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HAMPTON,J.W. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Forwards response to GL 89-13 re deviations noted in insp repts 50-269/93-25,50-270/93-25 & 50-287/93-25.Corrective actions:will document changes in SW sys program manual.

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DUKE POWER

April 4, 1995

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Site
Docket Nos. 50-269, -270, -287
Supplemental Response #3 to GL 89-13

Dear Sir:

In response to a Notice of Deviation as described in Inspection Report No. 50-269/93-25, 50-270/93-25, and 50-287/93-25, Duke committed to supplement our response to Generic Letter 89-13.

Please find attached supplemental response #3 to Generic Letter 89-13.

Very truly yours,

Joe M Davis

for J. W. Hampton

cc: Mr. S. D. Ebneter, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. L. A. Wiens, Project Manager
Office of Nuclear Reactor Regulation

Mr. P. E. Harmon
Senior Resident Inspector
Oconee Nuclear Site

110042

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ACTION I: SURVEILLANCE AND CONTROL

INTAKE STRUCTURE INSPECTION

A discussion of Oconee's program for intake structure inspection was included in our January 26, 1990 submittal. Additionally, as stated in our September 1, 1994 submittal, a discussion of the intake inspection program at Keowee has been added to the Service Water System Program Manual.

BIOCIDE ADDITION

A discussion of biocide addition was included in our January 26, 1990 submittal. Additionally, as stated in our September 1, 1994 submittal, a discussion of biocide addition at Keowee has been added to the Service Water System Program Manual. The Chemistry procedure that governs monitoring for Asiatic clams will be updated to include appropriate guidance for monitoring activities at Keowee by September 1, 1995.

FLUSHING AND FLOW TESTING

LPSW

A discussion of Oconee's program for flushing and flow testing, as it pertains to LPSW, was included in our January 26, 1990 and May 31, 1990 submittals. In addition, as alluded to in our September 1, 1994 submittal, a flush and video inspection were performed on the cross-connect between the Units 1&2 LPSW System and the Unit 3 LPSW System. It was concluded that this piping, and similar piping, has no problems of a magnitude that would prevent the piping from passing the flow required to meet accident load demands. This flush and inspection will continue to be performed on a periodic basis.

CCW

Our September 1, 1994 submittal stated that the CCW System hydraulic flow model had been completed but had not been benchmarked. However, we believe that this hydraulic model is not required (and is not required to be benchmarked) to meet the intent of Action I of GL 89-13.

The 8 ft. and 11 ft. diameter CCW inlet piping is coated to prevent any flow reduction caused by corrosion product buildup. The coating (and therefore the piping) is inspected and maintained. Guidance on the application and initial inspection of the coating is contained in the Oconee Pipe Coatings Manual. In addition, the inlet piping is greatly oversized for performing its accident function of supplying flow to LPSW, since it is designed to supply sufficient flow to condense steam from the main turbines during full power operation.

The 42 in. buried CCW crossover piping connects the CCW inlet piping of all 3 units and provides suction to the LPSW pumps. The ability of the CCW crossover piping to provide the required suction flow to LPSW is tested as part of the LPSW System flow test each outage and is modeled and benchmarked as part of the LPSW hydraulic flow models.

The emergency CCW piping, from the condenser discharge out through motor-operated valve CCW-9, recirculates water from the condenser discharge back to the intake canal. The ability of this piping to pass its required flow has been tested in a configuration similar to accident conditions each outage. Beginning with the Unit 3 EOC15 outage (mid 1995) and continuing with each subsequent refueling outage, this portion of the system will be tested in its worst case, design basis accident configuration.

These activities provide assurance that the CCW System is able to supply the required flows to meet accident load demands.

HPSW

Our September 1, 1994 submittal stated that the HPSW System hydraulic flow model had been completed but had not been benchmarked. However, we believe that this hydraulic model is not required (and is not required to be benchmarked) to meet the intent of Action I of GL 89-13. Since our September 1, 1994 submittal, we have decided to replace the safety related functions of this system as part of a modification to upgrade the CCW pumps to QA1. As stated in our March 9, 1995 submittal to NRC on open SWSOPI items, this modification will be implemented on the first unit during fourth quarter 1996. The modification will be completed on all three units by the end of 1997. In the interim, Operations will continue to monitor HPSW flow to the CCW pump motors and bearings. Also, the Elevated Water Storage Tank Drain Test will continue to be performed periodically. These activities provide assurance that HPSW is able to supply the required flow to the CCW pumps until implementation of the modification is completed.

ASW

As stated in our September 1, 1994 submittal, periodic pump testing currently serves as a flush on limited portions of the ASW System. Additional testing, which will be done on a refueling basis beginning with Unit 3 EOC15 (mid 1995), in conjunction with hydraulic flow modelling, will provide assurance that the ASW System is able to supply the flow required to meet accident load demands. A small segment of piping containing raw water lies downstream of the recirculation line and upstream of the piping containing condensate grade water. This segment will be visually inspected on a periodic basis. Integrated testing of the ASW System is impractical since that would require injecting raw water into the steam generators.

SSF ASW

In general, those portions of the SSF service water systems (HVAC, diesel engine, and auxiliary service water) in contact with raw water are periodically flushed as part of testing programs. A combined suction test, with all three systems in operation simultaneously, has been performed. There is no need to perform this particular test on a periodic basis.

A reverse flow test, measuring pressure and flow, has been performed on SSF ASW for Unit 1 and Unit 2 and will be performed on Unit 3 during the EOC15 outage. This test used condensate grade water to flush a significant majority of the piping specific to each unit and demonstrated that there was no blockage in the lines. Condensate grade water has been left in these lines. That portion of the SSF ASW piping upstream of the recirculation line, which contains raw water, is tested as part of the SSF ASW pump test on a quarterly basis. A small segment of piping containing raw water lies downstream of the recirculation line and upstream of the piping containing condensate grade water. This segment will be visually inspected on a periodic basis.

The SSF HVAC service water system is tested, as part of its quarterly pump test, in its worst case, design basis accident configuration. This pump test verifies system flow capability.

The SSF diesel engine service water system is tested, as part of its quarterly pump test, in its worst case, design basis accident configuration. This pump test verifies system flow capability.

These activities provide assurance that the SSF service water systems are able to supply the required flows to meet accident load demands.

Keowee

The Keowee Hydro Units are run intermittently (on average, at least once every two days); therefore, its cooling water systems are operated quite frequently. Normal operating conditions bound worst case, design basis accident conditions. The configurations of the systems are the same during normal and accident conditions. Flow indications are available for critical service water components and are procedurally monitored on a periodic basis during unit operation. As stated in our September 1, 1994 submittal, there are no stagnant raw water systems at Keowee when the units are running, with the exception of fire protection. The Keowee Fire Protection System is annually flushed and tested for flow and pressure requirements.

These activities and provisions provide assurance that the Keowee service water systems are able to supply the required flows to meet accident load demands.

ACTION II: TEST PROGRAM

OPEN CYCLE SYSTEMS

LPSW
A discussion of Oconee's program for testing safety-related heat exchangers cooled by the LPSW System was included in our January 26, 1990 submittal. The activities contained within this program assure that these safety related heat exchangers will transfer the required heat from safety related components to the ultimate heat sink.

CCW
The CCW System does not cool any safety related heat exchangers. It does provide cooling to the recirculated cooling water (RCW) heat exchangers which, in turn, cools the Spent Fuel Pool Cooling System. The RCW heat exchangers are periodically inspected and cleaned. Operations procedures contain limits on allowed spent fuel pool temperature. If these limits were to be challenged, an investigation would be initiated via Oconee's work management system. If deemed appropriate, this effort would lead to cleaning of the heat exchangers. These activities assure that the RCW heat exchangers will transfer the required heat from the Spent Fuel Pool Cooling System. This will be documented in the Service Water System Program Manual by December 1, 1995.

HPSW
The HPSW System provides cooling to the CCW pump motor coolers and to its own HPSW pump motor coolers.

The CCW pumps and their motor coolers are used during normal plant operation. CCW pump motor temperatures are electronically monitored through the use of digital alarm points on the operator aid computer. There are 12 CCW pumps, whereas only one pump is needed to provide the flow required by accident load demands. If motor temperature were to rise on an operating pump during an accident, that pump could be shut down while another pump is started. The continuous electronic monitoring in effect during normal operation and the redundancy available during accident situations assure that the CCW pump motor coolers will adequately support CCW pump operation.

The HPSW pump motor coolers are required for HPSW pump operation. Motor air inlet temperature and motor stator temperature are electronically monitored through the use of digital alarm points on the operator aid computer. However, as discussed previously under Action I, the safety related function of the HPSW pumps will be eliminated by the modification to upgrade the CCW pumps to QA1. Therefore, it is not necessary to place the HPSW pump motor coolers in a periodic testing program.

ASW

The ASW System provides cooling to the HPI pump motor coolers during certain accident scenarios. However, since LPSW in the normal source of cooling water to the HPI pump motor coolers, these coolers are covered by the response provided herein for LPSW. The ASW System does not provide cooling to any other safety related heat exchangers.

SSF ASW

Our September 1, 1994 submittal stated that appropriate hardware and program modifications, to fully include the SSF in our heat exchanger programs, will be completed by September 1, 1995. However, after further consideration, it has been determined that hardware and program modifications are not necessary.

The capability of the SSF diesel engine heat exchanger is determined by monitoring engine temperature during SSF diesel testing. The heat exchanger is checked during engine inspection, which is performed on a periodic basis. The diesel engine and its heat exchanger are tested at worst case, design basis, continuous loaded conditions. The manufacturer's recommended tolerances on engine temperature are used as acceptance criteria within the Operations procedure for engine operation. Engine temperature from each diesel run is monitored and compared against the manufacturer's recommended tolerances by the responsible equipment engineer.

The capability of the SSF HVAC heat exchangers is determined through periodic monitoring of compressor discharge pressure. Maintenance procedures guide the appropriate personnel to use compressor discharge pressure as an indicator of heat exchanger fouling. A determination on the need to clean the heat exchangers is made based on this indication.

These activities and provisions assure that the SSF heat exchangers are able to remove the required amount of heat. This functional test methodology for SSF will be documented in the Service Water System Program Manual by December 1, 1995.

Keowee

Our September 1, 1994 submittal stated that appropriate hardware and program modifications, to fully include Keowee in our heat exchanger programs, will be completed by September 1, 1995. However, after further consideration, it has been determined that hardware and program modifications are not necessary. Periodic monitoring of important component temperatures is performed by Keowee operators during their normal rounds. These rounds are performed every shift and are procedure driven, through the use of rounds sheets. In addition, statalarms and computer alarms exist for the important component temperatures. Normal operation of the Keowee units bounds operation during worst case accident conditions since a higher load is present during normal operation. Alarms are in place based on manufacturer's recommended tolerances. These activities and provisions assure that the Keowee heat exchangers are able to remove the required amount of heat. This functional test methodology for Keowee will be documented in the Service Water System Program Manual by December 1, 1995.

CLOSED CYCLE SYSTEMS

As stated in our January 26, 1990 submittal, there are no safety related closed cycle service water systems at Oconee. The Recirculated Cooling Water (RCW) System is a non-safety related closed cycle service water system. It is not subject to significant sources of contamination. Its water chemistry is controlled and it is continuously monitored for corrosion through the use of sample racks. Current practices are adequately maintaining the system in good condition. All downward trends in heat exchanger performance have been correctable by maintenance of the open cycle system. Thus, it has not been necessary to extend our test program (or the routine inspection and maintenance program addressed in Action III) to any of our closed cycle service water heat exchangers.

INSTRUMENTATION

Oconee's position on instrumentation used during testing was included in our January 26, 1990 submittal. However, where justified, this approach on the use of instrumentation may be revised based on experience. Any changes will be documented in the Service Water System Program Manual.

DESIGN LIMITS

Oconee's position on verifying temperatures are within design limits was included in our January 26, 1990 submittal. However, where justified, this verification may be revised based on experience. Any changes will be documented in the Service Water System Program Manual.

TESTING AND CORRECTIVE ACTIONS

A discussion of Oconee's program for testing, retesting, and corrective actions was included in our January 26, 1990 submittal. Any changes will be documented in the Service Water System Program Manual.

TESTING FREQUENCY

A discussion of Oconee's testing frequency was included in our January 26, 1990 submittal. However, where justified, these frequencies may be adjusted based on experience. Any changes will be documented in the Service Water System Program Manual.

SCHEDULE

A discussion of Oconee's schedule for heat exchanger testing was included in our January 26, 1990 submittal. For heat exchangers not included in the 1990 submittal, schedules are provided herein this submittal.

DOCUMENTATION

A discussion of Oconee's program for documentation was included in our January 26, 1990 submittal. The Service Water System Program Manual is currently being updated and consolidated for all three Duke nuclear sites and will be completed by December 1, 1995.

ACTION III: INSPECTION AND MAINTENANCE PROGRAM

OPEN-CYCLE SERVICE WATER SYSTEM PIPING AND COMPONENTS

As stated in our September 1, 1994 submittal, additional piping sections are being inspected as part of ongoing programs discussed in the Service Water System Program Manual. This includes portions discussed in Design Study ONDS-0252 and piping not included in the study, such as ASW, SSF ASW and Keowee. The Service Water System Program Manuals at Oconee, McGuire and Catawba are being updated, revised and combined into one manual. It will include organizational responsibilities for each element of the Program. This effort will be completed by December 1, 1995. To assure engineers understand their responsibilities, this revised manual will be added to their Position Specific Training Guide as part of the Engineering Support Training Program. The training program requires sign off by supervision that the Manual has been read and understood. Training on the new manual will be completed by March 1, 1996.

The Oconee Service Water Piping Corrosion Management Program Manual will be updated to add the criteria for judging piping structural condition acceptability based on results from an engineering calculation that has recently been completed (DPC-1206.02-54-003). In addition, this Manual will be updated to clarify the technical bases for scope and frequency, as well as assuring the appropriate actions are taken. Safety related service water systems not originally included in the scope, such as ASW, SSF and Keowee, will be included in the update. To compliment the Service Water System Program Manual update, an Engineering Support Program Document will be developed to implement specific inspection program requirements. This document will be completed by December 1, 1995. This Program is being constructed and implemented much the same as Oconee's Erosion/Corrosion Program (and associated manual). The Oconee Service Water Piping Corrosion Management Program Manual will be updated to reflect all of the above changes by December 1, 1995.

Monitoring for Asiatic clams is currently performed on LPSW, CCW, and HPSW per a Chemistry procedure. This procedure will be revised by September 1, 1995 to include monitoring for Asiatic clams on ASW, SSF and Keowee service water systems.

ACTION III: INSPECTION AND MAINTENANCE PROGRAM

REMOVAL OF FOULING MATERIAL

A discussion of Oconee's program for removal of fouling material was included in our January 26, 1990 submittal. However, where justified, this program may be revised based on experience. Any changes will be documented in the Service Water System Program Manual.

REPAIR PROGRAM

A discussion of Oconee's program for repairing defective protective coatings and corroded service water system piping and components was included in our January 26, 1990 submittal. However, where justified, this program may be revised based on experience. Any changes will be documented in the Service Water System Program Manual.

SCHEDULE

A discussion of Oconee's schedule for establishing programs was included in our January 26, 1990 and May 31, 1990 submittals, as well as our September 1, 1994 and this submittal.

DOCUMENTATION

A discussion of Oconee's program for documentation of maintenance inspections was included in our January 26, 1990 submittal. The Service Water System Program Manual is currently being updated and consolidated for all three Duke nuclear sites and will be completed by December 1, 1995.

ACTION IV: CONFIRMATION OF LICENSING BASIS

LPSW

As stated in our September 1, 1994 submittal, a comprehensive walkdown, inspection and drawing update was completed in early 1993 on the LPSW System. This effort was a design study (ONDS-0326) which built upon more limited walkdowns performed in support of the 1987 LPSW SITA and IE Bulletin 79-14. A design basis document exists for the LPSW System and contains information on the ability of the system to perform its required function in the event of a single active failure. Supporting calculations also exist.

CCW

That portion of CCW that supplies flow to accident loads, and is not buried, has undergone a walkdown. A design basis document exists for the CCW System and contains information on the ability of the system to perform its required function in the event of a single active failure. A supporting calculation also exists.

HPSW

That portion of HPSW that supplies flow to accident loads, and is not buried, has undergone a walkdown. A design basis document exists for the HPSW System and contains information on the ability of the system to perform its required function in the event of a single active failure. A supporting calculation also exists.

ASW

Our September 1, 1994 submittal committed to completing a walkdown of the ASW System by September 1, 1995. This walkdown has been completed. An existing design basis document on the Emergency Feedwater System includes the ASW System. The ASW System is not designed to be, and is not required to be, single active failure proof.

SSF ASW

As stated in our September 1, 1994 submittal, walkdowns of SSF service water systems have been completed. Our September 1, 1994 submittal committed to completing a design basis document on the SSF ASW System by September 1, 1995 and a design basis document on the SSF Diesel Service Water System by December 1, 1995. A design basis document already exists for the SSF HVAC Service Water System. The SSF service water systems are not designed to be, and are not required to be single active failure proof.

Our September 1, 1994 submittal mistakenly stated that the reverse flow test of SSF ASW piping will be repeated periodically. There are no plans to repeat this flow test on a periodic basis. This is consistent with our response to Violation 93-25-08, example B (dated May 12, 1994) and our response to ACTION I: FLUSHING AND FLOW TESTING stated earlier.

Keowee

As stated in our September 1, 1994 submittal, a walkdown was completed on all Keowee service water systems in July, 1994. This effort was originally in response to Violation 93-25-12, example C. Design basis documentation for Keowee service water systems is currently being created and will be completed by June 1, 1995. This documentation will include a review of the ability of the Keowee service water systems to perform their required functions following a single active failure.

ACTION V: PROCEDURES AND TRAINING

Our September 1, 1994 submittal mistakenly stated that our responses to Inspection Report 50-269, -270, -287/93-25 provided a discussion on procedures and training that was applicable to ACTION V of GL 89-13. More specifically, our responses to Deviation 93-25-01 and Violation 94-31-01, example A addressed concerns about Keowee operating procedures. Our response to Inspector Follow-up Item 93-25-06 addressed concerns about the "Loss of LPSW" Abnormal Procedure and our response to Violation 93-25-12, example B addressed concerns about Emergency Operating Procedure guidance for the ASW pump.

Our January 26, 1990 submittal provided a discussion of Oconee's programs for maintenance practices, operating and emergency procedures, and training modules involving service water systems. The submittal indicated a 2 year review based on programs defined in Oconee Station Directives and the Duke Power Company Nuclear Policy Manual as of January 26, 1990. These programs are subject to change where sufficient justification exists. Sufficient justification is assured by the management level signature reviews required to change these documents.

In the case of procedure review frequency, the change from 2 years to 6 years was justified based on Amendment 16 to Oconee's QA Topical Report. In making this frequency change, Amendment 16 references the 1988 version of ANSI N18.7. Amendment 16 to the QA Topical Report was submitted to the NRC December 1993 and was found acceptable, as stated in an August 1994 NRC letter from Mr. Gibson to Mr. Tuckman. Duke Power Nuclear System Directive 703 also contains instructions on reviewing safety related procedures up to every 6 years.

In addition, procedures and training are currently being enhanced by the following:
a.) Position Specific Training Guides have been created as part of the Engineering Support Training Program. This requires supervision sign-off that engineers working on service water have completed specific service water training requirements.
b.) Design basis documents have been completed or are being completed on LPSW, CCW, HPSW, ASW, SSF ASW, and Keowee. This will consolidate all up-to-date information in one location. This information can then be used in controlling and changing plant configuration, including procedures.