3.2 (cont'd)

E. Drywell Leak Detection

The limiting conditions of operation for the instrumentation that monitors drywell leak detection are given in Table 3.2-5.

F. (Deleted)

G. Recirculation Pump Trip

The limiting conditions for operation for the instrumentation that trip(s) the recirculation pumps as a means of limiting the consequences of a failure to scram during an anticipated transient are given in Table 3.2-7.

H. Accident Monitoring Instrumentation

The limiting conditions for operation of the instrumentation that provides accident monitoring are given in Table 3.2-8.

I. 4kv Emergency Bus Undervoltage Trip

The limiting conditions for operation for the instrumentation that prevents damage to electrical equipment or circuits as a result of either a degraded or loss-of-voltage condition on the emergency electrical buses are given in Table 3.2-2.

4.2 (cont'd)

E. Drywell Leak Detection

Instrumentation shall be calibrated and checked as indicated in Table 4.2-5.

F. (Deleted)

G. Recirculation Pump Trip

Instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-7.

System logic shall be functionally tested as indicated in Table 4.2-7.

H. Accident Monitoring Instrumentation

Instrumentation shall be demonstrated operable by performance of a channel check, channel calibration and functional test as indicated in Table 4.2-8, as applicable.

TABLE 3.2-8

## ACCIDENT MONITORING INSTRUMENTATION

| | Instrument | No. of Channels Provided by Design | Minimum No. of Operable Channels Required | Mode in Which Instrument Must be Operable | Action |
|---|---|---|---|---|---|
| 8. | Torus Water Level (wide range)<br>(23LI-202A or 23LR-202A/203A)<br>(23LI-202B or 23LR-202B/203B) | 2 | 1 | Note J | Note A |
| 9. | Torus Bulk Water Temperature<br>(16-1TI-131A or 16-[illegible]R-131A)<br>(16-1TI-131B or 16-[illegible]R-131B) | 2 | 1 | Note J | Note A |
| 10. | Torus Pressure<br>(27PR-101A)<br>(27PR-101B1) | 2 | 1 | Note J | Note A |
| 11. | Primary Containment Hydrogen/Oxygen Concentration<br>(27PCR-101A)<br>(27PCR-101B) | 2 | 1 | Note J, K | Note F |
| 12. | Reactor Vessel Pressure<br>(06PI-61A or 06PR-61A)<br>(06PI-61B or 06PR-61B) | 2 | 1 | Note J | Note A |
| 13. | Reactor Water Level (fuel zone)<br>(02-3LI-091)<br>(02-3LR-098) | 2 | 1 | Note J | Note A |
| 14. | Reactor Water Level (wide range)<br>(02-3LI-85A)<br>(02-3LR-85B) | 2 | 1 | Note J | Note A |

Amendment No. ~~130~~, ~~181~~.

TABLE 3.2-8 (Cont'd)
**ACCIDENT MONITORING INSTRUMENTATION**

NOTES FOR TABLE 3.2-8

A. With the number of operable channels less than the required minimum, either restore the inoperable channels to operable status within 30 days, or be in a cold condition within the next 24 hours.

B. With the number of OPERABLE channels less than required by the minimum channels OPERABLE requirements, initiate an alternate method of monitoring the appropriate parameter(s) within 72 hours and: (1) either restore the inoperable channel(s) to OPERABLE status within 7 days of the event, or (2) prepare and submit a Special Report to the Commission within 14 days following the event outlining the cause of the inoperability, the action taken, and the plans and schedule for restoring the system to OPERABLE status.

C. Each Safety/Relief Valve is equipped with two acoustical detectors, one of which is in service. Each SRV also has a backup thermocouple detector. In the event that a thermocouple is inoperable, SRV performance shall be monitored daily with the associated in service acoustical detector.

D. From and after the date that both of the acoustical detectors are inoperable, continued operation is permissible until the next outage in which a primary containment entry is made provided that the thermocouple is operable. Both acoustical detectors shall be made operable prior to restart.

E. In the event that both primary (acoustical detectors) and secondary (thermocouple) indications of this parameter for any one valve are disabled and neither indication can be restored in forty-eight (48) hours, the reactor shall be in a Hot Shutdown condition within twelve (12) hours and in a Cold Shutdown within the next twenty-four (24) hours.

F. With the number of operable channels less than the required minimum, continued reactor operation is permissible for the following 30 days provided at least once each 24 hours, either the appropriate parameter(s) is monitored and logged using 27PCX-101A, B, or an appropriate grab sample is obtained and analyzed. If this condition can not be met, be in the Hot Shutdown mode within the next 12 hours.

G. This parameter and associated instrumentation are not part of post-accident monitoring.

H. This instrument shall be operable in the Run, Startup/Hot Standby, and Hot Shutdown modes.

J. This instrument shall be operable in the Run and Startup/Hot Standby modes.

K. Primary containment atmosphere shall be continuously monitored for hydrogen and oxygen when in the Run and Startup/Hot Standby modes, except when the Post-Accident Sampling System (PASS) is to be operated. When the PASS is to be operated, the containment atmosphere monitoring systems may be isolated for a period not to exceed 3 hours in a 24-hour period.

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 | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 2. | Turbine Building Vent High Range Effluent Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 3. | Radwaste Building Vent High Range Effluent Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 4. | Containment High Range Radiation Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 5. | Drywell Pressure (narrow range) | N/A | Once/Operating Cycle | Once/day |
| 6. | Drywell Pressure (wide range) | N/A | Once/Operating Cycle | Once/day |
| 7. | Drywell Temperature | N/A | Once/Operating Cycle | Once/day |
| 8. | Torus Water Level (wide range) | N/A | Once/Operating Cycle | Once/day |
| 9. | Torus Bulk Water Temperature | N/A | Once/Operating Cycle | Once/day |
| 10. | Torus Pressure | N/A | Once/Operating Cycle | Once/day |
| 11. | Primary Containment Hydrogen/Oxygen Concentration Analyzer | N/A | Once/3 months | Once/day |
| 12. | Reactor Vessel Pressure | N/A | Once/Operating Cycle | Once/day |
| 13. | Reactor Water Level (fuel zone) | N/A | Once/Operating Cycle | Once/day |
| 14. | Reactor Water Level (wide range) | N/A | Once/Operating Cycle | Once/day |

3.7 (cont'd)

6. Oxygen Concentration

a. Primary containment oxygen concentration shall be less than four volume percent within 24 hours of exceeding 15% of rated thermal power during startup.

b. De-inerting may commence up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown.

7. Drywell-Torus Differential Pressure

a. Differential pressure between the drywell and torus shall be maintained at equal to or greater than 1.7 psid except as specified in (1) and (2) below:

4.7 (cont'd)

6. Oxygen Concentration

a. The primary containment oxygen concentration shall be verified to be within limits once each week. Instrument surveillances shall be performed as specified in Table 4.2-8.

7. Drywell-Torus Differential Pressure

a. The pressure differential between the drywell and torus shall be verified to be within limits once each shift. Instrument surveillances shall be performed as specified in Table 4.2-8.

3.7 (Cont'd)

(1) The drywell to torus differential pressure shall be established within 24 hours of exceeding 15% rated thermal power during startup. The differential pressure may be reduced to less than the limit up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown.

(2) The differential pressure may be decreased to less than 1.7 psid for a maximum of four (4) hours during required operability testing of the HPCI, RCIC, and Suppression Chamber - Drywell Vacuum Breaker System.

(3) If 3.7.A.7.a above cannot be met, restore the differential pressure to within limits within eight hours or reduce thermal power to less than 15% of rated within the next 12 hours.

8. If the specifications of 3.7.A.1 through 3.7.A.5 cannot be met the reactor shall be in the cold condition within 24 hours.

4.7 (Cont'd)

8. Not applicable.

3.7 (cont'd)

B. Standby Gas Treatment System

1. Except as specified in 3.7.B.2 below both circuits of the Standby Gas Treatment System shall be operable at all times when secondary containment integrity is required.

4.7 (cont'd)

B. Standby Gas Treatment System

1. Standby Gas Treatment System surveillance shall be performed as indicated below:

   a. At least once per operating cycle, it shall be demonstrated that:

      (1) Pressure drop across the combined high-efficiency and charcoal filters is less than 5.7 in. of water at 6,000 scfm, and

      (2) Each 39kW heater shall dissipate greater than 29kW of electric power as calculated by the following expression:

$$P = \sqrt{3}EI$$

where:
P= Dissipated Electrical Power;
E= Measured line-to-line voltage in volts (RMS);
I= Average measured phase current in amperes (RMS).

ATTACHMENT II to JPN-94-038

# Safety Evaluation
# Regarding Proposed Changes to Technical Specifications
# Primary Containment Atmosphere Monitoring (JPTS-93-010)

**New York Power Authority**

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

## I. DESCRIPTION OF THE PROPOSED CHANGES

This application for an amendment to the James A. FitzPatrick Technical Specifications revises the primary containment atmosphere monitoring requirements. The specific changes are as follow:

1. Page 54, Specification 4.2.H, "Accident Monitoring Instrumentation," add the words "functional test" to the list of tests performed and add the words "as applicable" at the end of the sentence. The revised specification reads:

   "H. Accident Monitoring Instrumentation

   Instrumentation shall be demonstrated operable by performance of a channel check, channel calibration and functional test as indicated in Table 4.2-8, as applicable."

2. Page 77b, Table 3.2-8, Item 11, change "drywell" to "primary containment."

   Add a new note "K" to the primary containment hydrogen/oxygen monitoring instrumentation under the "Modes in Which Instrumentation Must be Operable" column.

3. Page 77d, revise Note F to read:

   "F. With the number of operable channels less than the required minimum, continued reactor operation is permissible for the following 30 days provided at least once each 24 hours, either the appropriate parameter(s) is monitored and logged using 27PCX-101A, B, or an appropriate grab sample is obtained and analyzed. If this condition can not be met, be in the Hot Shutdown mode within the next 12 hours."

   Add a new note "K" to read:

   "K. Primary containment atmosphere shall be continuously monitored for hydrogen and oxygen when in the Run and Startup/Hot Standby modes, except when the Post-Accident Sampling System (PASS) is to be operated. When the PASS is to be operated, the containment atmosphere monitoring systems may be isolated for a period not to exceed 3 hours in a 24-hour period."

4. Page 86, Table 4.2-8, "Minimum Test and Calibration for Accident Monitoring Instrumentation," Item 11, change "drywell" to "primary containment."

5. Page 180, revise Specification 3.7.A.6, "Oxygen Concentration" to read:

   "6. Oxygen Concentration

a. Primary containment oxygen concentration shall be less than four volume percent within 24 hours of exceeding 15% of rated thermal power during startup.

b. De-inerting may commence up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown."

Revise Specification 4.7.A.6.a to read:

"The primary containment oxygen concentration shall be verified to be within limits once each week. Instrument surveillances shall be performed as specified in Table 4.2-8."

Revise Specification 4.7.A.7.a to read:

"The pressure differential between the drywell and torus shall be verified to be within limits once each shift. Instrument surveillances shall be performed as specified in Table 4.2-8."

6. Page 180a, revise Specification 3.7.A.7.a.(1) to read:

"The drywell to torus differential pressure shall be established within 24 hours of exceeding 15% rated thermal power during startup. The differential pressure may be reduced to less than the limit up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown."

Revise Specification 3.7.A.7.a.(3) to read:

"If 3.7.A.7.a above cannot be met, restore the differential pressure to within limits within eight hours or reduce thermal power to less than 15% of rated within the next 12 hours."

Revise Specification 3.7.A.8 to read:

"If the specifications of 3.7.A.1 through 3.7.A.5 cannot be met the reactor shall be in the cold condition within 24 hours."

7. Page 181, delete Specifications 3.7.A.9 and 4.7.A.9 in their entirety.

## II. PURPOSE OF THE PROPOSED CHANGES

The purpose of the proposed changes is to consolidate the primary containment atmosphere monitoring requirements of Specification 3.7.A.9 into Table 3.2-8, "Accident Monitoring Instrumentation." In addition, the proposed changes adopt Standard Technical Specifications (STS) primary containment inerting and de-inerting requirements and drywell to torus differential pressure monitoring requirements.

## III. SAFETY IMPLICATION OF THE PROPOSED CHANGES

During normal operation and following a design basis accident (i.e., LOCA) the primary containment atmosphere needs to be inerted to ensure that hydrogen combustion could not occur. Inerting is achieved by purging the primary containment with nitrogen until oxygen concentration is less than four percent by volume. Nitrogen is also used to maintain the drywell to torus differential pressure at greater than or equal to 1.7 psig. This differential pressure is necessary to reduce water slug forces on the torus and jet force on the downcomer pipe that could result during a LOCA.

When the primary containment atmosphere is inerted, operators cannot access the containment to perform required surveillances and leak inspections unless they wear self contained breathing apparatus. Technical Specification 3.7.A.6 allows for a 24 hour time grace period following startup or before shutdown in which the primary containment does not have to be inerted. The 24 hour time period is a reasonable amount of time for plant personnel to perform required leak inspections and then to complete inerting or shutdown evolutions. The current reference condition for this 24 hour "window" is when the mode switch is placed in the run position.

The proposed changes revise Specification 3.7.A.6 by adopting inerting and de-inerting requirements which are consistent with the guidance of the STS (Reference 1). The STS uses as the reference condition for inerting and de-inerting 15% rated thermal power instead of being in run mode. The proposed changes will require inerting to less than 4% $O_2$ concentration within 24 hours of exceeding 15% rated thermal power during startup and allow de-inerting 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown. The basis for this change, as stated in the STS, is that at less than 15% rated thermal power and within the first 24 hours following startup there is a low probability that an event generating significant amount of hydrogen would occur. In addition, there is also a low probability that such an event would happen within the last 24 hours before reaching 15% rated thermal power during a shutdown.

Making the 24 hour "window" contingent upon core thermal power will allow to place the mode switch in run sooner, removing startup neutron monitoring instrumentation scrams (i.e., APRM 15% and IRM upscale/inop). This reduces the probability of spurious trips due to spiking of this instrumentation. In addition the proposed changes

will allow additional time to perform work/inspections in the drywell such as MSIV testing, MSIV limit switches adjustments, MOV testing, leak inspection, before the containment is inerted. Therefore, implementing these changes will increase overall plant reliability and capacity factor.

This proposed change does not affect the assumptions or conclusions contained in the plant safety analyses. The proposed change does not involve physical modification to the plant nor involve any accident initiators. Therefore, the probability of an accident occurring remains unchanged. Accident analyses contained in FSAR Chapter 14 (Reference 2) assume that a LOCA occurs from full power. The consequences of a LOCA below 15% rated thermal power would be less severe and would produce less hydrogen. The containment is designed to accommodate a much larger amount of hydrogen and heat.

Consistent with this proposed change, Specification 3.7.A.7.a.(1) is being revised to require establishing drywell to torus differential pressure within 24 hours of exceeding 15% rated thermal power during startup. The differential pressure can be reduced to less than the established limit up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown. Specification 3.7.A.7.a.(3) is being revised to allow eight hours to restore the differential pressure to within limits or to reduce thermal power to less than 15% of rated within the next twelve hours. These proposed changes are consistent with the STS guidance which require the same plant conditions for applicability of primary containment oxygen concentration limiting conditions for operation as for the drywell to torus differential pressure. As stated in the STS, the completion times for the proposed actions are reasonable based on industry operating experience.

Specification 3.7.A.8 is being changed to indicate that 3.7.A.6, as revised, does not require shutdown to the cold condition within 24 hours.

Changes are also proposed to surveillance requirements 4.7.A.6.a, "Oxygen Concentration," and 4.7.A.7.a, "Drywell-Torus Differential Pressure." These two specifications currently refer to Table 4.2-8 for the instrument surveillances but do not specify surveillance frequency for the monitoring parameters. To clarify that these requirements are different, the proposed change will revise Specifications 4.7.A.6.a and 4.7.A.7.a to indicate the specific surveillance frequency for the primary containment oxygen concentration and the drywell to torus differential pressure. The primary containment oxygen concentration will be verified to be within limits once each week consistent with STS guidance. The drywell to torus differential pressure will be verified to be within limits once each shift consistent with current plant practice.

Several administrative changes are proposed to Tables 3.2-8, "Accident Monitoring Instrumentation," and 4.2-8, "Minimum Test and Calibration Frequency for Accident Monitoring Instrumentation." One of the changes revises item 11 to refer to "primary containment" instead of "drywell" hydrogen/oxygen concentration. This change clarifies

that the monitoring instrumentation senses both the drywell and torus atmospheres not just the drywell. This term is also used in the proposed Note K to this table and in the STS.

The proposed change also affects Table 3.2-8 by revising Note F and by adding a new Note K. Currently, Note F instructs the plant operators to refer to Specification 3.7.A.9 if minimum hydrogen/oxygen monitoring is not met. The proposed change eliminates the reference to Specification 3.7.A.9 by moving the action statement for hydrogen/oxygen concentration from Specifications 3.7.A.9.a and 3.7.A.9.b to Table 3.2-8, Note F. The proposed action statement is also revised such that if recorder 27PCR-101A or B is inoperable, a daily monitoring and logging of the appropriate parameter on the associated indicator on panel 27PCX-101A, B is acceptable in lieu of taking grab samples. The monitoring will be performed using indicators on 27PCX-101A and B which are Regulatory Guide 1.97 qualified analyzers. If at least one channel is not made operable within the following 30 day period, then the plant shall be placed in a mode in which monitoring is not required, (i.e., hot shutdown). The completion time for this action is being changed from 24 hours to 12 hours consistent with the STS guidance. This proposed action is acceptable because even in the event that the recorder is inoperable, indication of the parameter will be available.

Note K to Table 3.2-8 is added for completeness. Since the proposed action statement specified in the revised Note F and the new Note K are comparable to the monitoring requirements of Specification 3.7.A.9, Specification 3.7.A.9 is unnecessary and, therefore, is being deleted from the Technical Specifications. The associated surveillance requirements (Specification 4.7.A.9) have been incorporated into Specification 4.2.H, "Accident Monitoring Instrumentation." Specification 4.7.A.9 is being deleted. These proposed changes are administrative in nature and will result in the overall improvement to the Technical Specifications and will have no adverse safety effect.

## IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the FitzPatrick plant in accordance with the proposed Amendment would not involve a significant hazards consideration as defined in 10 CFR 50.92, since it would not:

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

The proposed changes revise primary containment atmosphere monitoring requirements. The proposed changes adopt reference plant operating conditions (i.e., 15% rated thermal power) for inerting /de-inerting requirement as well as for the drywell to torus differential pressure monitoring consistent with the NRC guidance provided in the Standard Technical Specifications. The FitzPatrick Technical

Specifications currently allow a 24 grace period following startup or before shutdown in which the primary containment does not have to be inerted. During this 24 hour time period required leak inspections as well as inerting or shutdown evolutions are completed. Making the 24 hour "window" contingent upon core thermal power will allow to place the mode switch in run sooner, removing startup neutron monitoring instrumentation scrams (i.e., APRM 15% and IRM upscale/inop). This reduces the probability of spurious trips due to spiking of this instrumentation. The proposed changes do not involve physical modification to the plant nor involve any accident initiators. Therefore, the probability of an accident occurring remains unchanged. Accident analyses contained in FSAR Chapter 14 assume that a LOCA occurs from full power. The consequences of a LOCA below 15% rated thermal power would be less severe and would produce less hydrogen.

The proposed changes to Tables 3.2-8 and 4.2-8 will eliminate the reference to Specifications 3.7.A.9 by moving the primary containment atmosphere monitoring requirements from Specification 3.7.A.9 to Table 3.2-8, Note F. Note F is also revised such that if recorder 27PCR-101A or B is inoperable, a daily monitoring and logging of the appropriate parameter on the associated indicator on panel 27PCX-101A, B is acceptable in lieu of taking grab samples. The monitoring will be performed using indicators on 27PCX-101A and B which are Regulatory Guide 1.97 qualified analyzers. The proposed new Note K is added for completeness. These changes are administrative in nature and will improve the overall quality of the technical specifications. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes revise primary containment atmosphere monitoring requirements by adopting STS guidance regarding inerting/de-inerting requirements. Consistent with this change the drywell to torus differential pressure monitoring requirement is being revised. Adopting the STS reference plant operating condition of 15% rated thermal power adds operational flexibility. The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated because the plant safety analyses assume that a LOCA occurs at full power. In addition, several changes are proposed to Tables 3.2-8 and 4.2-8 which simplify hydrogen/oxygen monitoring requirements by moving the primary containment monitoring requirements from Specification 3.7.A.9 to Table 3.2-8. These changes are administrative in nature and will result in the overall improvement to the Technical Specifications. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. involve a significant reduction in a margin of safety.

The proposed changes revise the primary containment atmosphere inerting/de-inerting

requirements and the drywell to torus differential pressure monitoring requirement. The proposed change will allow inerting within 24 hours of exceeding 15% rated thermal power during startup and de-inerting 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown. These requirements are consistent with the guidance provided in the STS. This proposed change does not affect the assumptions or conclusions contained in the plant safety analyses which assume that a LOCA occurs from full power. The consequences of a LOCA below 15% rated thermal power would be less severe and would produce less hydrogen. The proposed changes to Tables 3.2-8 and 4.3-8 are administrative in nature. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

## V. IMPLEMENTATION OF THE PROPOSED CHANGE

Implementation of the proposed changes will not adversely affect the ALARA or Fire Protection Programs at the FitzPatrick plant, nor will the changes affect the environment.

## VI. CONCLUSION

The changes, as proposed, do not constitute an unreviewed safety question as defined in 10 CFR 50.59. That is, they:

1. will not increase the probability nor the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the Safety Analysis Report;

2. will not create the possibility of an accident or malfunction of a type different from any previously evaluated in the Safety Analysis Report;

3. will not reduce the margin of safety as defined in the basis for any technical specification; and

4. involve no significant hazards consideration, as defined in 10 CFR 50.92.

## VII. REFERENCES

1. NRC NUREG-1433, "Standard Technical Specifications General Electric Plants BWR/4," Revision 0, dated September 1992.

2. James A. FitzPatrick Nuclear Power Plant Final Safety Analysis Report Chapter 14, "Safety Analyses."

ATTACHMENT III to JPN-94-038

**Markup of the current Technical Specifications pages**
**Primary Containment Atmosphere Monitoring (JPTS-93-010)**

**New York Power Authority**

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

3.2 (cont'd)

E. Drywell Leak Detection

The limiting conditions of operation for the instrumentation that monitors drywell leak detection are given in Table 3.2-5.

F. (Deleted)

G. Recirculation Pump Trip

The limiting conditions for operation for the instrumentation that trip(s) the recirculation pumps as a means of limiting the consequences of a failure to scram during an anticipated transient are given in Table 3.2-7.

H. Accident Monitoring Instrumentation

The limiting conditions for operation of the instrumentation that provides accident monitoring are given in Table 3.2-8.

I. 4kv Emergency Bus Undervoltage Trip

The limiting conditions for operation for the instrumentation that prevents damage to electrical equipment or circuits as a result of either a degraded or loss-of-voltage condition on the emergency electrical buses are given in Table 3.2-2.

4.2 (cont'd)

E. Drywell Leak Detection

Instrumentation shall be calibrated and checked as indicated in Table 4.2-5

F. (Deleted)

G. Recirculation Pump Trip

Instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-7.

System logic shall be functionally tested as indicated in Table 4.2-7.

H. Accident Monitoring Instrumentation

Instrumentation shall be demonstrated operable by performance of a channel check and channel calibration as indicated in Table 4.2-8, add as applicable

delete

add and functional test

Amendment No. 96, 120 181

TABLE 3.2-8 (cont'd)

## ACCIDENT MONITORING INSTRUMENTATION

| | Instrument | No. of Channels Provided by Design | Minimum No. of Operable Channels Required | Mode in Which Instrument Must be Operable | Action |
|---|---|---|---|---|---|
| 8. | Torus Water Level (wide range)<br>(23LI-202A or 23LR-202A/203A)<br>(23LI-202B or 23LR-202B/203B) | 2 | 1 | Note J | Note A |
| 9. | Torus Bulk Water Temperature<br>(16-1TI-131A or 16-1TR-131A)<br>(16-1TI-131B or 16-1TR-131B) | 2 | 1 | Note J | Note A |
| 10. | Torus Pressure<br>(27PR-101A)<br>(27PR-101B1) → CHANGE TO PRIMARY CONTAINMENT | 2 | 1 | Note J | Note A |
| 11. | Drywell Hydrogen/Oxygen Concentration<br>(27PCR-101A)<br>(27PCR-101B) | 2 | 1 | Note J, K add | Note F |
| 12. | Reactor Vessel Pressure<br>(06PI-61A or 06PR-61A)<br>(06PI-61B or 06PR-61B) | 2 | 1 | Note J | Note A |
| 13. | Reactor Water Level (fuel zone)<br>(02-3LI-091)<br>(02-3LR-098) | 2 | 1 | Note J | Note A |
| 14. | Reactor Water Level (wide range)<br>(02-3LI-85A)<br>(02-3LR-85B) | 2 | 1 | Note J | Note A |

TABLE 3.2-8 (Cont'd)

## ACCIDENT MONITORING INSTRUMENTATION

NOTES FOR TABLE 3.2-8

A. With the number of operable channels less than the required minimum, either restore the inoperable channels to operable status within 30 days, or be in a cold condition within the next 24 hours.

B. With the number of OPERABLE channels less than required by the minimum channels OPERABLE requirements, initiate an alternate method of monitoring the appropriate parameter(s) within 72 hours and: (1) either restore the inoperable channel(s) to OPERABLE status within 7 days of the event, or (2) prepare and submit a Special Report to the Commission within 14 days following the event outlining the cause of the inoperability, the action taken, and the plans and schedule for restoring the system to OPERABLE status.

C. Each Safety/Relief Valve is equipped with two acoustical detectors, one of which is in service. Each SRV also has a backup thermocouple detector. In the event that a thermocouple is inoperable, SRV performance shall be monitored daily with the associated in service acoustical detector.

D. From and after the date that both of the acoustical detectors are inoperable, continued operation is permissible until the next outage in which a primary containment entry is made provided that the thermocouple is operable. Both acoustical detectors shall be made operable prior to restart.

E. In the event that both primary (acoustical detectors) and secondary (thermocouple) indications of this parameter for any one valve are disabled and neither indication can be restored in forty-eight (48) hours, an orderly shutdown shall be initiated and the reactor shall be in a Hot Shutdown condition in twelve (12) hours and in a Cold Shutdown within the next twenty-four (24) hours.

F. (Refer to Specification 3.7.A.9.) REPLACE WITH TEXT "A"

G. This parameter and associated instrumentation are not part of post-accident monitoring.

H. This instrument shall be operable in the Run, Startup/Hot Standby, and Hot Shutdown modes.

J. This instrument shall be operable in the Run and Startup/Hot Standby modes.

K. INSERT TEXT "B"

TABLE 4.2.3

## MINIMUM TEST AND CALIBRATION FREQUENCY FOR ACCIDENT MONITORING INSTRUMENTATION

| | Instrument | Instrument Functional Test | Calibration Frequency | Instrument Check |
|---|---|---|---|---|
| 1. | Stack High Range Effluent Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 2. | Turbine Building Vent High Range Effluent Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 3. | Radwaste Building Vent High Range Effluent Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 4. | Containment High Range Radiation Monitor | Once/Operating Cycle | Once/Operating Cycle | Once/day |
| 5. | Drywell Pressure (narrow range) | N/A | Once/Operating Cycle | Once/day |
| 6. | Drywell Pressure (wide range) | N/A | Once/Operating Cycle | Once/day |
| 7. | Drywell Temperature | N/A | Once/Operating Cycle | Once/day |
| 8. | Torus Water Level (wide range) | N/A | Once/Operating Cycle | Once/day |
| 9. | Torus Bulk Water Temperature | N/A | Once/Operating Cycle | Once/day |
| 10. | Torus Pressure | N/A | Once/Operating Cycle | Once/day |
| 11. | Drywell Hydrogen/Oxygen Concentration Analyzer (CHANGE TO PRIMARY CONTAINMENT) | N/A | Once/3 months | Once/day |
| 12. | Reactor Vessel Pressure | N/A | Once/Operating Cycle | Once/day |
| 13. | Reactor Water Level (fuel zone) | N/A | Once/Operating Cycle | Once/day |
| 14. | Reactor Water Level (wide range) | N/A | Once/Operating Cycle | Once/day |

3.7 (cont'd)

6. Oxygen Concentration

a. The primary containment atmosphere shall be reduced to less than four percent oxygen with nitrogen gas during reactor power operation with reactor coolant pressure above 100 psig, except as specified in 3.7.A.6.h.

b. Within the 24 hr. period subsequent to placing the reactor in the run mode following a shutdown, the containment atmosphere oxygen concentration shall be reduced to less than 4 percent by weight and maintained in this condition. De-inerting may commence 24 hr. prior to a shutdown.

Replace with Text "C"

7. Drywell-Torus Differential Pressure

a. Differential pressure between the drywell and torus shall be maintained at equal to or greater than 1.7 psid except as specified in (1) and (2) below:

4.7 (cont'd)

6. Oxygen Concentration

a. The primary containment oxygen concentration shall be monitored as specified in Table 4.2-8.

REPLACE WITH TEXT "D"

7. Drywell-Torus Differential Pressure

a. The pressure differential between the drywell and torus shall be monitored as specified in Table 4.2-8.

REPLACE WITH TEXT "E"

| 3.7 (Cont'd) | 4.7 (Cont'd) |
|---|---|
| (1) This differential pressure shall be established within a 24 hour period subsequent to placing the reactor in the run mode. The differential pressure may be reduced to less than 1.7 psid 24 hours prior to a scheduled shutdown. → REPLACE WITH TEXT "F" | |
| (2) The differential pressure may be decreased to less than 1.7 psid for a maximum of four (4) hours during required operability testing of the HPCI, RCIC, and Suppression Chamber - Drywell Vacuum Breaker System. | |
| (3) If the specifications of item a, above, cannot be met, and the differential pressure cannot be restored within the subsequent six (6) hour period the reactor shall be in a Hot Shutdown condition in six (6) hours and a Cold Shutdown condition in the following eighteen (18) hours. → REPLACE WITH TEXT "G" | |
| 8. If the specifications of 3.7.A.1 through 3.7.A.6 (CHANGE TO 5) cannot be met the reactor shall be in the cold condition within 24 hours. | 8. Not applicable. |

3.7 (cont'd)

9. Primary containment atmosphere shall be continuously monitored for hydrogen and oxygen when containment integrity is required. The exception to this is when the Post-Accident Sampling System is to be operated. In this instance, the containment atmosphere monitoring systems may be isolated for a period not to exceed 3 hours in a 24-hour period. The monitoring system shall be considered operable if at least one monitor is operable.

   a) From and after the time the primary containment atmosphere monitoring instruments are found or made to be inoperable for any reason, continued reactor operation is permissible for the succeeding thirty (30) days unless one instrument monitoring each parameter is sooner made operable, provided an appropriate grab sample is obtained and analyzed at least once each twenty-four (24) hour period.

   b) If specification 3.7.A.9.a cannot be met, the reactor shall be placed in the cold condition within twenty-four (24) hours.

delete

B. Standby Gas Treatment System

1. Except as specified in 3.7.B.2 below both circuits of the Standby Gas Treatment System shall be operable at all times when secondary containment integrity is required.

4.7 (cont'd)

9. Primary Containment Atmosphere Monitoring Instruments

   a. Instrumentation shall be functionally tested and calibrated as specified in Table 4.2-8.

delete

B. Standby Gas Treatment System

1. Standby Gas Treatment System surveillance shall be performed as indicated below:

   a. At least once per operating cycle, it shall be demonstrated that:

      (1) Pressure drop across the combined high-efficiency and charcoal filters is less than 5.7 in. of water at 6,000 scfm, and

      (2) Each 39kW heater shall dissipate greater than 29kW of electric power as calculated by the following expression:
      $P = \sqrt{3}EI$

      where:

      P = Dissipated Electrical Power;
      E = Measured line-to-line voltage in volts (RMS);
      I = Average measured phase current in amperes (RMS).

Text "A"

With the number of operable channels less than the required minimum, continued reactor operation is permissible for the following 30 days provided at least once each 24 hours, either the appropriate parameter(s) is monitored and logged using 27PCX-101A, B, or an appropriate grab sample is obtained and analyzed. If this condition can not be met, be in the Hot Shutdown mode within the next 12 hours.

Text "B"

Primary containment atmosphere shall be continuously monitored for hydrogen and oxygen when in the Run and Startup/Hot Standby modes, except when the Post-Accident Sampling System (PASS) is to be operated. When the PASS is to be operated, the containment atmosphere monitoring systems may be isolated for a period not to exceed 3 hours in a 24-hour period.

Text "C"

a. Primary containment oxygen concentration shall be less than four volume percent within 24 hours of exceeding 15% of rated thermal power during startup.

b. De-inerting may commence up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown.

Text "D"

The primary containment oxygen concentration shall be verified to be within limits once each week. Instrument surveillances shall be performed as specified in Table 4.2-8.

Text "E"

The pressure differential between the drywell and torus shall be verified to be within limits once each shift. Instrument surveillances shall be performed as specified in Table 4.2-8.

Text "F"

The drywell to torus differential pressure shall be established within 24 hours of exceeding 15% rated thermal power during startup. The differential pressure may be reduced to less than the limit up to 24 hours prior to reducing thermal power to less than 15% of rated before a plant shutdown.

Text "G"

If 3.7.A.7.a above cannot be met, restore the differential pressure to within limits within eight hours or reduce thermal power to less than 15% of rated within the next 12 hours.