Duke Power®
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WILLIAM R MCCOLLUM, JR.
VP, Nuclear Support
Duke Energy Corporation

Duke Power
EC07H / 526 South Church Street
Charlotte, NC 28202-1802

Mailing Address:
P. O. Box 1006 - EC07H
Charlotte, NC 28201-1006

704 382 8983

704 382 6056 fax

wrmccoll@duke-energy.com

September 20, 2004

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTENTION: Document Control Desk

Subject: Duke Energy Corporation

Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, 270, and 50-287

McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370

License Amendment Request to Eliminate the Technical Specifications Requirements for the Hydrogen Monitors and Hydrogen Recombiners Oconee Technical Specification 3.3.8 and McGuire Technical Specifications 3.3.3 and 3.6.7, Using the Consolidated Line Item Improvement Process

In accordance with the provisions of 10 CFR 50.90, Duke Energy Corporation (Duke) is submitting a license amendment request (LAR) for the Facility Operating Licenses and Technical Specifications (TS) for Oconee Nuclear Station, Units 1, 2, and 3 and McGuire Nuclear Station, Units 1 and 2. The proposed amendment would eliminate the Oconee TS 3.3.8 requirements and the McGuire TS 3.3.3 requirements for the Hydrogen Monitors, and the McGuire TS 3.6.7 requirements for the Hydrogen Recombiners. Conforming changes are also being made to the associated Bases affected by this LAR and these Bases changes are included in this submittal package. This change is consistent with an NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specifications Change Traveler, TSTF-447, Revision 1, *Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors*.

A001

Attachment 1 provides a description of the proposed change, the requested confirmation of applicability, and plant-specific verifications and commitments. Attachments 2a and 2b provide the existing TS and Bases pages marked-up to show the proposed changes for Oconee and McGuire, respectively. Attachments 3a and 3b providing revised, clean TS and Bases pages for Oconee and McGuire, respectively, will be provided to the NRC at the time of issuance of the approved amendments.

Implementation of this proposed change to the Oconee and McGuire Facility Operating Licenses and TS will require revision to the Oconee and McGuire Updated Final Safety Analysis Reports (UFSAR). Necessary UFSAR changes will be submitted in accordance with 10 CFR 50.71(e).

Duke requests approval of this Consolidated Line Item Improvement Process (CLIIP) item by March 1, 2005, with each station's implementation to take place 60 days after completion of the Spring 2005 refueling outages. For Oconee this outage is 1EOC22 on Unit 1, and for McGuire, this outage is 2EOC16 on Unit 2. Regulatory commitments applicable to this LAR are described in Attachment 1, Section 6.1.

In accordance with Duke administrative procedures and the Quality Assurance Program Topical Report, the plant-specific changes contained in this proposed amendment have been reviewed and approved by the respective Oconee or McGuire Plant Operations Review Committee. This LAR has also been reviewed and approved by the Duke Nuclear Safety Review Board. Pursuant to 10 CFR 50.91, a copy of this amendment request is being sent to the designated officials of the State of North Carolina and the State of South Carolina.

Inquiries on this request should be directed to J. S. Warren at (704) 875-5171.

Very truly yours,

W. R. McCollum, Jr.

Attachments:

1. Description and Assessment

2a. Proposed Technical Specifications and Bases Changes (Mark-up) for Oconee

2b. Proposed Technical Specifications and Bases Changes (Mark-up) for McGuire

3a. Revised (Clean) Technical Specifications and Bases Pages for Oconee - FUTURE

3b. Revised (Clean) Technical Specifications and Bases Pages for McGuire - FUTURE

xc (with attachments):

W. D. Travers
U. S. Nuclear Regulatory Commission
Regional Administrator, Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, GA 30303

L. N. Olshan (Addressee Only)
NRC Project Manager (Oconee)
U. S. Nuclear Regulatory commission
Mail Stop O-8 H12
Washington, DC 20555-0001

J. J. Shea (Addressee Only)
NRC Project Manager (McGuire)
U. S. Nuclear Regulatory commission
Mail Stop O-8 H12
Washington, DC 20555-0001

M. C. Shannon
Senior Resident Inspector
U. S. Nuclear Regulatory Commission
Oconee Nuclear Site

J. B. Brady
Senior Resident Inspector
U. S. Nuclear Regulatory Commission
McGuire Nuclear Site

Beverly O. Hall, Section Chief
Radiation Protection Section
1645 Mail Service Center
Raleigh, NC 27699-1645

H. J. Porter, Director
Division of Radioactive Waste Management
South Carolina Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

W. R. McCollum, Jr., being duly sworn, affirms that he is the person who subscribed his name to the foregoing statement, and that all matters and facts set forth herein are true and correct to the best of his knowledge.

W. R. McCollum, Jr., Vice President, Nuclear Support

Subscribed and sworn to me: September 20, 2004

Notary Public

My commission expires: March 9, 2009

SEAL

BETTY SHARPE GREGORY NOTARY My Comm. Exp. March 09, 2009 PUBLIC MECKLENBURG COUNTY, N. C.

bxc (with attachments):

L. A. Keller
B. G. Davenport
K. L. Crane
J. E. Smith
ELL
Oconee Master File - ON03DM
McGuire Master File - MG01DM

ATTACHMENT 1

DESCRIPTION AND ASSESSMENT

1.0 INTRODUCTION

The proposed license amendment eliminates the Oconee Nuclear Station Technical Specifications (TS) 3.3.8 requirements for the Hydrogen Monitors and the McGuire Nuclear Station TS 3.3.3 requirements for the Hydrogen Monitors and the TS 3.6.7 requirements for the Hydrogen Recombiners.

The changes are consistent with an NRC approved Industry/Technical Specifications Task Force (TSTF) Standard Technical Specifications Change Traveler, TSTF-447, Revision 1, *Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors*. The availability of this TS improvement was announced in the Federal Register on September 25, 2003, as part of the Consolidated Line Item Improvement Process (CLIIP).

2.0 DESCRIPTION OF PROPOSED AMENDMENT

Consistent with the NRC-approved Revision 1 of TSTF-447, the proposed TS changes include:

For Oconee:

Revised - TS 3.3.8, Condition C (for consistency with the deletion of Function 10)

Deleted - TS 3.3.8, Condition D (Two required channels for Function 10 inoperable)

Revised - TS 3.3.8, Condition G (for consistency with the deletion of Condition D)

Revised - SR 3.3.8.2, Channel Calibration (for consistency with the deletion of Function 10)

Revised - SR 3.3.8.3, Channel Calibration (for consistency with the deletion of Function 10)

ATTACHMENT 1

Deleted - In Table 3.3.8-1, Item 10, Containment Hydrogen Concentration (Hydrogen Monitors)

For McGuire:

Deleted - TS 3.3.3, Condition F (Two hydrogen monitor channels inoperable)

Revised - TS 3.3.3, Condition G (for consistency with the deletion of Condition F)

Deleted - SR 3.3.3.2 (Channel Calibration for Hydrogen Monitors)

Deleted - In Table 3.3.3-1, Item 10 (Hydrogen Monitors)

Deleted - TS 3.6.7 (Hydrogen Recombiners)

Other changes included in this amendment are limited to formatting changes that resulted directly from the deletion of the above requirements related to the hydrogen monitors and the hydrogen recombiners.

As described in the NRC-approved Revision 1 of TSTF-447, the changes to the TS requirements result in changes to various TS Bases sections. Proposed changes to the TS Bases are also addressed in Attachments 2a and 2b and the forthcoming Attachments 3a and 3b.

3.0 BACKGROUND

The background for this amendment is adequately addressed by the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), TSTF-447, Revision 1, the documentation associated with the 10 CFR 50.44 rule making, and other related documents.

4.0 REGULATORY REQUIREMENTS AND GUIDANCE

The applicable regulatory requirements and guidance associated with this amendment are adequately addressed by the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), TSTF-447, Revision 1, the documentation

ATTACHMENT 1

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

Duke has reviewed the proposed no significant hazards consideration determination published on September 25, 2003 (68 FR 55416), as part of the CLIIP. Duke has concluded that the determination is applicable to Oconee and McGuire and is hereby incorporated by reference to satisfy the requirement of 10 CFR 50.91(a).

8.0 ENVIRONMENTAL EVALUATION

Duke has reviewed the environmental evaluation included in the model SE published on September 25, 2003 (68 FR 55416), as part of the CLIIP. Duke has concluded the staff's findings presented in that evaluation are applicable to Oconee and McGuire and the evaluation is hereby incorporated by reference for this amendment.

9.0 PRECEDENT

This amendment is being made in accordance with the CLIIP. Duke is not proposing variations or deviations from the TS changes described in TSTF-447, Revision 1, or the staff's model SE published on September 25, 2003 (68 FR 55416) other than the TS are not being renumbered ("Not used" is being inserted into the deleted portions). Note that Oconee does not have TS for hydrogen recombiners, thus the portion of the CLIIP that addresses deletion of the TS for hydrogen recombiners does not apply to Oconee.

10.0 REFERENCES

Federal Register Notice: Notice of availability of Model Application Concerning Technical Specification Improvement to Eliminate Hydrogen Recombiner Requirement, and Relax the Hydrogen and Oxygen Monitor Requirements for Light Water Reactors Using Consolidated Line Item Improvement Process, published September 25, 2003 (68 FR 55416).

ATTACHMENT 2a

Oconee Nuclear Station Units 1, 2, and 3

Proposed Technical Specifications and Bases Changes
(Mark-up)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ----------NOTE---------- Not applicable to Functions 10, 14, 18, 19, 20 and 22. ---------- One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. ----------NOTE---------- Only applicable to Function 10. ---------- Two required channels inoperable.	D.1 Restore one required channel to OPERABLE status.	72 hours
E. ----------NOTE---------- Only applicable to Function 14. ---------- One required channel inoperable.	E.1 Restore required channel to OPERABLE status.	24 hours

Not used

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. ----------NOTE---------- Only applicable to Functions 18, 19, 20, and 22. ---------- One or more Functions with required channel inoperable.	F.1 Declare the affected train inoperable.	Immediately
G. Required Action and associated Completion Time of Condition C, D or E not met.	G.1 Enter the Condition referenced in Table 3.3.8-1 for the channel.	Immediately
H. As required by Required Action G.1 and referenced in Table 3.3.8-1.	H.1 Be in MODE 3. AND H.2 Be in MODE 4.	12 hours 18 hours
I. As required by Required Action G.1 and referenced in Table 3.3.8-1.	I.1 Initiate action in accordance with Specification 5.6.6.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
These SRs apply to each PAM instrumentation Function in Table 3.3.8-1 except where indicated.

	SURVEILLANCE	FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.8.2	----------NOTE---------- Only applicable to PAM Functions 7, 10 and 22. --- Perform CHANNEL CALIBRATION.	12 months
SR 3.3.8.3	----------NOTES---------- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. Not applicable to PAM Functions 7, 10, and 22. --- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.8-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION G.1
1.	Wide Range Neutron Flux	2	H
2.	RCS Hot Leg Temperature	2	H
3.	RCS Hot Leg Level	2	I
4.	RCS Pressure (Wide Range)	2	H
5.	Reactor Vessel Head Level	2	I
6.	Containment Sump Water Level (Wide Range)	2	H
7.	Containment Pressure (Wide Range)	2	H
8.	Containment Isolation Valve Position	2 per penetration flow path[(a)(b)(c)]	H
9.	Containment Area Radiation (High Range)	2	I
10.	Containment Hydrogen Concentration	2	H
11.	Pressurizer Level	2	H
12.	Steam Generator Water Level	2 per SG	H
13.	Steam Generator Pressure	2 per SG	H
14.	Borated Water Storage Tank Water Level	2	H
15.	Upper Surge Tank Level	2	H
16.	Core Exit Temperature	2 independent sets of 5[(d)]	H
17.	Subcooling Monitor	2	H
18.	HPI System Flow	1 per train	NA
19.	LPI System Flow	1 per train	NA
20.	Reactor Building Spray Flow	1 per train	NA
21.	Emergency Feedwater Flow	2 per SG	H
22.	Low Pressure Service Water Flow to LPI Coolers	1 per train	NA

Not used

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Position indication requirements apply only to containment isolation valves that are electrically controlled.

(d) The subcooling margin monitor takes the average of the five highest CETs for each of the ICCM trains.

BASES

LCO (continued)

9. Containment Area Radiation (High Range)

Containment Area Radiation (High Range) instrumentation is a Type C, Category 1 variable provided to monitor the potential for significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans. The Containment Area Radiation instrumentation consists of two channels (RIA 57 and 58) with readout on two indicators and one channel recorded. The indicated range is 1 to 10^7 R/hr.

10. Containment Hydrogen Concentration Not used

Containment Hydrogen Concentration instrumentation is a Type A, Category 1 variable provided to detect high hydrogen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions. The Containment Hydrogen Concentration instrumentation consists of two channels (MT 80 and 81) with readout on two indicators and one channel recorded. The indicated range is 0 to 10% hydrogen concentration.

11. Pressurizer Level

Pressurizer Level instrumentation is a Type A, Category 1 variable used in combination with other system parameters to determine whether to terminate safety injection (SI), if still in progress, or to reinitiate SI if it has been stopped. Knowledge of pressurizer water level is also used to verify the unit conditions necessary to establish natural circulation in the RCS and to verify that the unit is maintained in a safe shutdown condition. The Pressurizer Level instrumentation consists of two channels (Train A channel consisting of two indications and Train B channel consisting of one indication) with two channels indicated and one channel recorded.

(Note: two indications are available in Train A, but only one is required). The indicated range is 0 to 400 inches (11% to 84% level as a percentage of volume).

BASES

ACTIONS

C.1 (continued)

operation with two required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance of qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur. Condition C is modified by a Note indicating this Condition is not applicable to PAM Functions 10, 14, 18, 19, 20, and 22.

D.1

When two required hydrogen monitor channels are inoperable, Required Action D.1 requires one channel to be restored to OPERABLE status. This action restores the monitoring capability of the hydrogen monitor. The 72 hour Completion Time is based on the relatively low probability of an event requiring hydrogen monitoring. Continuous operation with two required channels inoperable is not acceptable because alternate indications are not available.

Not used

Condition D is modified by a Note indicating this Condition is only applicable to PAM Function 10.

E.1

When one required BWST water level channel is inoperable, Required Action E.1 requires the channel to be restored to OPERABLE status. The 24 hour Completion Time is based on the relatively low probability of an event requiring BWST water and the availability of the remaining BWST water level channel. Continuous operation with one of the two required channels inoperable is not acceptable because alternate indications are not available. This indication is crucial in determining when the water source for ECCS should be swapped from the BWST to the reactor building sump.

Condition E is modified by a Note indicating this Condition is only applicable to PAM Function 14.

F.1

When a flow instrument channel is inoperable, Required Action F.1 requires the affected HPI, LPI, or RBS train to be declared inoperable

BASES

ACTIONS

F.1 (continued)

and the requirements of LCO 3.5.2, LCO 3.5.3, or LCO 3.6.5 apply. For Function 22, LPSW flow to LPI coolers, the affected train is the associated LPI train. For Function 18, HPI flow, an inoperable flow instrument channel causes the affected HPI train's automatic function to be inoperable. The HPI train continues to be manually OPERABLE provided the HPI discharge crossover valves and associated flow instruments are OPERABLE. Therefore, HPI is in a condition where one HPI train is incapable of being automatically actuated but capable of being manually actuated. The required Completion Time for declaring the train(s) inoperable is immediately. Therefore, LCO 3.5.2, LCO 3.5.3, or LCO 3.6.5 is entered immediately, and the Required Actions in the LCOs apply without delay. This action is necessary since there is no alternate flow indication available and these flow indications are key in ensuring each train is capable of performing its function following an accident. HPI and LPI train OPERABILITY assumes that the associated PAM flow instrument is OPERABLE because this indication is used to throttle flow during an accident and assure runout limits are not exceeded or to ensure the associated pumps do not exceed NPSH requirements.

For Function 20, the RBS train associated with an inoperable RBS flow instrument must be declared inoperable even though it is no longer needed to support throttling flow because this action is required by Technical Specifications.

Condition F is modified by a Note indicating this Condition is only applicable to PAM Functions 18, 19, 20, and 22.

G.1

Required Action G.1 directs entry into the appropriate Condition referenced in Table 3.3.8-1. The applicable Condition referenced in the Table is Function dependent. Each time an inoperable channel has not met the Required Action and associated Completion Time of Condition C, (D,) or E, as applicable, Condition G is entered for that channel and provides for transfer to the appropriate subsequent Condition.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.8.2 and SR 3.3.8.3 (continued)

Note 1 to SR 3.3.8.3 clarifies that the neutron detectors are not required to be tested as part of the CHANNEL CALIBRATION. There is no adjustment that can be made to the detectors. Furthermore, adjustment of the detectors is unnecessary because they are passive devices, with minimal drift. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration and the monthly axial channel calibration.

For the Containment Area Radiation instrumentation, a CHANNEL CALIBRATION may consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr, and a one point calibration check of the detector below 10 R/hr with a gamma source.

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD)sensors or Core Exit thermocouple sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

SR 3.3.8.2 is modified by a Note indicating that it is applicable only to Functions 7, 10 and 22. SR 3.3.8.3 is modified by Note 2 indicating that it is not applicable to Functions 7, 10 and 22. The Frequency of each SR is based on operating experience and is justified by the assumption of the specified calibration interval in the determination of the magnitude of equipment drift.

REFERENCES

1. Duke Power Company letter from Hal B. Tucker to Harold M. Denton (NRC) dated September 28, 1984.

2. UFSAR, Section 7.5.

3. NRC Letter from Helen N. Pastis to H. B. Tucker, "Emergency Response Capability - Conformance to Regulatory Guide 1.97," dated March 15, 1988.

4. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, May 1983.

ATTACHMENT 2b

McGuire Nuclear Station Units 1 and 2

Proposed Technical Specifications and Bases Changes
(Mark-up)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more Functions with two required channels inoperable.	E.1 Restore one channel to OPERABLE status.	7 days
F. Two hydrogen monitor channels inoperable. Not Used	F.1 Restore one hydrogen monitor channel to OPERABLE status.	72 hours
G. Required Action and associated Completion Time of Condition D, E or F not met. or	G.1 Be in MODE 3. AND G.2 Be in MODE 4.	6 hours 12 hours
H. Required Action and associated Completion of Condition D not met.	H.1 Initiate action in accordance with Specification 5.6.7.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
SR 3.3.3.1 and SR 3.3.3.3 apply to each PAM instrumentation Function in Table 3.3.3-1.

	SURVEILLANCE	FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2	----------NOTE---------- This SR is only applicable to Hydrogen Monitors. --- Perform CHANNEL CALIBRATION.	92 days
SR 3.3.3.3	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	18 months

Not Used

Not Used

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITIONS
1.	Neutron Flux (Wide Range)	2	B,C,E,G
2.	Reactor Coolant System (RCS) Hot Leg Temperature	2	B,C,E,G
3.	RCS Cold Leg Temperature	2	B,C,E,G
4.	RCS Pressure (Wide Range)	2	B,C,E,G
5.	Reactor Vessel Water Level (Dynamic Head Range)	2	B,C,E,G
6.	Reactor Vessel Water Level (Lower Range)	2	B,C,E,G
7.	Containment Sump Water Level (Wide Range)	2	B,C,E,G
8.	Containment Pressure (Wide Range)	2	B,C,E,G
9.	Containment Atmosphere Radiation (High Range)	1	D,H
10.	Hydrogen Monitors	2	B,C,E,G
11.	Pressurizer Level Not Used	2	B,C,E,G
12.	Steam Generator Water Level (Narrow Range)	2 per steam generator	B,C,E,G
13.	Core Exit Temperature - Quadrant 1	2(a)	B,C,E,G
14.	Core Exit Temperature - Quadrant 2	2(a)	B,C,E,G
15.	Core Exit Temperature - Quadrant 3	2(a)	B,C,E,G
16.	Core Exit Temperature - Quadrant 4	2(a)	B,C,E,G
17.	Auxiliary Feedwater Flow	2 per steam generator	B,C,E,G
18.	RCS Subcooling Margin Monitor	2	B,C,E,G
19.	Steam Line Pressure	2 per steam generator	B,C,E,G
20.	Refueling Water Storage Tank Level	2	B,C,E,G
21.	DG Heat Exchanger NSWS Flow(b)	1 per DG	D,G
22.	Containment Spray Heat Exchanger NSWS Flow(b)	1 per train	D,G

(a) A channel consists of two core exit thermocouples (CETs).

(b) Not applicable if the associated outlet valve is set to its flow balance position with power removed or if the associated outlet valve's flow balance position is fully open.

3.6 CONTAINMENT SYSTEMS

3.6.7 Hydrogen Recombiners

Not Used

LCO 3.6.7 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

Delete

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 ----------NOTE---------- LCO 3.0.4 is not applicable. ---------- Restore hydrogen recombiner to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.7.1	Perform a system functional test for each hydrogen recombiner.	18 months
SR 3.6.7.2	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	18 months
SR 3.6.7.3	Perform a resistance to ground test for each heater phase.	18 months

Delete Entire Page

LCO (continued)

Two channels of wide range containment pressure are required OPERABLE.

9. Containment Atmosphere Radiation (High Range)

Containment Atmosphere Radiation is provided to monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans. Containment radiation level is used to determine if a high energy line break (HELB) has occurred, and whether the event is inside or outside of containment.

Two channels of high range containment atmosphere radiation are provided. One channel is required OPERABLE. Diversity is provided by portable instrumentation or by sampling and analysis.

10. Hydrogen Monitors — Not Used

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. This variable is also important in verifying the adequacy of mitigating actions.

DELETE

Two channels of hydrogen monitors are required OPERABLE.

11. Pressurizer Level

Pressurizer Level is used to determine whether to terminate SI, if still in progress, or to reinitiate SI if it has been stopped. Knowledge of pressurizer water level is also used to verify the unit conditions necessary to establish natural circulation in the RCS and to verify that the unit is maintained in a safe shutdown condition.

Three channels of pressurizer level are provided. Two channels are required OPERABLE.

12. Steam Generator Water Level (Narrow Range)

SG Water Level is provided to monitor operation of decay heat removal via the SGs. The Category I indication of SG level is the narrow range level instrumentation.

ACTIONS (continued)

discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

D.1

Condition D applies when a single require channel is inoperable. Required Action D.1 requires restoring the required channel to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Continuous operation with the required channel inoperable is not acceptable. Therefore, requiring restoration of the required channel to OPERABLE status limits the risk that the PAM function will be in a degraded condition should an event occur.

E.1

Condition E applies when one or more Functions have two inoperable required channels (i.e., two channels inoperable in the same Function). Required Action E.1 requires restoring one channel in the Function(s) to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Continuous operation with two required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur. Condition E does not apply to hydrogen monitor channels and functions with single channels.

Not Used

F.1

Condition F applies when two hydrogen monitor channels are inoperable. Required Action F.1 requires restoring one hydrogen monitor channel to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable based on the low probability that an accident causing core damage would occur during this time.

BASES

ACTIONS (continued)

G.1 and G.2

If the Required Action and associated Completion Time of Conditions D, E, or F are not met, the unit must be brought to a MODE where the requirements of this LCO do not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and MODE 4 within 12 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.

H.1

Alternate means of monitoring Containment Area Radiation have been developed and tested. These alternate means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. If these alternate means are used, the Required Action is not to shut down the unit but rather to follow the directions of Specification 5.6.7, in the Administrative Controls section of the TS. The report provided to the NRC should discuss the alternate means used, describe the degree to which the alternate means are equivalent to the installed PAM channels, justify the areas in which they are not equivalent, and provide a schedule for restoring the normal PAM channels.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that SR 3.3.3.1 and SR 3.3.3.3 apply to each PAM instrumentation Function in Table 3.3.3-1.

Performing the Neutron Flux Instrumentation and Containment Atmosphere Radiation (High-Range) surveillances meets the License Renewal Commitments for License Renewal Program for High-Range Radiation and Neutron Flux Instrumentation Circuits per UFSAR Chapter 18, Table 18-1 and License Renewal Commitments Specification MCS-1274.00-00-0016, Section 4.44.

SR 3.3.3.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a

SURVEILLANCE REQUIREMENTS (continued)

similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments located throughout the unit.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

As specified in the SR, a CHANNEL CHECK is only required for those channels that are normally energized.

The Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

Not Used

SR 3.3.3.2

A CHANNEL CALIBRATION is performed every 92 days on the Hydrogen Monitor channels. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor using hydrogen gas mixtures to obtain calibration points at 0 volume percent (v/o) and 9 v/o hydrogen. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. The Frequency is based on operating experience associated with these monitors.

SR 3.3.3.3

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the

B 3.6 CONTAINMENT SYSTEMS

B 3.6.7 Hydrogen Recombiners

Not Used

BASES

BACKGROUND

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a hydrogen oxygen reaction.

Per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and GDC 41, "Containment Atmosphere Cleanup" (Ref. 2), hydrogen recombiners are required to reduce the hydrogen concentration in the containment following a loss of coolant accident (LOCA). The recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor remains in containment, thus eliminating any discharge to the environment. The hydrogen recombiners are manually initiated since flammable limits would not be reached until several days after a Design Basis Accident (DBA).

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Two 100% capacity independent hydrogen recombiner systems are provided. Each consists of controls located outside containment in an area not exposed to the post LOCA environment, a power supply and a recombiner. Recombination is accomplished by heating a hydrogen air mixture above 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the recombiner. A single recombiner is capable of maintaining the hydrogen concentration in containment below the 4.0 volume percent (v/o) flammability limit. Two recombiners are provided to meet the requirement for redundancy and independence. Each recombiner is powered from a separate Engineered Safety Features bus, and is provided with a separate power panel and control panel.

APPLICABLE SAFETY ANALYSES

The hydrogen recombiners provide for the capability of controlling the bulk hydrogen concentration in containment to less than the lower flammable concentration of 4.0 v/o following a DBA. This control would prevent a containment wide hydrogen burn, thus ensuring the pressure and temperature assumed in the analyses are not exceeded. The limiting DBA relative to hydrogen generation is a LOCA. Hydrogen may accumulate in containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant;

BASES

APPLICABLE SAFETY ANALYSES (continued)

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump;

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space); or

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

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To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 3 are used to maximize the amount of hydrogen calculated.

Based on the conservative assumptions used to calculate the hydrogen concentration versus time after a LOCA, the hydrogen concentration increases at different rates depending on the region of the containment being measured. The initiation of the Air Return System and Hydrogen Skimmer System along with the hydrogen recombiners will maintain the hydrogen concentration in the primary containment below flammability limits.

The hydrogen recombiners are designed such that, with the conservatively calculated hydrogen generation rates, a single recombiner is capable of limiting the peak hydrogen concentration in containment to less than 4.0 v/o (Ref. 3).

The hydrogen recombiners satisfy Criterion 3 of 10 CFR 50.36 (Ref. 4).

LCO

Two hydrogen recombiners must be OPERABLE. This ensures operation of at least one hydrogen recombiner in the event of a worst case single active failure.

Operation with at least one hydrogen recombiner ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.

APPLICABILITY

In MODES 1 and 2, two hydrogen recombiners are required to control the hydrogen concentration within containment below its flammability limit of 4.0 v/o following a LOCA, assuming a worst case single failure.

BASES

APPLICABILITY (continued)

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the hydrogen recombiners is low. Therefore, the hydrogen recombiners are not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA are low, due to the pressure and temperature limitations in these MODES. Therefore, hydrogen recombiners are not required in these MODES.

ACTIONS

A.1

With one containment hydrogen recombiner inoperable, the inoperable recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE hydrogen recombiner is adequate to perform the hydrogen control function. However, the overall reliability is reduced because a single failure in the OPERABLE recombiner could result in reduced hydrogen control capability. The 30 day Completion Time is based on the availability of the other hydrogen recombiner, the small probability of a LOCA occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

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Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is based on the availability of the other hydrogen recombiner, the small probability of a LOCA occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

B.1

If the inoperable hydrogen recombiner(s) cannot be restored to OPERABLE status within the required 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 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

Performance of a system functional test for each hydrogen recombiner ensures the recombiners are operational and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR verifies that the minimum heater sheath temperature increases to ≥ 700°F in ≤ 90 minutes. After reaching 700°F, the power is increased to maximum power (not to exceed maximum rated power) for approximately 2 minutes and power is verified to be ≥ 60 kW.

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Industry operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.7.2

This SR ensures there are no physical problems that could affect recombiner operation. Since the recombiners are mechanically passive, they are not subject to mechanical failure. The only credible failure involves loose wiring or structural connections, deposits of foreign materials, etc.

A visual inspection is sufficient to determine abnormal conditions that could cause such failures. The 18 month Frequency for this SR was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

SR 3.6.7.3

This SR requires performance of a resistance to ground test for each heater phase to ensure that there are no detectable grounds in any heater phase. This SR should be performed following SR 3.6.7.1. This is accomplished by verifying that the resistance to ground for any heater phase is ≥ 10,000 ohms.

The 18 month Frequency for this Surveillance was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

BASES

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. UFSAR Section 6.2.
4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).

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BASES

APPLICABILITY (continued)

the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HSS is low. Therefore, the HSS is not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA or steam line break (SLB) are reduced due to the pressure and temperature limitations in these MODES. Therefore, the HSS is not required in these MODES.

ACTIONS

A.1

With one HSS train inoperable, the inoperable train must be restored to OPERABLE status within 30 days. In this Condition, the remaining OPERABLE HSS train is adequate to perform the hydrogen mixing function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in reduced hydrogen mixing capability. The 30 day Completion Time is based on the availability of the other HSS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit, and the availability of the hydrogen recombiners and Hydrogen Mitigation System.

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one HSS train is inoperable. This allowance is based on the availability of the other HSS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

B.1

If an inoperable HSS train cannot be restored to OPERABLE status within the required 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 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

BASES

BACKGROUND (continued)

that local pockets of hydrogen at increased concentrations would burn before reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches 8.5 volume percent (v/o) and results in 100% of the hydrogen present being consumed.

APPLICABLE SAFETY ANALYSES

The HMS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. 3). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup.

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen concentration resulting from a DBA can be maintained less than the flammability limit using the hydrogen recombiners. The hydrogen ignitors, however, have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. As such, the hydrogen ignitors satisfy Criterion 4 of 10 CFR 50.36 (Ref. 4).

LCO

Two HMS trains must be OPERABLE with power from two independent, safety related power supplies.

For this unit, an OPERABLE HMS train consists of 34 of 35 ignitors energized on the train.

Operation with at least one HMS train ensures that the hydrogen in containment can be burned in a controlled manner. Unavailability of both HMS trains could lead to hydrogen buildup to higher concentrations, which could result in a violent reaction if ignited. The reaction could take place fast enough to lead to high temperatures and overpressurization of containment and, as a result, breach containment or cause containment leakage rates above those assumed in the safety analyses. Damage to safety related equipment located in containment could also occur.

ATTACHMENT 3a

Oconee Nuclear Station Units 1, 2, and 3

Revised (Clean) Technical Specifications and Bases Pages*

* Reprinted pages will be provided prior to issuance of the approved amendment.

ATTACHMENT 3b

McGuire Nuclear Station Units 1 and 2

Revised (Clean) Technical Specifications and Bases Pages*

* Reprinted pages will be provided prior to issuance of the approved amendment.