ENTERGY

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Grand Gulf Nuclear Station

February 26, 1993

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Reactor Coolant System Leakage Detection Systems Technical Specification Changes per NUREG-1434
Proposed Amendment to the Operating License (PCOL-93/02)

GNRO-93/00016

Gentlemen:

Entergy Operations, Inc. is submitting by this letter a proposed amendment to the Grand Gulf Nuclear Station (GGNS) Operating License. The proposed amendment is in response to an event occurring on December 17, 1992 where the drywell atmosphere particulate radioactivity monitoring and drywell atmosphere gaseous radioactivity monitoring systems were both declared inoperable. This condition placed the unit in a 12-hour shutdown ACTION statement and prompted discussions with the Staff concerning a potential waiver of compliance pending review of an emergency Technical Specification change.

This proposed change requests changes to the Reactor Coolant System Leakage Technical Specifications (TS) consistent with the requirements stipulated in the improved Standard Technical Specifications, NUREG 1434, Revision 0. These proposed changes are justified for GGNS and provide increased operational flexibility by allowing a 30-day period to restore from a condition like that encountered in December. These changes are also consistent with guidance provided in generic correspondence on intergranular stress corrosion cracking.

Attachment 2 provides a detailed description of the proposed changes, justification, and the No Significant Hazards Considerations. Attachment 3 is a copy of the mark-up TS and TS bases pages, and Attachment 4 is an information copy of the proposed TS.

In accordance with the provisions of 10CFR50.4, the signed original of the requested amendment is enclosed. This amendment has been reviewed and accepted by the Plant Safety Review Committee and the Safety Review Committee.

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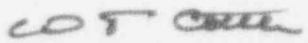
Based on the guidelines presented in 10CFR50.92, Entergy Operations has concluded that this proposed amendment involves no significant hazards considerations. Attachment 2 details the basis for this determination.

Yours truly,



WTC/WEL/ams
attachments: 1. Affirmation per 10CFR50.30
2. GGNS PCOL-92/07
3. Mark-up of Affected Technical Specification Pages
4. Proposed Technical Specifications Pages - Information Only
cc: Mr. R. H. Bernhard (w/a)
Mr. D. C. Hintz (w/a)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
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Attachment 1 to GNRO 93/00016
Page 1 of 1

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-29

DOCKET NO. 50-416

IN THE MATTER OF

MISSISSIPPI POWER & LIGHT COMPANY
and
SYSTEM ENERGY RESOURCES, INC.
and
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION
and
ENTERGY OPERATIONS, INC.

AFFIRMATION

I, W. T. Cottle, being duly sworn, state that I am Vice President, Operations GGNS of Entergy Operations, Inc.; that on behalf of Entergy Operations, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this application for amendment of the Operating License of the Grand Gulf Nuclear Station; that I signed this application as Vice President, Operations GGNS of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

W. T. Cottle

STATE OF MISSISSIPPI
COUNTY OF CLAIBORNE

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 26th day of February, 1993.

(SEAL)

Elizabeth D. Lang
Notary Public

My commission expires:

December 28, 1995

PROPOSED CHANGE TO THE OPERATING LICENSE

REACTOR COOLANT SYSTEM LEAKAGE DETECTION SYSTEMS

(GGNS PCOL-93/02)

A. SUBJECT: Reactor Coolant System Leakage Detection Systems

Technical Specifications: 3.4.3.1, 4.4.3.1.b, 4.4.3.2.1 and bases .

Affected Pages: TS pages 3/4 4-8, 3/4 4-10, B 3/4 4-2

B. DISCUSSION:

At approximately 10:20 AM on December 17, 1992 the drywell atmosphere particulate radioactivity monitoring and the drywell atmosphere gaseous radioactivity monitoring systems were declared inoperable. Since the drywell air coolers condensate flow monitoring system had been previously declared inoperable, the unit was determined to have only one of the required leakage detection systems operable.

The drywell atmosphere gaseous radioactivity monitoring system was declared inoperable due to its failure to meet its applicable system calibration requirements. While the maintenance technician was performing the calibration which failed on the drywell atmosphere gaseous radioactivity monitoring system he inadvertently hit some contacts with his wrench. As a result, the drywell atmosphere particulate radioactivity monitoring system was also declared inoperable.

Technical Specification Limiting Condition for Operation (LCO) 3.4.3.1, "Leakage Detection Systems", specifies operability requirements for the reactor coolant system leakage detection systems. The associated ACTION statement allows continued operation for up to 30 days with two out of three of these systems operable. If two systems cannot be maintained OPERABLE, the ACTION statement requires the unit to be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.

This proposed amendment to the Grand Gulf Nuclear Station (GGNS) Technical Specifications (TS) requests changes to Specification 3/4.4.3.1, Leak Detection Systems, Surveillance Requirement 4.4.3.2.1 and the TS bases for each. The proposed changes modify the TS consistent with the Improved Standard Technical Specifications as presented in NUREG 1434, Revision 0 (NUREG 1434) in that the NUREG 1434 requirements are incorporated consistent with the existing TS format and conventions. The proposed changes provide additional action statements consistent with the design of the leakage detection systems at GGNS and support increased operational flexibility while preserving adequate monitoring of the reactor coolant pressure boundary. The proposed specification, if approved, would provide for a 30-day period to restore from a condition like that encountered on December 17, 1992. The proposed changes are described as follows:

1) The three leakage detection systems required operable by LCO 3.4.3.1 are restated as follows:

   a. The drywell floor drain sump monitoring system,

   b. One channel of either the drywell atmosphere particulate or gaseous radioactivity monitoring system, and

c. The drywell air coolers condensate flow rate monitoring system.

2) The LCO 3.4.3.1 ACTION statement is replaced with the following:

Enter all applicable ACTIONs.

a. With the drywell floor drain sump monitoring system inoperable, operation may continue for up to 30 days. Note: The provisions of Specification 3.0.4 are not applicable.

b. With both the drywell atmosphere particulate and gaseous radioactivity monitoring systems inoperable, operation may continue provided grab samples of the drywell atmosphere are obtained and analyzed at least once per 12 hours.

c. With the drywell air coolers condensate flow rate monitoring system inoperable, perform a CHANNEL CHECK of the required drywell atmospheric monitoring systems once per 8 hours. Note: Not applicable when the required drywell atmospheric monitoring system is inoperable.

d. With the drywell atmosphere particulate and gaseous radioactivity monitoring systems and the drywell air cooler condensate flow rate monitoring system inoperable operation may continue for up to 30 days. Note: The provisions of Specification 3.0.4 are not applicable.

e. With the required action and associated completion time of ACTION a, b, c or d not met be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

f. With all the required leakage detection systems inoperable, enter LCO 3.0.3.

3) Surveillance 4.4.3.1.b is revised to delete the Drywell Equipment Drain Sump Monitoring System. This system is no longer included in the LCO.

4) Surveillance 4.4.3.2.1 is revised to require that RCS leakage be demonstrated within the applicable limits every 12 hours. This change omits references to those specific systems used to perform the surveillance.

5) The bases are expanded to reflect the revised specification, to be consistent with the bases for the proposed ACTION statements and revised surveillance requirements.

C. JUSTIFICATION

Reactor coolant system (RCS) leakage detection systems are required by 10 CFR 50, GDC 30, which requires means for detecting and, to the extent practical, identifying the location of RCS leakage. Regulatory Guide 1.45 (RG 1.45) describes acceptable methods of implementing this requirement with regard to the selection of leakage detection systems for the reactor coolant system pressure boundary. GGNS has committed to regulatory position C of RG 1.45 with the exception to positions noted in the GGNS UFSAR [Ref. 3].

Leakage detection systems are provided to alert operators when reactor coolant system leakage rates in the drywell above normal levels occur and to quantify the leakage. Because the leakage could be from a break in the reactor coolant pressure boundary, early detection and measurement would allow the operator time to evaluate the source and quantity of leakage before leakage levels reach unacceptable levels (i.e., technical specification limits).

Of primary concern are cracks in the reactor coolant pressure boundary that may have been induced by intergranular stress corrosion cracking (IGSCC) in austenitic stainless steel material and components, especially weld material categorized as Category D, E, F, or G welds per Generic Letter 88-01 [Ref. 1] that are known to be susceptible to IGSCC. As documented in previous correspondence [Ref. 4], any such welds at GGNS have been stress relief treated and reclassified as Category C welds. Therefore the probability of IGSCC in the reactor coolant system boundary is small. Even so, each of the leakage detection systems inside the drywell are designed with the capability of detecting leakage less than the established leakage rate limits and providing an appropriate alarm in the control room of excess leakage. Because these systems provide no automatic action, nor are they credited following an accident, if an accident occurred while these systems are inoperable, the safety systems credited in the accident analysis would be available and capable of performing their safety functions.

1. LCO 3.4.3.1 and SURVEILLANCE 4.4.3.1.b

   The required systems are rearranged in the LCO and restated consistent with those specified in the Improved Technical Specifications as presented in NUREG 1434, Revision 0 (NUREG 1434) [Ref. 5]. The rearranged systems group the drywell atmospheric monitoring systems (requiring either) since these systems perform the same function of continuously monitoring the drywell atmosphere for radioactivity indicative of RCS leakage. The Drywell Equipment Drain Sump Monitoring System is removed from the LCO and Surveillance Requirement 4.4.3.1.b. This system is used only to detect and measure leakage from known sources of operational leakage inside the drywell. This IDENTIFIED LEAKAGE is limited in conjunction with Specification 3/4.4.3.2 such that the total drywell leak rate is limited to 30 gallons per minute. Removal of this system is consistent with NUREG 0313, Criteria 1 of the NRCs Interim Policy Statement on Technical Specifications Improvement [Ref. 8], and the definition of PRESSURE BOUNDARY LEAKAGE.

   The drywell atmosphere gaseous radioactivity monitoring system and the drywell particulate radioactivity monitoring system are combined in the proposed LCO because they serve similar functions. The remaining systems in the proposed specification are used to quantify and/or recognize UNIDENTIFIED LEAKAGE in the drywell.

2. ACTION a

   The Drywell Floor Drain Sump Monitoring System is used to quantify UNIDENTIFIED LEAKAGE in conjunction with Specification 3/4.4.3.2. With this system inoperable, RCS unidentified and total leakage are determined every 12 hours per TS 3/4.4.3.1, as clarified in the proposed bases. This is consistent with the NRC's position given in GL 88-01, supplement 1 [Ref. 2]. This Generic Letter recognized that manual leak rate measurements are also acceptable (e.g. measuring the differences in sump level),

provided the accuracy and inspectability of these alternatives are demonstrated to be appropriate. Continued operation is justified based on operating experience considering the multiple forms of leakage detection still available. The proposed exception to Specification 3.0.4 reflects the condition that other instrumentation is available to monitor RCS leakage during mode changes. Note that this ACTION in conjunction with ACTION b or ACTION c comprise the remaining combinations of inoperable leakage detection systems under this specification.

3. ACTION b

The drywell atmosphere particulate radioactivity monitoring system and the drywell atmosphere gaseous radioactivity monitoring system form the drywell atmospheric monitoring system. These are combined in the proposed LCO because they serve similar functions. The drywell atmospheric monitoring system continuously monitors the drywell atmosphere for airborne particulate and gaseous radioactivity. A sudden significant increase of radioactivity could be attributed to reactor coolant boundary steam or water leakage and would alarm in the control room. With the drywell atmospheric monitoring system inoperable, grab samples of the drywell atmosphere are taken once per 12 hours in accordance with proposed ACTION b. The 12-hour interval provides periodic information adequate to detect leakage.

4. ACTION c

The Drywell air cooler condensate flow rate monitoring system provides alarms and indication for condensate flow from four of the six drywell coolers. This system serves as an indicator, but not quantifier, of RCS UNIDENTIFIED LEAKAGE. With this system inoperable, a CHANNEL CHECK of the required drywell atmospheric monitoring systems is performed every eight hours to provide information of activity in the drywell at a more frequent interval than the routine surveillance. This interval provides periodic information adequate to detect leakage and recognizes that other forms of leakage detection are available.

5. ACTION d

With both the drywell atmosphere particulate and gaseous radioactivity monitoring systems and the drywell air cooler condensate flow monitoring systems inoperable, the only means of detecting UNIDENTIFIED LEAKAGE is the drywell floor drain sump monitoring system. This condition does not provide the required diverse means to detect leakage. The intended leakage detection diversity is restored within 30 days. The 30 day period ensures that the plant will not be operated in a degraded configuration for an extended time period. The proposed exception to Specification 3.0.4 reflects the condition that other instrumentation is available to monitor RCS leakage during mode changes.

6. ACTIONs e and f

If any required ACTION(s) cannot be met within the associated completion time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed times are reasonable, based on operating experience, to

reach the required plant conditions in an orderly manner and without challenging plant systems.

With all required monitoring systems INOPERABLE, no required automatic means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required. The total time period allowed to reach a condition where the LCO does not apply (MODE 4) is 37 hours and is consistent with TS 3.0.3 in NUREG 1434.

7. SURVEILLANCE 4.4.3.2.1

Surveillance 4.4.3.2.1 is revised to omit references to those specific systems used to perform the surveillance. The revised surveillance requirement is worded as follows:

> 4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits once per 12 hours.

RCS leakage is monitored by a variety of instruments designed to provide alarms and to quantify UNIDENTIFIED and IDENTIFIED leakage. Operability of the equipment necessary to monitor UNIDENTIFIED LEAKAGE is governed by LCO 3.4.3.1. Surveillance 4.4.3.2.1 requires RCS leakage to be quantified. This function is performed by the drywell floor and equipment drain sump level and flow monitoring instrumentation. However, as stated in NUREG 1434, any method may be used to quantify leakage within the guidelines of RG 1.45 [Ref. 6]. The reactor vessel head flange leak detection system monitors the reactor vessel head for leakage. Any leakage from this area is routed to the drywell equipment drain sump and is measured as identified leakage. Performance of surveillance 4.4.3.2.1.d is not required to verify the required leakage rate requirements are satisfied.

8. BASES

The bases for 3/4.4.3.1, Leakage Detection Systems, and 3/4.4.3.2, Operational Leakage, are expanded to reflect the above changes. These changes reflect the justification provided for the above items.

D. NO SIGNIFICANT HAZARDS CONSIDERATIONS

1. Entergy Operations, Inc. proposes to change the current Grand Gulf Nuclear Station (GGNS) Technical Specifications (TS) to modify Limiting Condition for Operation (LCO) 3.4.3.1, its associated ACTION statement, and TS bases to be consistent with the Improved Standard Technical Specifications as presented in NUREG 1434, Revision 0 (NUREG 1434). The proposed changes are described as follows:

   a. The LCO required systems are rearranged to require operable:

      - The drywell floor drain sump monitoring system, and

      - One channel of the drywell atmosphere particulate or gaseous radioactivity monitoring systems, and

- The drywell air coolers condensate flow monitoring system.

b. The ACTION statements are expanded to require:

1) a 30 day completion time for restoring the drywell floor drain sump monitoring system. A TS 3.0.4 exemption is also added.

2) grab samples of the drywell atmosphere to be obtained and analyzed at least once per 12 hours with either the drywell atmosphere particulate or gaseous radioactivity monitoring system inoperable.

3) a CHANNEL CHECK of the required drywell atmospheric monitoring systems once per 8 hours with the drywell air coolers condensate flow rate monitoring system inoperable.

4) a 30 day completion time with both the drywell atmosphere particulate and gaseous radioactivity monitoring systems and the drywell air cooler condensate flow monitoring systems inoperable provided grab samples of the drywell atmosphere are obtained and analyzed at least once per 12 hours and the drywell floor drain sump monitoring system is OPERABLE. A TS 3.0.4 exemption is also added.

5) HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours with the above required ACTION(s) and associated completion time not met.

6) entering LCO 3.0.3 with all required systems inoperable.

c. Surveillance 4.4.3.1.b is revised to delete the Drywell Equipment Drain Sump Monitoring System. This system is no longer included in the LCO.

d. Surveillance 4.4.3.2.1 and bases are revised to omit references to those specific systems used to perform the surveillance. The revised surveillance requirement is worded as follows:

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits once per 12 hours.

2. The Commission has provided standards for determining whether a no significant hazards consideration exists as stated in 10CFR50.92(c). A proposed amendment to an operating license involves a no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

3. Entergy Operations Inc. has evaluated the no significant hazards considerations in its request for a license amendment. In accordance with 10CFR50.91(a), Entergy Operations Inc. is providing the analysis of the proposed amendment against the three

standards in 10CFR50.92(c). A description of the no significant hazards considerations determination follows:

a. No significant increase in the probability or consequences of an accident previously evaluated results from this change.

The proposed changes do not affect the design or operation of any plant system. The systems affected only provide operator information and perform no automatic functions used to mitigate accidents. These affected systems are not credited with mitigating an accident. Due to the diversity of the leakage detection systems, reasonable assurance is provided for detecting small leaks across the reactor coolant pressure boundary. Each of the leakage detection systems inside the drywell are designed with the capability of detecting leakage less than the established leakage rate limits and providing an appropriate alarm in the control room of excess leakage. Because these systems provide no automatic action, nor are they credited following an accident, if an accident occurred while these systems are inoperable, the safety systems credited in the accident analysis would be available and capable of performing their safety functions. Revised surveillance requirement 4.4.3.2.1 continues to require that leakage rates are monitored and remain within limits once every 12 hours or the appropriate ACTION statement is entered. The TS 3.0.4 proposed exceptions do not increase the probability or consequences of an accident because other leak detection instrumentation is available to monitor leakage.

Therefore, the probability or consequences of previously analyzed accidents are not significantly increased.

b. The change would not create the possibility of a new or different kind of accident from any previously analyzed.

The requested change will not add any plant equipment, or introduce any new modes of plant operation. Although in the case of proposed action "d", the Drywell Atmosphere Gaseous and Particulate Radioactivity Monitoring systems will be disabled, the Floor Drain Sump Monitoring system is still available to monitor UNIDENTIFIED LEAKAGE from the reactor coolant system within the Drywell. This leakage, in conjunction with the revised surveillance requirement, will continue to be monitored every 12 hours in accordance with the Technical Specifications. Revised surveillance requirement 4.4.3.2.1 does not create the possibility of a new or different kind of accident because it continues to require that leakage rates are monitored and remain within limits once every 12 hours or the appropriate ACTION statement is entered. Therefore, operating the plant with the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated. The TS 3.0.4 proposed exceptions do not increase the possibility of a new or different kind of accident because other leak detection instrumentation is available to monitor leakage.

c. This change would not involve a significant reduction in a margin of safety.

The function of the leakage detection systems is to monitor and detect leakage from the reactor coolant pressure boundary. Only the Drywell Floor and Equipment

Drain Sump Monitoring Systems have the ability to quantify leakage. The continued availability of the leakage quantification function in conjunction with grab samples provides a level of assurance (i.e., a margin of safety) that leakage from the reactor coolant system will continue to be adequately monitored. Revised surveillance 4.4.3.2.1 continues to require that leakage rates are monitored and remain within limits once every 12 hours or the appropriate ACTION statement is entered. Therefore, operating the plant with the proposed changes will not involve a significant reduction in a margin of safety. The TS 3.0.4 proposed exceptions do not involve a significant reduction in a margin of safety because the diversity of other leak detection instrumentation provides assurance that leakage is adequately monitored.

4. Based on the above evaluation, operation in accordance with the proposed amendment involves no significant hazards considerations.

E. REFERENCES

1. USNRC Generic Letter 88-01, "NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping," January 25, 1988 (MAEC-88/0019).

2. USNRC Generic Letter 88-01, Supplement 1, "NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping," February 4, 1992 (GNRI-92/00030).

3. Grand Gulf Nuclear Station Final Safety Analysis Report, Updated through Revision 7, Chapters 5 and 7.

4. Letter from W. T. Cottle, Entergy Operations, to USNRC dated December 7, 1990, "Revisions to Technical Specifications Per Generic Letter 88-01", (AECM-90/0198).

5. NUREG 1434, Standard Technical Specifications, General Electric BWR/6 Plants, Revision 0, September 28, 1992.

6. Regulatory Guide 1.45, Reactor Coolant Pressure Boundary Leakage Detection Systems, May 1973.

7. NUREG-0313, Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping, Revision 2, June 1986.

8. Interim Policy Statement on Technical Specifications Improvement, Nuclear Regulatory Commission, 52 FR 3788 (February 6, 1987).

MARKED-UP TECHNICAL SPECIFICATIONS PAGES

REACTOR COOLANT SYSTEM LEAKAGE DETECTION SYSTEMS

(GGNS PCOL-93/02)

REACTOR COOLANT SYSTEM

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.3.1 The following reactor coolant system leakage detection systems shall be OPERABLE:

b. ~~a.~~ One channel of either the drywell atmosphere particulate or gaseous radioactivity monitoring system, and

a. ~~b.~~ The drywell floor ~~and equipment~~ drain sump ~~level and flow~~ monitoring systems, ~~and~~

c. ~~Either~~ The drywell air coolers condensate flow rate monitoring system ~~or the drywell atmosphere gaseous radioactivity monitoring system~~.

relocate

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION: Replace with Insert A

With only two of the above required leakage detection systems OPERABLE, operation may continue for up to 30 days provided grab samples of the drywell atmosphere are obtained and analyzed at least once per 24 hours when the required gaseous and/or particulate radioactive monitoring system is inoperable; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.1 The reactor coolant system leakage detection systems shall be demonstrated OPERABLE by:

a. Drywell atmosphere particulate and gaseous monitoring systems performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

b. Drywell floor ~~and equipment~~ drain sump level and flow monitoring systems performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION TEST at least once per 18 months.

c. Drywell air coolers condensate flow rate monitoring system performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

INSERT A

Enter all applicable ACTIONs.

a. With the drywell floor drain sump monitoring system inoperable, operation may continue for up to 30 days. Note: The provisions of Specification 3.0.4 are not applicable.

b. With both the drywell atmosphere particulate and gaseous radioactivity monitoring systems inoperable, operation may continue provided grab samples of the drywell atmosphere are obtained and analyzed at least once per 12 hours.

c. With the drywell air coolers condensate flow rate monitoring system inoperable, perform a CHANNEL CHECK of the required drywell atmospheric monitoring systems once per 8 hours. Note: Not applicable when the required drywell atmospheric monitoring system is inoperable.

d. With the drywell atmosphere particulate and gaseous radioactivity monitoring systems and the drywell air cooler condensate flow rate monitoring system inoperable operation may continue for up to 30 days. Note: The provisions of Specification 3.0.4 are not applicable.

e. With the required action and associated completion time of ACTION a, b, c or d not met, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

f. With all the required leakage detection systems inoperable, enter LCO 3.0.3.

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits ~~by:~~ (once per 12 hours)

DELETE

a. Monitoring the drywell atmospheric particulate and gaseous radioactivity at least once per 12 hours,

b. Monitoring the drywell floor and equipment drain sump level and flow rate at least once per 12 hours,

c. Monitoring the drywell air coolers condensate flow rate at least once per 12 hours, and

d. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours.

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

a. At least once per 18 months, and

b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3

4.4.3.2.3 The high/low pressure interface valves leakage pressure monitors shall be demonstrated OPERABLE with alarm and interlock setpoints per Table 3.4.3.2-2 and Table 3.4.3.2-3 by performance a:

a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and

b. CHANNEL CALIBRATION at least once per 18 months.

3/4.4.2 SAFETY/RELIEF VALVES

The safety valve function of the safety/relief valves (SRV) operate to prevent the reactor coolant system from being pressurized above the Safety Limit of 1325 psig in accordance with the ASME Code. A total of 13 OPERABLE safety/relief valves is required to limit reactor pressure to within ASME III allowable values for the worst case upset transient. Any combination of 6 SRVs operating in the relief mode and 7 SRVs operating in the safety mode is acceptable.

Demonstration of the safety/relief valve lift settings will occur only during shutdown and will be performed in accordance with the provisions of Specification 4.0.5.

The low-low set system ensures that safety/relief valve discharges are minimized for a second opening of these valves, following any overpressure transient. This is achieved by automatically lowering the closing setpoint of 6 valves and lowering the opening setpoint of 2 valves following the initial opening. In this way, the frequency and magnitude of the containment blowdown duty cycle is substantially reduced. Sufficient redundancy is provided for the low-low set system such that failure of any one valve to open or close at its reduced setpoint does not violate the design basis.

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.3.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the reactor coolant pressure boundary. These systems provide the ability to measure leakage from fluid systems in the drywell.

← Insert B

3/4.4.3.2 OPERATIONAL LEAKAGE

The allowable leakage rates from the reactor coolant system have been based on the predicted and experimentally observed behavior of cracks in pipes. The normally expected background leakage due to equipment design and the detection capability of the instrumentation for determining system leakage was also considered. The evidence obtained from experiments suggests that for leakage somewhat greater than that specified for UNIDENTIFIED LEAKAGE the probability is small that the imperfection or crack associated with such leakage would grow rapidly. However, in all cases, if the leakage rates exceed the values specified or the leakage is located and known to be PRESSURE BOUNDARY LEAKAGE, the reactor will be shut down to allow further investigation and corrective action. Service sensitive reactor coolant system Type 304 and 316 austenitic stainless steel piping, i.e., those that are subject to high stress or that contain relatively stagnant, intermittent, or low flow fluids, requires additional surveillance and leakage limits.

The Surveillance Requirements for RCS pressure isolation valves provide added assurance of valve integrity, thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

← INSERT C

INSERT B

GDC 30 of 10 CFR 50, Appendix A (Ref. 1), requires means for detecting and, to the extent practical, identifying the location of the source of Reactor Coolant System (RCS) leakage. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

Leakage detection systems for the RCS are provided to alert the operators when leakage rates above normal background levels are detected and also to supply quantitative measurement of leakage rates. Systems for separating the leakage of an identified source from an unidentified source are necessary to provide prompt and quantitative information to the operators to permit them to take immediate corrective action. Each of the leakage detection systems inside the drywell is designed with the capability of detecting leakage less than the established leakage rate limits and providing an appropriate alarm of excess leakage in the control room.

A control room alarm allows the operators to evaluate the significance of the indicated leakage and, if necessary, shut down the reactor for further investigation and corrective action. The allowed leakage rates are well below the rates predicted for critical crack sizes. Therefore, these actions provide adequate response before a significant break in the reactor coolant pressure boundary can occur.

The drywell floor drain sump monitoring system is required to quantify UNIDENTIFIED LEAKAGE from the RCS. With this system inoperable, RCS UNIDENTIFIED and total leakage must continue to be determined every 12 hours per TS 3/4.4.3.1 to ensure adequate monitoring of the reactor coolant pressure boundary. Manual leak rate measurements are acceptable (e.g. measuring the differences in sump level or manually pumping the sump) while the floor drain sump is being restored, provided the accuracy and inspectability of these alternatives are demonstrated to be suitable. The other monitoring systems provide early alarms to the operators so closer examination of other detection systems will be made to determine the extent of any corrective action that may be required. The drywell atmospheric activity monitor and the drywell air cooler condensate flow rate monitor will provide indications of changes in leakage. The 30 day completion time of required ACTION "a" is based on other leakage detection systems that are still available. ACTION "a" is modified by a Note that states the provisions of 3.0.4 are not applicable. As a result, a MODE change is allowed when the drywell floor drain sump monitoring system is inoperable. This allowance is provided because other instrumentation is available to monitor RCS leakage.

With both gaseous and particulate drywell atmospheric monitoring channels inoperable, periodic leakage information is provided by taking and analyzing grab samples of the containment atmosphere every 12 hours. Provided a sample is obtained and analyzed every 12 hours, the plant may continue operation since at lease one other form of drywell leakage detection (i.e. air cooler condensate

flow rate monitor) is available. The 12 hour interval provides periodic information that is adequate to detect leakage.

With the required drywell air cooler condensate flow rate monitoring system inoperable, a CHANNEL CHECK is performed on the required drywell atmospheric monitoring system at a more frequent interval than the routine surveillance. The 8 hour interval provides periodic information of activity in the drywell that is adequate to detect leakage and recognizes that other forms of leakage detection are available. However, ACTION "c" is modified by a Note that allows this action to be not applicable if the required drywell atmospheric monitoring system is inoperable. This is consistent with TS 4.0.3 — Surveillances are not required to be performed on inoperable equipment.

With both the gaseous and particulate drywell atmospheric monitor channels and the drywell air cooler condensate flow rate monitor inoperable, the only means of detecting UNIDENTIFIED LEAKAGE is the drywell floor drain sump monitoring system. This condition does not provide the required diverse means of leakage detection. ACTION "d" requires restoring either of the inoperable monitors to OPERABLE status in 30 days to regain the intended leakage detection diversity. The 30 day completion time ensures the plant will not be operated in a degraded configuration for a lengthy time period. The required actions are modified by a Note that states the provisions of 3.0.4 are not applicable. As a result, a MODE change is allowed when both the gaseous and particulate drywell monitoring channels and air cooler condensate flow rate monitor are inoperable.

If any required ACTION(s) cannot be met within the associated completion time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed times are reasonable, based on operating experience, to reach the required plant conditions in an orderly manner and without challenging plant systems.

With all required monitoring systems INOPERABLE, no required automatic means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
2. Regulatory Guide 1.45, May 1973.
3. GGNS UFSAR, Sections 5.2.5 and 7.6.2.4.2.1.

INSERT C

The Surveillance requirements for RCS leakage typically utilize sump level and flow rate instrumentation to quantify actual leakage rates. However, any method may be used to quantify leakage within the guidelines of Regulatory Guide 1.45.