

## PLANT SYSTEMS

### AUXILIARY FEEDWATER SYSTEM

#### LIMITING CONDITION FOR OPERATION

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3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency busses, and
- b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.\*

APPLICABILITY: MODES 1, 2, and 3.

#### ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to operable status as soon as possible.

#### SURVEILLANCE REQUIREMENTS

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4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
  - 1) Verifying that each non-automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position;
  - 2) Verifying that each automatic valve in the flow path is in the fully open position whenever the Auxiliary Feedwater System is placed in automatic control or when above 10% RATED THERMAL POWER; and

\*Not applicable with steam pressure less than 900 psig.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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- 3) Verifying that the isolation valves in the auxiliary feedwater suction line from the upper surge tanks are open with power to the valve operators removed.
- b. At least once per 92 days by:
- 1) Verifying that each motor-driven pump is tested in accordance with ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP and develops a discharge pressure greater than or equal to 1210 psig at a flow of greater than or equal to 450 gpm.
  - 2) Verifying that the steam turbine-driven pump develops a discharge pressure of greater than or equal to 1210 psig at a flow of greater than or equal to 900 gpm when the secondary steam supply pressure is greater than 900 psig. The provisions of specification 4.0.4 are not applicable for entry into MODE 3.
- c. At least once per 18 months during shutdown by:
- 1) Verifying that each automatic valve in the flow path actuates to its correct position upon receipt of an Auxiliary Feedwater Actuation test signal,
  - 2) Verifying that each auxiliary feedwater pump starts as designed automatically upon receipt of an Auxiliary Feedwater Actuation test signal, and
  - 3) Verifying that the valve in the suction line of each auxiliary feedwater pump from the Nuclear Service Water System automatically actuates to its full open position within less than or equal to 13 seconds on a Low Suction Pressure test signal.

Justification and Safety Analysis

The motor-driven and the turbine-driven auxiliary feedwater pumps are tested at least once per 31 days in accordance with Technical Specification 4.7.1.2-a. 1) and 2) in order to verify the developed discharge pressure and flow. The auxiliary feedwater pumps are ASME Class 3 centrifugal pumps which come under the scope of ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP. McGuire is committed to the 1980 edition of the ASME Boiler and Pressure Vessel Code. According to this code the motor-driven and the turbine driven auxiliary feedwater pumps should be tested on a quarterly basis, (once every 92 days). The surveillance and testing requirements contained in the ASME code for auxiliary feedwater pumps are conservative.

It is the intent of Duke Power Company to switch over to the ASME code surveillance requirement after obtaining NRC concurrence in this matter. The following 6 pages provide the test results for the auxiliary feedwater pumps since 1981. The test results demonstrate the high reliability of these pumps. Duke Power Company submits that quarterly testing will be sufficient to detect pump failure and assure operational readiness and will reduce unnecessary pump wear. The new testing frequency will be consistent with other safety related pump surveillance and testing.

In addition the auxiliary feedwater pumps will be rotated on a monthly basis to assure the lubrication of the journal bearings as suggested by the NRC.

The proposed changes would not compromise the operational readiness of the auxiliary feedwater pumps and would reduce the pump wear by reducing the number of pump starts. The proposed changes to the McGuire Technical Specifications do not have any adverse safety implications.



McGUIRE NUCLEAR STATION UNIT 1  
TURBINE-DRIVEN AUXILIARY FEEDWATER PUMP  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason For Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
04-12-81	x		
07-08-81	x		
08-10-81	x		
09-15-81	x		
10-05-81	x		
11-04-81	x		
12-31-81	x		
01-27-82	x		
02-11-82	x		
03-20-82	x		
04-19-82	x		
05-19-82	x		
06-16-82	x		
07-16-82	x		
08-19-82	x		
09-16-82	x		
10-18-82	x		
11-22-82	x		
12-21-82	x		
Steam Generator Modification			
04-29-83	x		
06-01-83	x		
06-27-83	x		
07-25-83	x		
08-30-83	x		
09-19-83	x		
09-26-83 <sup>1</sup>			
10-24-83	x		
11-19-83	x		
12-19-83	x		
01-26-84	x		
02-13-84	x		
Refueling			
04-26-84	x		
05-24-84		x	Pump parameters acceptable/ISA-49 failed response time
06-21-84	x		

<sup>1</sup>Periodic Maintenance Retest

WMS/nem  
07-16-84

McGUIRE NUCLEAR STATION UNIT 1  
MOTOR-DRIVEN AUXILIARY FEEDWATER PUMP - A  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason for Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
03-11-81	x		
04-11-81	x		
05-15-81	x		
06-23-81	x		
07-21-81	x		
08-26-81	x		
09-29-81	x		
10-26-81	x		
11-23-81	x		
12-29-81	x		
01-25-82	x		
02-24-82	x		
03-24-82	x		
04-22-82	x		
05-20082	x		
06-17-82	x		
07-20-82	x		
08-20-82	x		
09-17-82		x	Failed Horizontal Vibration Readings
09-22-82	x		
10-22-82	x		
11-23-82	x		
12-23-82	x		
Steam Generator Modification			
04-26-83	x		
05-24-83	x		
06-21-83		x	High Horizontal Bearing Vibrations/Alert-Range Bimonthly Testing
07-06-83		x	
07-20-83	x		
08-03-83	x		
09-02-83	x		
09-30-83	x		
10-28-83	x		
11-23-83	x		
12-21-83	x		
01-13-84	x		
02-08-84	x		
03-16-84	x		
04-19-84	x		
05-15-84	x		
06-12-84	x		

McGUIRE NUCLEAR STATION UNIT 1  
MOTOR-DRIVEN AUXILIARY FEEDWATER PUMP - B  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason for Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
03-10-81			
04-11-81	x		
05-18-81	x		
06-24-81	x		
07-21-81	x		
08-26-81	x		
09-29-81	x		
10-26-81	x		
11-24-81	x		
12-29-81	x		
01-11-82 <sup>1</sup>	x		
01-26-82	x		
02-24-82	x		
03-24-82	x		
04-23-82	x		
05-21-82	x		
06-18-82	x		
07-22-82	x		
08-23-82	x		
09-20-82	x		
10-20-82	x		
11-23-82	x		
12-23-82		x	Vibration Meter Out of Calibration
12-30-82	x		
Steam Generator Modification			
04-26-83	x		
05-08-83	x		
06-13-83	x		
07-06-83	x		
-8-03-83	x		
08-31-83	x		
09-28-83	x		
10-26-83	x		
11-23-83	x		
12-22-83	x		
01-19-84	x		
01-27-84 <sup>1</sup>			
02-16-84	x		
Refueling			
04-19-84	x		
05-15-84	x		
06-12-84	x		

<sup>1</sup>Periodic Maintenance Retest



McGUIRE NUCLEAR STATION UNIT 2  
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason for Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
05-25-83			
Steam Generator Modification			
08-08-83	x		
09-07-83	x		
10-06-83	x		
11-04-83		x	2 SA-48 Failed Valve Response Time
12-01-83		x	Pump $\Delta P$ Low Limit Alert Range Exceeded/ Discharge Pressure Gauge Out of Calibration
12-09-83	x		
01-22-84	x		
02-22-84	x		
03-21-84	x		
04-18-84	x		
05-16-84	x		
06-06-84 <sup>1</sup>	x		
06-15-84	x		

<sup>1</sup>Retest of 2SA-48 due to Maintenance work.

WMS/nem  
07-16-84

McGUIRE NUCLEAR STATION UNIT 2  
MOTOR-DRIVEN AUXILIARY FEEDWATER PUMP A  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason for Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
04-20-83			
05-25-83	x		
Steam Generator Modification			
08-05-83	x		
09-05-83	x		
10-03-83	x		
01-17-83	x		
11-28-83	x		
01-09-84	x		
02-07-84	x		
03-06-84	x		
04-03-84	x		
05-11-84	x		
05-29-84	x		
06-26-84	x		

WMS/nem  
07-16-84



McGUIRE NUCLEAR STATION UNIT 2  
MOTOR-DRIVEN AUXILIARY FEEDWATER PUMP - B  
TEST RESULTS

<u>Date Tested</u>	<u>Results</u>		<u>Reason for Failure</u>
	<u>Acceptable</u>	<u>Unacceptable</u>	
04-13-83			
04-20-83	x		
05-19-83	x		
Steam Generator Modification			
08-05-83	x		
08-11-83	x		
08-13-83	x		
09-08-83	x		
10-06-83	x		
11-09-83	x		
12-01-83	x		
01-19-84	x		
02-23-84	x		
03-22-84	x		
04-18-84	x		
05-08-84	x		
06-14-84	x		

Analysis of Significant Hazards Consideration

Pursuant to requirements of 10CFR50.91, this analysis provides a determination that the proposed changes to the Technical Specifications do not involve any significant hazards consideration, as defined by 10CFR50.92.

The proposed Technical Specifications change the overly conservative current specifications to the ASME Boiler and Pressure Vessel Code (Section XI, Subsection IWP) surveillance and testing requirements. The resulting Technical Specifications will continue to be conservative. In view of the high reliability of the auxiliary feedwater pumps, the same type of testing as applicable to other safety related pumps is considered sufficient and appropriate. The proposed changes do not introduce any new accident mechanisms. Due to high reliability and redundancy of the auxiliary feedwater pumps there will be no change in the consequences of any accidents considered in the FSAR.

Therefore the proposed changes would not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- 3) Involve a significant reduction in a margin of safety.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.