruments were incorporated into loop accuracy calculations to ensure that sufficient margin exists between the field setpoint and the TS setpoint limit considering 30-month drift uncertainties. Based on the results of the above analysis, the proposed extension of the calibration interval for the temperature control instrumentation is acceptable.

d. SR 4.11.C.2 Battery Room Ventilation Temperature Transmitter and Differential Pressure Switch Calibrations (Change 1.A.21)

A review of past drift data for the battery room differential pressure switches indicates that drift has exceeded the calibration tolerance on several occasions. These failures were on the air handling unit (AHU) and recirculation fan switches which provide annunciation only and do not perform a safety-related function, and on the exhaust fan switches which provide an automatic start of the exhaust fans. New calibration tolerances have been calculated for these instruments based on past performance to bound future drift. Predicted values of future drift for these instruments were incorporated into loop accuracy calculations to ensure that sufficient margin exists between the field trip setpoint and the TS trip setpoint limit when 30-month drift uncertainties are considered. Based on the results of the above analysis, the proposed extension is acceptable to the staff.

e. RETS SR 3.7.a., 3.7.b.2 and 3.7.b.3 Off-Gas System Explosive Gas Instrumentation Channel Functional Test and Instrument Calibrations (Changes 1.A.22, 1.A.23, 1.A.24, 1.A.25)

A review of past drift data for the dilution steam flow and recombiner temperature instruments in the off-gas explosive gas system indicates that drift values were within the required calibration tolerance. Therefore, this instrumentation has an acceptable past performance record as defined in Generic Letter 91-04. Predicted values of future drift for the dilution system flow and recombiner temperature instruments were incorporated into loop accuracy calculations to ensure that sufficient margin exists between the field setpoint and the TS setpoint limit considering 30-month drift uncertainties. Past drift for the hydrogen analyzers has exceeded the calibration tolerance on several occasions. A review of the hydrogen analyzer performance shows that the STI should not be extended for these instruments. The manufacturer recommends that these units be calibrated once per quarter. A new RETS 3.7.b.4 was added to require calibration of these instruments once per quarter. Based on the above analysis, the extension of the calibration interval to 24 months for these instruments is acceptable with the addition of the new TS 3.7.b.4 which requires calibration of the hydrogen analyzer once per quarter.

f. RETS SAA and LSFT Requirements (Changes 1.A.26, 1.A.29 and 1.A.30) Table 3.10-2:

Item 3 - Reactor Building Area Exhaust Monitors, Recorders and Isolation Simulated Automatic Actuation Note f)
Item 6 - SJAE Radiation Monitors/Offgas Line Isolation Simulated Automatic Actuation (Note f)
Item 8 - Mechanical Vacuum Pump Isolation Simulated Automatic Actuation (Note f) and LSFT
Item 9 - Liquid Radwaste Discharge Monitor/Isolation Simulated Automatic Actuation (Note f)
Item 12 - Normal Service Water Effluent (Note f)
Item 13 - SBGTS Actuation (Note f)

The LSFT requirement for the above listed items in Table 3.10-2 except Item 8 is not changed. The LSFT frequency for Item 8 is changed from "Once per Operating Cycle" to "Once per 24 Months" by revision of the Table 3.10-2 notation. The SAA testing interval of the instrumentation for Items 3, 6, 8, 9, and 13 is extended to 24 months by Note f in Table 3.10-2. A review of the surveillance test data and operating work history revealed no failures that would prevent the initiation of their functions. Therefore, extension of the STI to 24 months is acceptable. For Item 12, a quarterly instrument channel functional test and calibration is performed to verify the indication and alarm functions. During calibration, a source check is performed to ensure that the detector responds properly to a known source of radioactivity. This combination of testing meets the intent of the SAA testing, which is to actuate the circuit in question by applying a simulated signal to the sensor. Therefore, the once per operating cycle SAA testing requirement for this instrumentation is redundant to the testing that is already performed on a quarterly basis, and deletion of the SAA requirement for the normal service water effluent monitor is acceptable.

2.2.10 Changes to the RPS Normal Supply EPA Undervoltage Trip Setting in SR 4.9.G.2 (Change 1.B.6)

The licensee performed a calculation to determine the total channel uncertainties associated with the normal RPS EPA trip setpoints over a 24-month operating cycle. Based on the results of this calculation, the RPS MG set source undervoltage (UV) setpoint specified in SR 4.9.G.2 requires revision from its present value of ≥108V to ≥112.3V. The licensee analyzed the impact of the voltage drop from the EPAs to scram the pilot valve solenoids and other relays and concluded that the minimum voltage should be raised for the RPS scram pilot valve solenoids to ensure proper operation. The proposed SR 4.9.G.2 RPS MG set source UV setpoint, ≥112.3V, is more conservative. Based on our review of the setpoint analysis and the fact that is more conservative, the staff concludes that this setpoint change is acceptable.

2.2.11 Editorial, Clarification and Bases Changes

a. Technical Specification Tables 4.1-2, 3.2-10, 4.2-5, 4.2-6, and 4.2-8 are revised to make the format consistent with the changes in the proposed amendment and the BWR Standard Technical Specifications. These proposed changes are editorial in nature to clarify the TS requirements and are, therefore, acceptable.

b. The proposed changes to Table 3.2-10 clarify the operability and surveillance requirements by adding instrumentation components previously omitted from the table, and by reformatting the table to make it consistent with other instrumentation tables in the TS. These changes clarify operability and surveillance requirements for the remote shutdown equipment, incorporate editorial changes and do not change any TS requirements. They are, therefore, acceptable.

c. The proposed changes to the Technical Specification Bases revise terms such as "each refueling outage," "during refueling outage," "once per operating cycle," and "once per 24 months" to provide consistency between the surveillance test intervals and the Bases discussion. These proposed changes clarify the new STIs and are acceptable.

Based on review of the proposed changes to the James A. FitzPatrick Nuclear Power Plant TS, the NRC staff finds that the proposed changes to extend instrumentation surveillance test intervals to support 24-month operating cycles are consistent with the provisions of Generic Letter 91-04. In addition, the staff finds that the proposed instrument setpoint changes provide sufficient margin between the field settings and the TS limits for instrument drift predicted for the extended calibration interval. Finally, the staff finds that the proposed editorial changes and Bases changes more clearly define the surveillance requirements with specific applicability and corrective actions. The staff, therefore, concludes that the proposed TS changes for instrumentation surveillances on a 24-month operating cycle as discussed above are acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (61 FR 25709). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Sang Rhow

Date: October 2, 1996