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

PHILADELPHIA ELECTRIC COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-277

PEACH BOTTOM ATOMIC POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 104
License No. DPR-44

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

   A. The application for amendment by Philadelphia Electric Company, et al. (the licensee) dated November 10, 1983, 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-44 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.104 , are hereby incorporated in the license. PECO shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing

Attachment:
Changes to the Technical Specifications

Date of Issuance: February 7, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 104

FACILITY OPERATING LICENSE NO. DPR-44

DOCKET NO. 50-277

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain a vertical line indicating the area of change.

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Table 3.1.1 (Cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

| Minimum No. of Operable Instrument Channels per Trip System (1) | Trip Function | Trip Level Setting | Modes in which Function Must be Operable | | | Number of Instrument Channels Provided by Design | Action (1) |
|---|---|---|---|---|---|---|---|
| | | | Refuel (7) | Startup | Run | | |
| 2 | High Water Level in Scram Discharge Instrument Volume | ≤50 Gallons | X(2) | X | X | 4 Instrument Channels | A |
| 2 | Turbine Condenser Low Vacuum | >23 in. Hg. Vacuum | X(3) | X(3) | X | 4 Instrument Channels | A or C |
| 2 | Main Steam Line High Radiation | ≤3 X Normal Full Power Background | X | X | X | 4 Instrument Channels | A |
| 4 | Main Steam Line Isolation Valve Closure | ≤10% Valve Closure | X(3)(6) | X(3)(6) | X(6) | 8 Instrument Channels | A |
| 2 | Turbine Control Valve Fast Closure | 500<P<850 psig Control Oil Pressure Between Fast Closure Solenoid and Disc Dump Valve | | | X(4) | 4 Instrument Channels | A or D |
| 4 | Turbine Stop Valve Closure | ≤10% Valve Closure | | | X(4) | 8 Instrument Channels | A or D |

Amendment No. 23, 34, 104

NOTES FOR TABLE 3.1.1

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable sensor channels for a trip system cannot be met, the affected trip system shall be placed in the safe (tripped) condition, or the appropriate actions listed below shall be taken.

   A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours.

   B. Reduce power level to IRM range and place mode switch in the start up position within 8 hours.

   C. Reduce turbine load and close main steam line isolation valves within 8 hours.

   D. Reduce power to less than 30% rated.

2. Permissible to bypass, in refuel and shutdown positions of the reactor mode switch.

3. Bypassed when reactor pressure is less than 600 psig.

4. Bypassed when turbine first stage pressure is less than 220 psig or less than 30% of rated.

5. IRM's are bypassed when APRM's are onscale and the reactor mode switch is in the run position.

6. The design permits closure of any two lines without a scram being initiated.

7. When the reactor is subcritical and the reactor water temperature is less than 212 degrees F, only the following trip functions need to be operable:

   A. Mode switch in shutdown

   B. Manual scram

   C. High flux IRM

   D. Scram discharge instrument volume high level

8. Not required to be operable when primary containment integrity is not required.

9. Not required to be operable when the reactor pressure vessel head is not bolted to the vessel.

TABLE 4.1.1 (Cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT FUNCTIONAL TESTS
MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENT AND CONTROL CIRCUITS

| | Group (2) | Functional Test | Minimum Frequency (3) |
|---|---|---|---|
| High Water Level in Scram Discharge Instrument Volume | A | Trip Channel and Alarm | Every 1 month. |
| Turbine Condenser Low Vacuum (6) | B2 | Trip Channel and Alarm (4) | Every 1 month (1). |
| Main Steam Line High Radiation | B1 | Trip Channel and Alarm (4) | Once/week. |
| Main Steam Line Isolation Valve Closure | A | Trip Channel and Alarm | Every 1 month (1). |
| Turbine Control Valve EHC Oil Pressure | A | Trip Channel and Alarm | Every 1 month. |
| Turbine First Stage Pressure Permissive | A | Trip Channel and Alarm | Every 3 months (1). |
| Turbine Stop Valve Closure | A | Trip Channel and Alarm | Every 1 month (1). |
| Reactor Pressure Permissive (6) | B2 | Trip Channel and Alarm (4) | Every 3 months. |

TABLE 4.1.2

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

| Instrument Channel | Group (1) | Calibration (4) | Minimum Frequency (2) |
|---|---|---|---|
| IRM High Flux | C | Comparison to APRM on Controlled Shutdown | Maximum frequency once per week. |
| APRM High Flux | | | |
| Output Signal | B1 | Heat Balance | Twice per week. |
| Flow Bias Signal | B1 | With Standard Pressure Source | Every refueling outage. |
| LPRM Signal | B1 | TIP System Traverse | Every 6 weeks. |
| High Reactor Pressure | B2 | Standard Pressure Source | Once per operating cycle. |
| High Drywell Pressure | B2 | Standard Pressure Source | Once per operating cycle. |
| Reactor Low Water Level | B2 | Pressure Standard | Once per operating cycle. |
| High Water Level in Scram Discharge Instrument Volume | A | Water Column | Every refueling outage. |
| Turbine Condenser Low Vacuum | B2 | Standard Vacuum Source | Once per operating cycle. |
| Main Steam Line Isolation Valve Closure | A | Note (5) | Note (5) |
| Main Steam Line High Radiation | B1 | Standard Current Source (3) | Every 3 months. |
| Turbine First State Pressure Permissive | A | Standard Pressure Source | Every 6 months. |

TABLE 3.2.A

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

| Minimum No. of Operable Instrument Channels per Trip System (1) | Instrument | Trip Level Setting | Number of Instrument Channels Provided By Design | Action (2) |
|---|---|---|---|---|
| 2 | Main Steam Line Leak Detection High Temperature | $\leq$ 200 deg. F. | 4 Inst. Channels | B |
| 1 | Reactor Cleanup System High Flow | $\leq$ 300% of Rated Flow | 2 Inst. Channels | C |
| 1 | Reactor Cleanup System High Temperature | $\leq$ 200 deg. F | 1 Inst. Channel | E |

NOTES FOR TABLE 3.2.A

1. Whenever Primary Containment integrity is required by Section 3.7, there shall be two operable or tripped trip systems for each function.

2. If the first column cannot be met for one of the trip systems, that trip system shall be tripped or the appropriate action listed below shall be taken:

   A. Initiate an orderly shutdown and have the reactor in Cold Shutdown Condition in 24 hours.

   B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Isolate Shutdown Cooling.

   E. Isolate Reactor Water Cleanup Filter Demineralizers unless the following provision is satisfied. The RWCU Filter Demineralizer may be used (the isolation overridden) to route the reactor water to the main condenser or waste surge tank, with the high temperature trip inoperable for up to 48 hours, provided the water inlet temperature is monitored once per hour and confirmed to be below 180 degrees F.

3. Instrument setpoint corresponds to 177.7" above top of active fuel.

4. Instrument setpoint corresponds to 129.7" above top of active fuel.

5. Two required for each steam line.

6. These signals also start SBGTS and initiate secondary containment isolation.

7. Only required in Run Mode (interlocked with Mode Switch).

8. At a radiation level of 1.5 times the normal rated power background, an alarm will be tripped in the control room to alert the control room operators to an increase in the main steam line tunnel radiation level.

9. In the event of a loss of ventilation in the main steam line tunnel area, the main steam line tunnel exhaust duct high temperature setpoint may be raised up to 250 degrees F for a period not to exceed 30 minutes to permit restoration of the ventilation flow. During the 30-minute period, an operator shall observe control room indications of the duct temperature so in the event of rapid increases (indicative of a steam line break) the operator shall promptly close the main steam line isolation valves.

TABLE 3.2.C
INSTRUMENTATION THAT INITIATES CONTROL ROD BLOCKS

| Minimum No. of Operable Instrument Channels Per Trip System | Instrument | Trip Level Setting | Number of Instrument Channels Provided by Design | Action |
|---|---|---|---|---|
| 4 | APRM Upscale (Flow Biased) | $\leq (0.66w+42-0.66\Delta w) \times \frac{FRP}{MFLPD}$ (2) | 6 Inst. Channels | (10) |
| 4 | APRM Upscale (Startup Mode) | $\leq$128 | 6 Inst. Channels | (10) |
| 4 | APRM Downscale | $\geq$2.5 indicated on scale | 6 Inst. Channels | (10) |
| 1 (7) | Rod Block Monitor (Flow Biased) | $\leq (0.66w+41-0.66\Delta w) \times \frac{FRP}{MFLPD}$ (2) | 2 Inst. Channels | (1) |
| 1 (7) | Rod Block Monitor Downscale | $\geq$2.5 indicated on scale | 2 Inst. Channels | (1) |
| 6 | IRM Downscale (3) | $\geq$2.5 indicated on scale | 8 Inst. Channels | (10) |
| 6 | IRM Detector not in Startup Position | (8) | 8 Inst. Channels | (10) |
| 6 | IRM Upscale | $\leq$108 indicated on scale | 8 Inst. Channels | (10) |
| 2 (5) | SRM Detector not in Startup Position | (4) | 4 Inst. Channels | (1) |
| 2 (5)(6) | SRM Upscale | $\leq 10^5$ counts/sec. | 4 Inst. Channels | (1) |
| 1 | Scram Discharge Instrument Volume High Level | $\leq$25 gallons | 1 Inst. Channel | (9) |

Amendment No. 23, 35, 36, 42, 48, 70, 76, 86, 91, 104

## TABLE 4.2.C

## MINIMUM TEST AND CALIBRATION FREQUENCY FOR CONTROL ROD BLOCKS ACTUATION

| | Instrument Channel | Instrument Functional Test | Calibration | Instrument Check |
|---|---|---|---|---|
| 1) | APRM - Downscale | (1) (3) | Once/3 months | Once/day |
| 2) | APRM - Upscale | (1) (3) | Once/3 months | Once/day |
| 3) | IRM - Upscale | (2) (3) | Startup or Control Shutdown | (2) |
| 4) | IRM - Downscale | (2) (3) | Startup or Control Shutdown | (2) |
| 5) | RBM - Upscale | (1) (3) | Once/6 months | Once/day |
| 6) | RBM - Downscale | (1) (3) | Once/6 months | Once/day |
| 7) | SRM - Upscale | (2) (3) | Startup or Control Shutdown | (2) |
| 8) | SRM - Detector Not in Startup Position | (2) (3) | Startup or Control Shutdown | (2) |
| 9) | IRM - Detector Not in Startup Position | (2) (3) | Startup or Control Shutdown | (2) |
| 10) | Scram Discharge Instrument Volume - High Level | Quarterly | Once/Operating Cycle | NA |

| Logic System Functional Test (4) (6) | Frequency |
|---|---|
| (1) System Logic Check | Once/6 months |

## TABLE 4.2.D

## MINIMUM TEST AND CALIBRATION FREQUENCY FOR RADIATION MONITORING SYSTEMS

| Instrument Channels | Instrument Functional Test | Calibration | Instrument Check (2) |
|---|---|---|---|
| 1) Refuel Area Exhaust Monitors - Upscale | (1) | Once/3 months | Once/day |
| 2) Reactor Building Area Exhaust Monitors - Upscale | (1) | Once/3 months | Once/day |
| 3) Off-Gas Radiation Monitors | (1) | Once/3 months | Once/day |

| Logic System Functional Test (4) (6) | Frequency |
|---|---|
| 1) Reactor Building Isolation | Once/6 months |
| 2) Standby Gas Treatment System Actuation | Once/6 months |
| 3) Steam Jet Air Ejector Off-Gas Line Isolation | Once/6 months |

3.2 BASES (Cont'd)

Pressure instrumentation is provided to close the main steam isolation valves in RUN Mode when the main steam line pressure drops below 850 psig. The Reactor Pressure Vessel thermal transient due to an inadvertent opening of the turbine bypass valves when not in the RUN Mode is less severe than the loss of feedwater analyzed in section 14.5 of the FSAR; therefore, closure of the Main Steam Isolation valves for thermal transient protection when not in RUN Mode is not required.

The HPCI high flow and temperature instrumentation are provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation of HPCI isolation valves. Tripping logic for the high flow is 1 out of 2 logic. Temperature is monitored at four (4) locations with four (4) temperature sensors at each location. Two (2) sensors at each location are powered by "A" DC control bus and two (2) by "B" DC control bus. Each pair of sensors, e.g., "A" or "B" at each location are physically separated and the tripping of either "A" or "B" bus sensor will actuate HPCI isolation valves. The trip settings of $\leq$ 300% of design flow for high flow and 200 degrees F for high temperature are such that core uncovery is prevented and fission product release is within limits.

The RCIC high flow and temperature instrumentation are arranged the same as that for the HPCI. The trip setting of $\leq$ 300% for high flow and 200 degrees F for temperature are based on the same criteria as the HPCI.

The Reactor Water Cleanup System high flow instrumentation is arranged similar to that for the HPCI System. The trip settings are such that core uncovery is prevented and fission product release is maintained within limits. The high temperature instrumentation downstream of the non-regenerative heat exchanger is provided to protect the ion exchange resin in the demineralizer from damage due to high temperature. Such damage could impair the resins' ability to remove impurities from the primary coolant and possibly result in the release of previously captured impurities back into the coolant in large concentrations.

The instrumentation which initiates CSCS action is arranged in a dual bus system. As for other vital instrumentation arranged in this fashion, the Specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. An exception to this is when logic functional testing is being performed.

The control rod block functions are provided to prevent excessive control rod withdrawal so that MCPR does not decrease to the fuel cladding integrity safety limit. The trip logic for this function is 1 out of n: e.g., any trip on one of 6 APRM's, 8 IRM's, or 4 SRM's will result in a rod block.

The minimun instrument channel requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing or calibration. This time period is only 3% of the operating time in a month and does not significantly increase the risk of preventing an inadvertent control rod withdrawal.

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

PHILADELPHIA ELECTRIC COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-278

PEACH BOTTOM ATOMIC POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 108
License No. DPR-56

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

   A. The application for amendment by Philadelphia Electric Company, et al. (the licensee) dated November 10, 1983, 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-56 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.108 , are hereby incorporated in the license. PECO shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 7, 1985

ATTACHMENT TO LICENSE AMENDMENT NO.108

FACILITY OPERATING LICENSE NO. DPR-56

DOCKET NO. 50-278

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain a vertical line indicating the area of change.

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Table 3.1.1 (Cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

| Minimum No. of Operable Instrument Channels per Trip System (1) | Trip Function | Trip Level Setting | Modes in which Function Must be Operable | | | Number of Instrument Channels Provided by Design | Action (1) |
|---|---|---|---|---|---|---|---|
| | | | Refuel (7) | Startup | Run | | |
| 2 | High Water Level in Scram Discharge Instrument Volume | $\leq$50 Gallons | X(2) | X | X | 4 Instrument Channels | A |
| 2 | Turbine Condenser Low Vacuum | $\geq$23 in. Hg. Vacuum | X(3) | X(3) | X | 4 Instrument Channels | A or C |
| 2 | Main Steam Line High Radiation | $\leq$3 X Normal Full Power Background | X | X | X(14) | 4 Instrument Channels | A |
| 4 | Main Steam Line Isolation Valve Closure | $\leq$10% Valve Closure | X(3)(6) | X(3)(6) | X(6) | 8 Instrument Channels | A |
| 2 | Turbine Control Valve Fast Closure | 500<P<850 psig Control Oil Pressure Between Fast Closure Solenoid and Disc Dump Valve | | | X(4) | 4 Instrument Channels | A or D |
| 4 | Turbine Stop Valve Closure | $\leq$10% Valve Closure | | | X(4) | 8 Instrument Channels | A or D |

Amendment No. 22, 106, 108

NOTES FOR TABLE 3.1.1

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable sensor channels for a trip system cannot be met, the affected trip system shall be placed in the safe (tripped) condition, or the appropriate actions listed below shall be taken.

   A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours.

   B. Reduce power level to IRM range and place mode switch in the start up position within 8 hours.

   C. Reduce turbine load and close main steam line isolation valves within 8 hours.

   D. Reduce power to less than 30% rated.

2. Permissible to bypass, in refuel and shutdown positions of the reactor mode switch.

3. Bypassed when reactor pressure is less than 600 psig.

4. Bypassed when turbine first stage pressure is less than 220 psig or less than 30% of rated.

5. IRM's are bypassed when APRM's are onscale and the reactor mode switch is in the run position.

6. The design permits closure of any two lines without a scram being initiated.

7. When the reactor is subcritical and the reactor water temperature is less than 212 degrees F, only the following trip functions need to be operable:

   A. Mode switch in shutdown

   B. Manual scram

   C. High flux IRM

   D. Scram discharge instrument volume high level

8. Not required to be operable when primary containment integrity is not required.

9. Not required to be operable when the reactor pressure vessel head is not bolted to the vessel.

TABLE 4.1.1 (Cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT FUNCTIONAL TESTS
MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENT AND CONTROL CIRCUITS

| | Group (2) | Functional Test | Minimum Frequency (3) |
|---|---|---|---|
| High Water Level in Scram Discharge Instrument Volume | A | Trip Channel and Alarm | Every 1 month. |
| Turbine Condenser Low Vacuum (6) | B2 | Trip Channel and Alarm (4) | Every 1 month (1). |
| Main Steam Line High Radiation | B1 | Trip Channel and Alarm (4) | Once/week. |
| Main Steam Line Isolation Valve Closure | A | Trip Channel and Alarm | Every 1 month (1). |
| Turbine Control Valve EHC Oil Pressure | A | Trip Channel and Alarm | Every 1 month. |
| Turbine First Stage Pressure Permissive | A | Trip Channel and Alarm | Every 3 months (1). |
| Turbine Stop Valve Closure | A | Trip Channel and Alarm | Every 1 month (1). |
| Reactor Pressure Permissive (6) | B2 | Trip Channel and Alarm (4) | Every 3 months. |

TABLE 4.1.2

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

| Instrument Channel | Group (1) | Calibration (4) | Minimum Frequency (2) |
|---|---|---|---|
| IRM High Flux | C | Comparison to APRM on Controlled Shutdown | Maximum frequency once per week. |
| APRM High Flux | | | |
| Output Signal | B1 | Heat Balance | Twice per week. |
| Flow Bias Signal | B1 | With Standard Pressure Source | Every refueling outage. |
| LPRM Signal | B1 | TIP System Traverse | Every 6 weeks. |
| High Reactor Pressure | B2 | Standard Pressure Source | Once per operating cycle. |
| High Drywell Pressure | B2 | Standard Pressure Source | Once per operating cycle. |
| Reactor Low Water Level | B2 | Pressure Standard | Once per operating cycle. |
| High Water Level in Scram Discharge Instrument Volume | A | Water Column | Every refueling outage. |
| Turbine Condenser Low Vacuum | B2 | Standard Vacuum Source | Once per operating cycle. |
| Main Steam Line Isolation Valve Closure | A | Note (5) | Note (5) |
| Main Steam Line High Radiation | B1 | Standard Current Source (3) | Every 3 months. |
| Turbine First State Pressure Permissive | A | Standard Pressure Source | Every 6 months. |

Amendment No. 87, 108

TABLE 3.2.A

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

| Minimum No. of Operable Instrument Channels per Trip System (1) | Instrument | Trip Level Setting | Number of Instrument Channels Provided By Design | Action (2) |
|---|---|---|---|---|
| 2 | Main Steam Line Leak Detection High Temperature | $\leq$ 200 deg. F. | 4 Inst. Channels | B |
| 1 | Reactor Cleanup System High Flow | $\leq$ 300% of Rated Flow | 2 Inst. Channels | C |
| 1 | Reactor Cleanup System High Temperature | $\leq$ 200 deg. F | 1 Inst. Channel | E |

NOTES FOR TABLE 3.2.A

1. Whenever Primary Containment integrity is required by Section 3.7, there shall be two operable or tripped trip systems for each function.

2. If the first column cannot be met for one of the trip systems, that trip system shall be tripped or the appropriate action listed below shall be taken:

   A. Initiate an orderly shutdown and have the reactor in Cold Shutdown Condition in 24 hours.

   B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Isolate Shutdown Cooling.

   E. Isolate Reactor Water Cleanup Filter Demineralizers unless the following provision is satisfied. The RWCU Filter Demineralizer may be used (the isolation overridden) to route the reactor water to the main condenser or waste surge tank, with the high temperature trip inoperable for up to 48 hours, provided the water inlet temperature is monitored once per hour and confirmed to be below 180 degrees F.

3. Instrument setpoint corresponds to 177.7" above top of active fuel.

4. Instrument setpoint corresponds to 129.7" above top of active fuel.

5. Two required for each steam line.

6. These signals also start SBGTS and initiate secondary containment isolation.

7. Only required in Run Mode (interlocked with Mode Switch).

8. At a radiation level of 1.5 times the normal rated power background, an alarm will be tripped in the control room to alert the control room operators to an increase in the main steam line tunnel radiation level.

9. In the event of a loss of ventilation in the main steam line tunnel area, the main steam line tunnel exhaust duct high temperature setpoint may be raised up to 250 degrees F for a period not to exceed 30 minutes to permit restoration of the ventilation flow. During the 30-minute period, an operator shall observe control room indications of the duct temperature so in the event of rapid increases (indicative of a steam line break) the operator shall promptly close the main steam line isolation valves.

NOTES FOR TABLE 3. 2. A (Cont.)

10. Within 24 hours prior to the planned start of the hydrogen injection test with the reactor power at greater than 20% rated power, the normal full power radiation background level and associated trip setpoints may be changed based on a calculated value of the radiation level expected during the test. The background radiation level and associated trip setpoints may be adjusted during the test program based on either calculations or measurements of actual radiation levels resulting from hydrogen injection. The background radiation level shall be determined and associated trip setpoints shall be set within 24 hours of re-establishing normal radiation levels after completion of the test program, and within 12 hours of establishing reactor power levels below 20% rated power.

TABLE 3.2.C
INSTRUMENTATION THAT INITIATES CONTROL ROD BLOCKS

| Minimum No. of Operable Instrument Channels Per Trip System | Instrument | Trip Level Setting | Number of Instrument Channels Provided by Design | Action |
|---|---|---|---|---|
| 4 | APRM Upscale (Flow Biased) | $\leq (0.66w+42-0.66\Delta w) \times \frac{FRP}{MFLPD}$ (2) | 6 Inst. Channels | (10) |
| 4 | APRM Upscale (Startup Mode) | ≤12% | 6 Inst. Channels | (10) |
| 4 | APRM Downscale | ≥2.5 indicated on scale | 6 Inst. Channels | (10) |
| 1 (7) | Rod Block Monitor (Flow Biased) | $\leq (0.66w+41-0.66\Delta w) \times \frac{FRP}{MFLPD}$ (2) | 2 Inst. Channels | (1) |
| 1 (7) | Rod Block Monitor Downscale | ≥2.5 indicated on scale | 2 Inst. Channels | (1) |
| 6 | IRM Downscale (3) | ≥2.5 indicated on scale | 8 Inst. Channels | (10) |
| 6 | IRM Detector not in Startup Position | (8) | 8 Inst. Channels | (10) |
| 6 | IRM Upscale | ≤108 indicated on scale | 8 Inst. Channels | (10) |
| 2 (5) | SRM Detector not in Startup Position | (4) | 4 Inst. Channels | (1) |
| 2 (5)(6) | SRM Upscale | $\leq 10^5$ counts/sec. | 4 Inst. Channels | (1) |
| 1 | Scram Discharge Instrument Volume High Level | ≤25 gallons | 1 Inst. Channel | (9) |

Amendment No. 22, 62, 92, 108, 77, 88,

## TABLE 4.2.C

## MINIMUM TEST AND CALIBRATION FREQUENCY FOR CONTROL ROD BLOCKS ACTUATION

| | Instrument Channel | Instrument Functional Test | Calibration | Instrument Check |
|---|---|---|---|---|
| 1) | APRM - Downscale | (1) (3) | Once/3 months | Once/day |
| 2) | APRM - Upscale | (1) (3) | Once/3 months | Once/day |
| 3) | IRM - Upscale | (2) (3) | Startup or Control Shutdown | (2) |
| 4) | IRM - Downscale | (2) (3) | Startup or Control Shutdown | (2) |
| 5) | RBM - Upscale | (1) (3) | Once/6 months | Once/day |
| 6) | RBM - Downscale | (1) (3) | Once/6 months | Once/day |
| 7) | SRM - Upscale | (2) (3) | Startup or Control Shutdown | (2) |
| 8) | SRM - Detector Not in Startup Position | (2) (3) | Startup or Control Shutdown | (2) |
| 9) | IRM - Detector Not in Startup Position | (2) (3) | Startup or Control Shutdown | (2) |
| 10) | Scram Discharge Instrument Volume - High Level | Quarterly | Once/Operating Cycle | NA |

| Logic System Functional Test (4) (6) | Frequency |
|---|---|
| (1) System Logic Check | Once/6 months |

## TABLE 4.2.D

## MINIMUM TEST AND CALIBRATION FREQUENCY FOR RADIATION MONITORING SYSTEMS

| Instrument Channels | Instrument Functional Test | Calibration | Instrument Check (2) |
|---|---|---|---|
| 1) Refuel Area Exhaust Monitors - Upscale | (1) | Once/3 months | Once/day |
| 2) Reactor Building Area Exhaust Monitors - Upscale | (1) | Once/3 months | Once/day |
| 3) Off-Gas Radiation Monitors | (1) | Once/3 months | Once/day |

| Logic System Functional Test (4) (6) | Frequency |
|---|---|
| 1) Reactor Building Isolation | Once/6 months |
| 2) Standby Gas Treatment System Actuation | Once/6 months |
| 3) Steam Jet Air Ejector Off-Gas Line Isolation | Once/6 months |

3.2 BASES (Cont'd)

Pressure instrumentation is provided to close the main steam isolation valves in RUN Mode when the main steam line pressure drops below 850 psig. The Reactor Pressure Vessel thermal transient due to an inadvertent opening of the turbine bypass valves when not in the RUN Mode is less severe than the loss of feedwater analyzed in section 14.5 of the FSAR; therefore, closure of the Main Steam Isolation valves for thermal transient protection when not in RUN Mode is not required.

The HPCI high flow and temperature instrumentation are provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation of HPCI isolation valves. Tripping logic for the high flow is 1 out of 2 logic. Temperature is monitored at four (4) locations with four (4) temperature sensors at each location. Two (2) sensors at each location are powered by "A" DC control bus and two (2) by "B" DC control bus. Each pair of sensors, e.g., "A" or "B" at each location are physically separated and the tripping of either "A" or "B" bus sensor will actuate HPCI isolation valves. The trip settings of $\leq$ 300% of design flow for high flow and 200 degrees F for high temperature are such that core uncovery is prevented and fission product release is within limits.

The RCIC high flow and temperature instrumentation are arranged the same as that for the HPCI. The trip setting of $\leq$ 300% for high flow and 200 degrees F for temperature are based on the same criteria as the HPCI.

The Reactor Water Cleanup System high flow instrumentation is arranged similar to that for the HPCI System. The trip settings are such that core uncovery is prevented and fission product release is maintained within limits. The high temperature instrumentation downstream of the non-regenerative heat exchanger is provided to protect the ion exchange resin in the demineralizer from damage due to high temperature. Such damage could impair the resins' ability to remove impurities from the primary coolant and possibly result in the release of previously captured impurities back into the coolant in large concentrations.

The instrumentation which initiates CSCS action is arranged in a dual bus system. As for other vital instrumentation arranged in this fashion, the Specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. An exception to this is when logic functional testing is being performed.

The control rod block functions are provided to prevent excessive control rod withdrawal so that MCPR does not decrease to the fuel cladding integrity safety limit. The trip logic for this function is 1 out of n: e.g., any trip on one of 6 APRM's, 8 IRM's, or 4 SRM's will result in a rod block.

The minimun instrument channel requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing or calibration. This time period is only 3% of the operating time in a month and does not significantly increase the risk of preventing an inadvertent control rod withdrawal.