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May 3, 2011

AEP-NRC-2011-28
10 CFR 50.90

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: Donald C. Cook Nuclear Plant, Units 1 and 2
Docket Nos. 50-315 and 50-316

LICENSE AMENDMENT REQUEST FOR ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE (TSTF)-513, REVISION 3, "REVISE PWR OPERABILITY REQUIREMENTS AND ACTIONS FOR RCS LEAKAGE INSTRUMENTATION"

Dear Sir or Madam:

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Indiana Michigan Power Company (I&M) is submitting a request for an amendment to the Technical Specifications (TS) for Donald C. Cook Nuclear Plant (CNP), Units 1 and 2.

The proposed amendment would revise the TS to define a new time limit for restoring inoperable Reactor Coolant System (RCS) leakage detection instrumentation to operable status; establish alternate methods of monitoring RCS leakage when one or more required monitors are inoperable; and make TS Bases changes which reflect the proposed changes and more accurately reflect the contents of the facility design basis related to operability of the RCS leakage detection instrumentation. These changes are consistent with NRC-approved Revision 3 to TSTF Improved Standard Technical Specification (STS) Change Traveler TSTF-513, "Revise PWR Operability Requirements and Actions for RCS Leakage Instrumentation." The availability of this TS improvement was announced in the Federal Register on January 3, 2011 (76 FR 189), as part of the consolidated line item improvement process (CLIIP).

Attachment 1 provides an affirmation. Attachment 2 provides an evaluation of the proposed changes. Attachment 3 provides the marked-up pages of existing Unit 1 TS to show the proposed changes. Attachment 4 provides the marked-up pages of existing Unit 2 TS to show the proposed changes. Attachment 5 provides the marked-up pages of the existing Unit 1 TS Bases to show the proposed changes. Attachment 6 provides the marked-up pages of the existing Unit 2 TS Bases to show the proposed changes.

A001
LRR

Bases changes are provided on an "information only" basis. Bases changes will be incorporated in accordance with the CNP TS Bases change procedure.

Revised (clean) TS pages with proposed changes incorporated will be provided to the Nuclear Regulatory Commission (NRC) Licensing Project Manager when requested.

I&M requests approval of the proposed license amendment by May 3, 2012, with the amendment being implemented within 90 days following approval.

In accordance with 10 CFR 50.91(a)(1), "Notice for Public Comment," the analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is being provided to the Commission in accordance with the distribution requirements in 10 CFR 50.4.

In accordance with 10 CFR 50.91(b)(1), "State Consultation," a copy of this application and its reasoned analysis about no significant hazards considerations is being provided to the designated Michigan official.

There are no new regulatory commitments made in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Joel P. Gebbie
Site Vice President

MCS/jmr

c: J. T. King – MPSC
S. M. Krawec, AEP Ft. Wayne, w/o attachments
MDNRE – WHMD/RPS
NRC Resident Inspector
M. A. Satorius, NRC Region III
P. S. Tam – NRC Washington DC

Attachments:
1. Affirmation
2. Evaluation of the proposed changes.
3. CNP Unit 1 TS Pages Marked To Show Proposed Changes
4. CNP Unit 2 TS Pages Marked To Show Proposed Changes
5. CNP Unit 1 TS Bases Pages Marked To Show Proposed Changes [Information Only]
6. CNP Unit 2 TS Bases Pages Marked To Show Proposed Changes [Information Only]

AFFIRMATION

I, Joel P. Gebbie, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

Indiana Michigan Power Company

Joel P. Gebbie
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 3rd DAY OF May, 2011

Notary Public

My Commission Expires 6/10/2013

EVALUATION OF PROPOSED CHANGES

1.0 DESCRIPTION

Indiana Michigan Power Company (I&M) proposes to revise the Donald C. Cook Nuclear Plant (CNP) Unit 1 and Unit 2 Technical Specifications (TS) to define a new time limit for restoring inoperable Reactor Coolant System (RCS) leakage detection instrumentation to operable status; establish alternate methods of monitoring RCS leakage when one or more required monitors are inoperable; and make conforming TS Bases changes. These changes are consistent with NRC-approved Revision 3 to Technical Specification Task Force (TSTF) Standard Technical Specification (STS) Change Traveler TSTF-513, "Revise PWR Operability Requirements and Actions for RCS Leakage Instrumentation." The availability of this TS improvement was announced in the Federal Register on January 3, 2011 (76 FR 189) as part of the consolidated line item improvement process (CLIIP).

2.0 PROPOSED CHANGES

The proposed changes revise and add a new Condition D to TS 3.4.15, "RCS Leakage Detection Instrumentation," and revise the associated bases. New Condition D is applicable when the containment atmosphere gaseous radioactivity monitor is the only operable TS-required monitor (i.e., all other monitors are inoperable). New Condition D Required Actions require analyzing grab samples of the containment atmosphere every 12 hours and restoring another monitor within 7 days. Previously existing Conditions D, E, and F will be re-lettered as Conditions E, F, and G, respectively. Additionally, the TS Bases, which summarize the reasons for the specifications, will be revised in accordance with the CNP Bases Control Program to clarify the specified safety function for each required instrument in the limiting condition for operation (LCO) Bases, delete discussion from the Bases that could be construed to alter the meaning of TS operability requirements, and reflect the changes made to TS 3.4.15.

The proposed changes also correct inappropriate references to "required" equipment in TS 3.4.15. In several locations, the specifications incorrectly refer to a "required" monitor. The term "required" is reserved for situations in which there are multiple ways to meet the LCO, such as the requirement for either a gaseous or particulate radiation monitor. The incorrect use of the term "required" is removed from TS 3.4.15 Conditions and Surveillance Requirements (SR) where appropriate.

I&M is proposing two variations from the TS changes described in TSTF-513, Revision 3, as published in the Federal Register on January 3, 2011 (76 FR 189), as part of the CLIIP Notice of Availability.

The proposed TS and Bases changes have been modified to reflect the CNP current licensing basis. In LCO 3.4.15.c, the CNP Unit 1 and Unit 2 TS specify a containment humidity monitor as a leakage detection instrument instead of a containment air cooler condensate flow rate monitor. The containment humidity monitor has been substituted for the containment air cooler condensate flow rate monitor in the revised TS and Bases.

LCO 3.4.15 for Unit 1 varies from the STS format as a result of commitments incorporated during CNP's TS conversion to STS. As such, the newly created Condition D for the Unit 1 TS varies slightly from the TSTF model application. However, the intent of the TSTF change, to provide a Condition that is applicable when the containment gaseous radioactivity monitor is the only OPERABLE monitor, is still met.

3.0 BACKGROUND

NRC Information Notice (IN) 2005-24, "Nonconservatism in Leakage Detection Sensitivity," dated August 3, 2005, informed addressees that the reactor coolant activity assumptions for primary containment atmosphere gaseous radioactivity monitors may be non-conservative. This means the monitors may not be able to detect a one gallon per minute leak within one hour. Some licensees have taken action in response to IN 2005-24 to remove the gaseous radioactivity monitor from the TS list of required monitors. However, industry experience has shown that the primary containment atmosphere gaseous radiation monitor is often the first monitor to indicate an increase in RCS leak rate. As a result, the TSTF and the NRC staff met on April 29, 2008, and April 14, 2009, to develop an alternative approach to address the issue identified in IN 2005-24. The agreed solution is to retain the primary containment atmosphere gaseous radiation monitor in the LCO list of required equipment, revise the specified safety function of the gas monitor to specify the required instrument sensitivity level, revise the Actions to require additional monitoring, and provide less time before a plant shutdown is required when the primary containment atmosphere gaseous radiation monitor is the only operable monitor.

4.0 TECHNICAL ANALYSIS

I&M has reviewed TSTF-513, Revision 3, and the model SE published on January 3, 2011 (76 FR 189), as part of the CLIIP Notice of Availability. I&M has concluded that the technical bases presented in TSTF Traveler-513, Revision 3, and the model SE prepared by the NRC staff are applicable to CNP.

The proposed amendment revises the language in the TS Bases that describes when the gaseous and particulate containment atmosphere radioactivity monitor is operable. The proposed amendment requires additional batch or manual RCS leakage monitoring to be performed when the primary containment atmosphere gaseous radiation monitor is the only operable continuous or automatic monitor. These alternative batch methods provide an RCS leakage detection capability similar to the TS-required methods. The grab sample has an RCS leakage detection capability that is comparable to that of the containment particulate radiation monitor. The proposed Actions and Completion Times for grab samples are adequate because use of frequent grab samples provides additional assurance (in addition to the mass balances that may be required) that any significant RCS leakage will be detected prior to significant RCPB degradation.

5.0 REGULATORY SAFETY ANALYSIS

5.1 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

I&M has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below:

Description of Amendment Request: The proposed amendment would revise TS 3.4.15, "Reactor Coolant System (RCS) Leakage Detection Instrumentation" Conditions and Required Actions and the licensing basis for the gaseous radiation monitor, as well as make associated TS Bases changes for TS 3.4.15.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), the I&M analysis of the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is presented below:

1: Does the Proposed Change Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated?

Response: No

The proposed change clarifies the operability requirements for the RCS leakage detection instrumentation and reduces the time allowed for the plant to operate when the only TS-required operable RCS leakage detection instrumentation monitor is the containment atmosphere gaseous radiation monitor. The monitoring of RCS leakage is not a precursor to any accident previously evaluated. The monitoring of RCS leakage is not used to mitigate the consequences of any accident previously evaluated. Therefore, it is concluded that the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2: Does the Proposed Change Create the Possibility of a New or Different Kind of Accident from any Accident Previously Evaluated?

Response: No

The proposed change clarifies the operability requirements for the RCS leakage detection instrumentation and reduces the time allowed for the plant to operate when the only TS-required operable RCS leakage detection instrumentation monitor is the containment atmosphere gaseous radiation monitor. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change maintains sufficient continuity and diversity of leak detection capability that the probability of piping evaluated and approved for Leak-Before-Break progressing to pipe rupture remains extremely low. Therefore, it is concluded that the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3: Does the Proposed Change Involve a Significant Reduction in a Margin of Safety?

Response: No

The proposed change clarifies the operability requirements for the RCS leakage detection instrumentation and reduces the time allowed for the plant to operate when the only TS-required operable RCS leakage detection instrumentation monitor is the containment atmosphere gaseous radiation monitor. Reducing the amount of time the plant is allowed to operate with only the containment atmosphere gaseous radiation monitor operable increases the margin of safety by increasing the likelihood that an increase in RCS leakage will be detected before it potentially results in gross failure.

Therefore, it is concluded that the proposed change does not involve a significant reduction in a margin of safety.

Based upon the above analysis, I&M concludes that the requested change does not involve a significant hazards consideration, as set forth in 10 CFR 50.92(c), "Issuance of Amendment."

5.2 APPLICABLE REGULATORY REQUIREMENTS / CRITERIA

A description of the proposed TS change and its relationship to applicable regulatory requirements were published in the Federal Register Notice of Availability on January 3, 2011 (76 FR 189). I&M has reviewed the NRC staff's model SE referenced in the CLIIP Notice of Availability and concluded that portions of the regulatory evaluation section relative to General Design Criterion 60 and Regulatory Guide (RG) 1.45 are not applicable to CNP.

The construction permits for CNP were issued and the majority of construction was completed prior to issuance of 10 CFR 50, Appendix A, General Design Criteria, in 1971 by the Atomic Energy Commission (AEC). CNP was designed and constructed to comply with the AEC General Design Criteria (GDC) as proposed on July 10, 1967. The application of the AEC proposed General Design Criteria to CNP is contained in the CNP UFSAR as the Plant Specific Design Criteria (PSDC). Appendix A of 10 CFR 50 GDC differ both in numbering and content from the PSDC for CNP.

PSDC 16, Monitoring Reactor Coolant Leakage, describes the means that are provided to detect significant uncontrolled leakage from the reactor coolant pressure boundary. This requirement meets the intent of General Design Criterion 30, which requires that means be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

CNP is not committed to RG 1.45, Reactor Coolant Pressure Boundary Leakage Detection Systems. However, the requirements of RG 1.45 were followed to the extent practical in the design of the leakage monitoring systems. A detailed discussion of RCS leakage monitoring is provided in CNP UFSAR Section 4.2.7, "Leakage."

The Unit 1 containment atmosphere particulate radioactivity monitor has a licensing basis leak detection capability of 0.8 gpm in 1 hour. The Unit 1 containment atmosphere gaseous radioactivity monitor has a licensing basis leak detection capability of 1 gpm in 4 hours. The

Unit 2 containment atmosphere particulate and gaseous radioactivity monitors have a licensing basis leak detection capability of 1 gpm in 4 hours [References 1, 2, and 3].

6.0 ENVIRONMENTAL CONSIDERATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

7.0 REFERENCES

1. M. W. Rencheck, I&M, to U.S. NRC Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, Additional Information Supporting Implementation of Leak Before Break Methodology to the Pressurizer Surge Line," dated October 26, 2000

2. NRC to AEP Letter, "Donald C. Cook Nuclear Plant, Units 1 and 2 - Review of Leak-Before-Break for the Pressurizer Surge Line Piping as Provided by 10 CFR Part 50, Appendix A, GDC 4 (TAC Nos. MA7834 and MA7835)," dated November 8, 2000

3. NRC Safety Evaluation for CNP TS Amendments 236 (Unit 1) and 218 (Unit 2), dated December 28, 1999

Attachment 3 to AEP-NRC-2011-28

DONALD C. COOK NUCLEAR PLANT UNIT 1
TECHNICAL SPECIFICATION PAGES MARKED TO SHOW CHANGES

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump monitor in each sump;

b. One containment atmosphere particulate radioactivity monitor; and

c. One containment humidity or containment atmosphere gaseous radioactivity monitor.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ~~Required c~~Containment sump monitor(s) inoperable.	A.1	----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ----------	
		Perform SR 3.4.13.1.	Once per 24 hours
	AND		
	A.2	Restore ~~required~~ containment sump monitor(s) to OPERABLE status.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ~~Required c~~Containment atmosphere particulate radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the containment atmosphere.	Once per 12 hours
	OR	
	B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1.	Once per 12 hours
	AND	
	B.2 Restore ~~required~~ containment atmosphere particulate radioactivity monitor to OPERABLE status.	30 days
C. Required containment humidity or containment atmosphere gaseous radioactivity monitor inoperable.	C.1 Analyze grab samples of the containment atmosphere.	Once per 24 hours
	OR	
	C.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1.	Once per 24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
---------- NOTE ---------- Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- D. Containment sump monitor inoperable. AND Containment atmosphere particulate radioactivity monitor inoperable.	D.1 Analyze grab samples of the containment atmosphere. AND D.2.1 Restore containment sump monitor to OPERABLE status. OR D.2.2 Restore containment atmosphere particulate radioactivity monitor to OPERABLE status.	Once per 12 hours 7 days 7 days
ED. ~~Required c~~Containment atmosphere particulate radioactivity monitor inoperable. AND Required containment humidity or containment atmosphere gaseous radioactivity monitor inoperable.	ED.1 Restore ~~required~~ containment atmosphere particulate radioactivity monitor to OPERABLE status. OR ED.2 Restore required containment humidity or containment atmosphere gaseous radioactivity monitor to OPERABLE status.	30 days 30 days
FE. Required Action and associated Completion Time of Condition A, B, C, ~~or~~ D, or E not met.	FE.1 Be in MODE 3. AND FE.2 Be in MODE 5.	6 hours 36 hours
GF. LCO 3.4.15.a, b, and c not met.	GF.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitors.	12 hours
SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitors.	92 days
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the ~~required~~ containment sump monitors.	24 months
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitors.	24 months
SR 3.4.15.5	Perform CHANNEL CALIBRATION of the required containment humidity monitor.	24 months

Attachment 4 to AEP-NRC-2011-28

DONALD C. COOK NUCLEAR PLANT UNIT 2
TECHNICAL SPECIFICATION PAGES MARKED TO SHOW CHANGES

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump monitor in each sump;

b. One containment atmosphere radioactivity monitor (gaseous or particulate); and

c. One containment humidity monitor.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~Required c~~Containment sump monitor(s) inoperable.	A.1 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ----------	
	Perform SR 3.4.13.1.	Once per 24 hours
	AND	
	A.2 Restore ~~required~~ containment sump monitor(s) to OPERABLE status.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the containment atmosphere. OR B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1. AND B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	Once per 24 hours Once per 24 hours 30 days
C. ~~Required c~~Containment humidity monitor inoperable.	C.1 Analyze grab samples of the containment atmosphere. OR C.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1.	Once per 24 hours Once per 24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
---------- NOTE ---------- Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- D. Containment sump monitor(s) inoperable. AND Containment humidity monitor inoperable.	D.1 Analyze grab samples of the containment atmosphere. AND D.2.1 Restore containment sump monitor(s) to OPERABLE status. OR D.2.2 Restore containment humidity monitor to OPERABLE status.	Once per 12 hours 7 days 7 days
ED. Required containment atmosphere radioactivity monitor inoperable. AND ~~Required c~~Containment humidity monitor inoperable.	ED.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. OR ED.2 Restore ~~required~~ containment humidity monitor to OPERABLE status.	30 days 30 days
FE. Required Action and associated Completion Time of Condition A, B, C, ~~or~~ D, or E not met.	FE.1 Be in MODE 3. AND FE.2 Be in MODE 5.	6 hours 36 hours
GF. LCO 3.4.15.a, b, and c not met.	GF.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitor.	92 days
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the ~~required~~ containment sump monitors.	24 months
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	24 months
SR 3.4.15.5	Perform CHANNEL CALIBRATION of the ~~required~~ containment humidity monitor.	24 months

Attachment 5 to AEP-NRC-2011-28

DONALD C. COOK NUCLEAR PLANT UNIT 1
TECHNICAL SPECIFICATION BASES PAGES MARKED TO SHOW CHANGES
[INFORMATION ONLY]

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.15 RCS Leakage Detection Instrumentation

BASES

BACKGROUND

Plant Specific Design Criterion 16 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS LEAKAGE. Regulatory Guide (RG) 1.45, Revision 0, (Ref. 2) describes acceptable methods for selecting leakage detection systems. While Cook Nuclear Plant (CNP) is not committed to RG 1.45, the requirements of RG 1.45 were followed to the extent practical. This was documented in D.C. Cook's response to Generic Letter 84-04 (Ref. 3), and accepted by the NRC as documented in the associated Safety Evaluation Report (Ref. 4).

Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE. In addition to meeting the OPERABILITY requirements, the monitors are typically set to provide the most sensitive response without causing an excessive number of spurious alarms.

The containment sump used to collect unidentified LEAKAGE is instrumented to detect increases above the normal flow rates. ~~and the monitoring system is capable of detecting a 1 gpm leak within 4 hours. This sensitivity has been found acceptable for detecting increases in LEAKAGE.~~

The reactor coolant contains radioactivity that, when released to the containment, ~~can~~ may be detected by radiation monitoring instrumentation. ~~Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Instrument sensitivities of 10^{-9} µCi/cc radioactivity for particulate monitoring and of 10^{-6} µCi/cc radioactivity for gaseous monitoring are practical for these leakage detection systems.~~ Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE.

An increase in humidity of the containment atmosphere would indicate release of water vapor to the containment. Dew point temperature measurements can thus be used to monitor humidity levels of the containment atmosphere as an indicator of potential RCS LEAKAGE. ~~A 1°F increase in dew point is well within the sensitivity range of available instruments.~~

Since the humidity level is influenced by several factors, a quantitative evaluation of an indicated leakage rate by this means may be

BASES

BACKGROUND (continued)

questionable and should be compared to observed increases in liquid flow into or from the containment sump. Humidity level monitoring is considered most useful as an indirect alarm or indication to alert the operator to a potential problem.

Air temperature and pressure monitoring methods may also be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during unit operation, but a rise above the normally indicated range of values may indicate RCS leakage into the containment. The relevance of temperature and pressure measurements ~~are~~ is affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing rapid and sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

The above-mentioned LEAKAGE detection methods or systems differ in sensitivity and response time. Some of these systems could serve as early alarm systems signaling the operators that closer examination of other detection systems is necessary to determine the extent of any corrective action that may be required.

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. ~~The system response times and sensitivities are described in the UFSAR (Ref. 3).~~

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should a leakage occur detrimental to the safety of the unit and the public. In addition, a specific leak before break analysis was performed for the pressurizer surge line (Ref. 6), which assumed the operators would be capable of identifying a leak from this location prior to propagation of the break. The containment atmosphere particulate radioactivity monitor was specifically assumed in this analysis.

RCS Leakage Detection Instrumentation satisfies Criterion 1 of 10 CFR 50.36(c)(2)(ii).

LCO

~~One method of protecting against large RCS leakage derives from the ability of instruments to rapidly detect extremely small leaks.~~ This LCO requires instruments of diverse monitoring principles to be OPERABLE to

provide ~~a high degree of~~ confidence that small amounts of unidentified LEAKAGE ~~extremely small leaks~~ are detected in time to allow actions toplace the unit in a safe condition, when RCS LEAKAGE indicates possible RCPB degradation.

The LCO requires three instruments to be OPERABLE.

The containment sump is used to collect unidentified LEAKAGE. The containment sump consists of three sumps – the lower containment sump, the reactor cavity sump, and the pipe tunnel sump. The LCO requirements apply to the total amount of unidentified LEAKAGE collected in all three sumps. The monitor for the containment sump detects the operating frequency of a pump and is instrumented to detect when there is an increase above the normal value by 1 gpm. The identification of an increase in unidentified LEAKAGE will be delayed by the time required for the unidentified LEAKAGE to travel to the containment sump and it may take longer than four hours to detect a 1 gpm increase in unidentified LEAKAGE, depending on the origin and magnitude of the LEAKAGE. This sensitivity is acceptable for containment sump monitor OPERABILITY.

The reactor coolant contains radioactivity that, when released to the containment, can be detected by the gaseous or particulate containment atmosphere radioactivity monitor. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE, but have recognized limitations. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. If there are few fuel element cladding defects and low levels of activation products, it may not be possible for the gaseous or particulate containment atmosphere radioactivity monitors to detect a 1 gpm increase within 4 hours during normal operation. The particulate containment atmosphere radioactivity monitor is OPERABLE when it is capable of detecting a 0.8 gpm increase in unidentified LEAKAGE within 1 hour given an RCS activity equivalent to that assumed in the design calculations for the monitors. The gaseous containment atmosphere radioactivity monitor is OPERABLE when it is capable of detecting a 1 gpm increase in unidentified LEAKAGE within 4 hours given an RCS activity equivalent to that assumed in the design calculations for the monitors.

An increase in humidity of the containment atmosphere could indicate the release of water vapor to the containment. Containment humidity monitors are instrumented to detect when there is an increase in LEAKAGE above the normal value by 1 gpm. The time required to detect a 1 gpm increase above the normal value varies based on environmental and system conditions and may take longer than 4 hours. This sensitivity is acceptable for the containment humidity monitor OPERABILITY.

The LCO is satisfied when monitors of diverse measurement means are available. Thus, one containment sump monitor in each sump (lower

BASES

LCO (continued)

containment, reactor cavity, and pipe tunnel), a particulate radioactivity monitor, and a containment humidity or containment gaseous radioactivity monitor, provide an acceptable minimum. In addition, for a containment sump monitor to be OPERABLE, its associated sump pump and integrator must also be OPERABLE.

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5, the temperature is to be ≤ 200°F and pressure is maintained low or at atmospheric pressure. In MODE 6 the temperature is low and the pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation are much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6.

ACTIONS

A.1 and A.2

With the ~~one or more required~~ containment sump monitor(s) inoperable, no other form of sampling can provide the equivalent information; however, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the containment atmosphere radioactivity monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.13.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established.

Restoration of the ~~required~~ sump monitor(s) to OPERABLE status within a Completion Time of 30 days is required to regain the function after the failure of the monitors. This time is acceptable, considering the Frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

B.1.1, B.1.2, and B.2

With the ~~required~~ containment atmosphere particulate radioactivity monitoring instrumentation channel inoperable, alternative action is required. Either grab samples of the containment atmosphere must be

BASES

ACTIONS (continued)

taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information.

With a sample obtained and analyzed or water inventory balance performed every 12 hours, the reactor may be operated for up to 30 days to allow restoration of the required containment atmosphere particulate radioactivity monitor.

The 12 hour interval provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

C.1 and C.2

With the required containment humidity or containment gaseous radioactivity monitor inoperable, alternative action is again required. Either grab samples of the containment atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. Provided a grab sample is taken or a water inventory balance is performed every 24 hours, reactor operation may continue while awaiting restoration of the containment humidity or containment gaseous radioactivity monitor to OPERABLE status.

The 24 hour interval provides periodic information that is adequate to detect RCS LEAKAGE. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

D.1, D.2.1, and D.2.2

With the containment sump monitor and the containment atmosphere particulate radiation monitor inoperable, the only means of detecting LEAKAGE are the containment gaseous radiation monitor and the containment humidity monitor.

A Note clarifies that this Condition is applicable when the only OPERABLE monitor is the containment atmosphere gaseous radiation monitor. The containment atmosphere gaseous radioactivity monitor typically cannot detect a 1 gpm leak within four hours when RCS activity is low. In addition, this configuration does not provide the required diverse means of leakage detection. Indirect methods of monitoring RCS leakage must be implemented. Grab samples of the containment atmosphere must be taken to provide alternate periodic information. The 12 hour interval is sufficient to detect increasing RCS leakage. The Required Action provides 7 days to restore another RCS leakage monitor to OPERABLE status to regain the intended leakage detection diversity. The 7 day Completion Time ensures that the plant will not be operated in a degraded configuration for a lengthy time period.

E.1 and E.2

With the ~~required~~ containment atmosphere particulate radioactivity monitor and the required containment humidity or containment atmosphere gaseous radioactivity monitor inoperable, the only means of

BASES

ACTIONS (continued)

detecting leakage is the containment sump monitor. This Condition does not provide the required diverse means of leakage detection. The Required Action is to restore either of the inoperable required monitors to OPERABLE status within 30 days to regain the intended leakage detection diversity. The 30 day Completion Time ensures that the unit will not be operated in a reduced configuration for a lengthy time period.

FE.1 and FE.2

If any Required Action and associated Completion Time of Condition A, B, C, ~~or~~ D, or E cannot be met, the unit must be brought to a MODE in which the requirement does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

GF.1

With all three types of required monitors inoperable (i.e., LCO 3.4.15.a, b, and c not met), no automatic means of monitoring leakage are available, and immediate unit shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. The check gives reasonable confidence that the channel is operating properly. The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a COT on the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown that it is proper for detecting degradation.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.15.3, SR 3.4.15.4, and SR 3.4.15.5

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The Frequency of 24 months considers channel reliability and operating experience has proven that this Frequency is acceptable.

REFERENCES

1. UFSAR, Section 1.4.3.
2. Regulatory Guide 1.45, Rev. 0, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973.
3. AEP Letter to NRC, AEP:NRC:0137D, "NRC Generic Letter 84-04; Elimination Of Postulated Pipe Breaks In Primary Main Loops Generic Issue A-2, Asymmetric Blowdown Loads On PWR Primary Systems Request For License Condition Deletion," dated September 10, 1984.
4. NRC Letter to AEP, "Generic Letter 84-04, Safety Evaluation of Westinghouse Topical Reports Dealing With Elimination of Postulated Pipe Breaks in PWR Primary Main Loops," dated November 22, 1985.
5. UFSAR, Section 4.2.7
6. WCAP-15435, Rev. 1, Technical Justification for Eliminating Pressurizer Surge Line Rupture as the Structural Design Basis for D.C. Cook Units 1 and 2 Nuclear Power Plant, August 2000.

Attachment 6 to AEP-NRC-2011-28

DONALD C. COOK NUCLEAR PLANT UNIT 2
TECHNICAL SPECIFICATION BASES PAGES MARKED TO SHOW CHANGES
[INFORMATION ONLY]

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.15 RCS Leakage Detection Instrumentation

BASES

BACKGROUND

Plant Specific Design Criterion 16 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS LEAKAGE. Regulatory Guide (RG) 1.45, Revision 0, (Ref. 2) describes acceptable methods for selecting leakage detection systems. While Cook Nuclear Plant (CNP) is not committed to RG 1.45, the requirements of RG 1.45 were followed to the extent practical. This was documented in D.C. Cook's response to Generic Letter 84-04 (Ref. 3), and accepted by the NRC as documented in the associated Safety Evaluation Report (Ref. 4).

Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE. In addition to meeting the OPERABILITY requirements, the monitors are typically set to provide the most sensitive response without causing an excessive number of spurious alarms.

The containment sump used to collect unidentified LEAKAGE is instrumented to detect increases above the normal flow rates. ~~and the monitoring system is capable of detecting a 1 gpm leak within 4 hours. This sensitivity has been found acceptable for detecting increases in LEAKAGE.~~

The reactor coolant contains radioactivity that, when released to the containment, ~~can~~ may be detected by radiation monitoring instrumentation. ~~Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Instrument sensitivities of 10^{-9} µCi/cc radioactivity for particulate monitoring and of 10^{-6} µCi/cc radioactivity for gaseous monitoring are practical for these leakage detection systems.~~ Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE.

An increase in humidity of the containment atmosphere would indicate release of water vapor to the containment. Dew point temperature measurements can thus be used to monitor humidity levels of the containment atmosphere as an indicator of potential RCS LEAKAGE. ~~A 1°F increase in dew point is well within the sensitivity range of available instruments.~~

Since the humidity level is influenced by several factors, a quantitative evaluation of an indicated leakage rate by this means may be

BASES

BACKGROUND (continued)

questionable and should be compared to observed increases in liquid flow into or from the containment sump. Humidity level monitoring is considered most useful as an indirect alarm or indication to alert the operator to a potential problem.

Air temperature and pressure monitoring methods may also be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during unit operation, but a rise above the normally indicated range of values may indicate RCS leakage into the containment. The relevance of temperature and pressure measurements ~~are~~ is affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing rapid and sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

The above-mentioned LEAKAGE detection methods or systems differ in sensitivity and response time. Some of these systems could serve as early alarm systems signaling the operators that closer examination of other detection systems is necessary to determine the extent of any corrective action that may be required.

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. ~~The system response times and sensitivities are described in the UFSAR (Ref. 3).~~

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should a leakage occur detrimental to the safety of the unit and the public.

RCS Leakage Detection Instrumentation satisfies Criterion 1 of 10 CFR 50.36(c)(2)(ii).

LCO

~~One method of protecting against large RCS leakage derives from the ability of instruments to rapidly detect extremely small leaks.~~ This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide ~~a high degree of~~ confidence that small amounts of unidentified LEAKAGE ~~extremely small leaks~~ are detected in time to allow actions to place the unit in a safe condition, when RCS LEAKAGE indicates possible RCPB degradation.

The LCO requires three instruments to be OPERABLE.

The containment sump is used to collect unidentified LEAKAGE. The containment sump consists of three sumps – the lower containment sump, the reactor cavity sump, and the pipe tunnel sump. The LCO requirements apply to the total amount of unidentified LEAKAGE collected in all three sumps. The monitor for the containment sump detects the operating frequency of a pump and is instrumented to detect when there is an increase above the normal value by 1 gpm. The identification of an increase in unidentified LEAKAGE will be delayed by the time required for the unidentified LEAKAGE to travel to the containment sump and it may take longer than four hours to detect a 1 gpm increase in unidentified LEAKAGE, depending on the origin and magnitude of the LEAKAGE. This sensitivity is acceptable for containment sump monitor OPERABILITY.

The reactor coolant contains radioactivity that, when released to the containment, can be detected by the gaseous or particulate containment atmosphere radioactivity monitor. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE, but have recognized limitations. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. If there are few fuel element cladding defects and low levels of activation products, it may not be possible for the gaseous or particulate containment atmosphere radioactivity monitors to detect a 1 gpm increase within 4 hours during normal operation. However, the particulate containment atmosphere radioactivity monitor is OPERABLE when it is capable of detecting a 1 gpm increase in unidentified LEAKAGE within 4 hours given an RCS activity equivalent to that assumed in the design calculations for the monitors. The gaseous containment atmosphere radioactivity monitor is OPERABLE when it is capable of detecting a 1 gpm increase in unidentified LEAKAGE within 4 hours given an RCS activity equivalent to that assumed in the design calculations for the monitors.

An increase in humidity of the containment atmosphere could indicate the release of water vapor to the containment. Containment humidity monitors are instrumented to detect when there is an increase in LEAKAGE above the normal value by 1 gpm. The time required to detect a 1 gpm increase above the normal value varies based on environmental and system conditions and may take longer than 4 hours. This sensitivity is acceptable for the containment humidity monitor OPERABILITY.

The LCO is satisfied when monitors of diverse measurement means are available. Thus, one containment sump monitor in each sump (lower containment, reactor cavity, and pipe tunnel), in combination with a gaseous or particulate radioactivity monitor and a containment humidity monitor, provide an acceptable minimum. In addition, for a containment sump monitor to be OPERABLE, its associated sump pump and integrator must also be OPERABLE.

BASES

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5, the temperature is to be ≤ 200°F and pressure is maintained low or at atmospheric pressure. In MODE 6 the temperature is low and the pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation are much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6.

ACTIONS

A.1 and A.2

With the ~~one or more required~~ containment sump monitor(s) inoperable, no other form of sampling can provide the equivalent information; however, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the containment atmosphere radioactivity monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.13.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established.

Restoration of the ~~required~~ sump monitor(s) to OPERABLE status within a Completion Time of 30 days is required to regain the function after the failure of the monitors. This time is acceptable, considering the Frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

B.1.1, B.1.2, and B.2

With the required containment atmosphere radioactivity monitoring instrumentation channel inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information.

With a sample obtained and analyzed or water inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of the required containment atmosphere radioactivity monitor.

BASES

ACTIONS (continued)

The 24 hour interval provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

C.1 and C.2

With the ~~required~~ containment humidity monitor inoperable, alternative action is again required. Either grab samples of the containment atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. Provided a grab sample is taken or a water inventory balance is performed every 24 hours, reactor operation may continue while awaiting restoration of the containment humidity monitor to OPERABLE status.

The 24 hour interval provides periodic information that is adequate to detect RCS LEAKAGE. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

D.1, D.2.1, and D.2.2

With the containment sump monitor and the containment humidity monitor inoperable, the only means of detecting LEAKAGE are the containment atmosphere particulate and gaseous radiation monitors. A Note clarifies that this Condition is applicable when the only OPERABLE monitor is the containment atmosphere gaseous radiation monitor. The containment atmosphere gaseous radioactivity monitor typically cannot detect a 1 gpm leak within four hours when RCS activity is low. In addition, this configuration does not provide the required diverse means of leakage detection. Indirect methods of monitoring RCS leakage must be implemented. Grab samples of the containment atmosphere must be taken to provide alternate periodic information. The 12 hour interval is sufficient to detect increasing RCS leakage. The Required

Action provides 7 days to restore another RCS leakage monitor to OPERABLE status to regain the intended leakage detection diversity. The 7 day Completion Time ensures that the plant will not be operated in a degraded configuration for a lengthy time period.

E.1 and E.2

With the required containment atmosphere radioactivity monitor and the ~~required~~ containment humidity monitor inoperable, the only means of detecting leakage is the containment sump monitor. This Condition does not provide the required diverse means of leakage detection. The Required Action is to restore either of the inoperable required monitors to OPERABLE status within 30 days to regain the intended leakage detection diversity. The 30 day Completion Time ensures that the unit will not be operated in a reduced configuration for a lengthy time period.

BASES

ACTIONS (continued)

FE.1 and FE.2

If any Required Action and associated Completion Time of Condition A, B, C, ~~or~~ D, or E cannot be met, the unit must be brought to a MODE in which the requirement does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

GF.1

With all three types of required monitors inoperable (i.e., LCO 3.4.15.a, b, and c not met), no automatic means of monitoring leakage are available, and immediate unit shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. The check gives reasonable confidence that the channel is operating properly. The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a COT on the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown that it is proper for detecting degradation.

SR 3.4.15.3, SR 3.4.15.4, and SR 3.4.15.5

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The Frequency of 24 months

BASES

SURVEILLANCE REQUIREMENTS (continued)

considers channel reliability and operating experience has proven that this Frequency is acceptable.

REFERENCES

1. UFSAR, Section 1.4.3.

2. Regulatory Guide 1.45, Rev. 0, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973.

3. AEP Letter to NRC, AEP:NRC:0137D, "NRC Generic Letter 84-04; Elimination Of Postulated Pipe Breaks In Primary Main Loops Generic Issue A-2, Asymmetric Blowdown Loads On PWR Primary Systems Request For License Condition Deletion," dated September 10, 1984.

4. NRC Letter to AEP, "Generic Letter 84-04, Safety Evaluation of Westinghouse Topical Reports Dealing With Elimination of Postulated Pipe Breaks in PWR Primary Main Loops," dated November 22, 1985.

5. UFSAR, Section 4.2.7