Enclosure

Proposed Technical Specification Changes

Unit 1

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Unit 2

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.3.4 TURBINE OVERSPEED PROTECTION*

LIMITING CONDITION FOR OPERATION

3.3.4 At least one turbine overspeed protection system shall be OPERABLE.

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

ACTION:

a. With one stop valve or one governor valve per high pressure turbine steam line inoperable and/or with one reheat stop valve or one reheat intercept valve per low pressure turbine steam line inoperable, restore the inoperable valve(s) to OPERABLE status within 72 hours, or close at least one valve in the affected steam line(s) or isolate the turbine from the steam supply within the next 6 hours.

b. With the above required turbine overspeed protection system otherwise inoperable, within 6 hours isolate the turbine from the steam supply.

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.4.1 The provisions of Specification 4.0.4 are not applicable.

*The turbine overspeed protection system will be maintained in accordance with the Farley Nuclear Plant "Turbine Overspeed Reliability Assurance Program."

The program will be performed in accordance with procedures, maintenance work requests and/or outage work schedules as appropriate. All deviations from the program or deficiencies identified through the specified maintenance, calibration or testing activities will be evaluated by Alabama Power Company to determine if operability of the system has been affected and appropriate action taken such as correcting the deviation or deficiency, performing compensatory action, or removing the turbine from service. The "Turbine Overspeed Reliability Assurance Program" is the subject of on-going review and evaluation by Alabama Power Company such that changes in scope and/or schedule may be made as appropriate; however, the objective of maintaining the high reliability of the turbine overspeed protection system will be met. The program and any subsequent changes will be reviewed and approved as specified in existing plant administrative procedures.

**Specification not applicable with all main steam isolation valves and associated bypass valves in the closed position and all other steam flow paths to the turbine isolated.

3/4.3.4 TURBINE OVERSPEED PROTECTION

This specification is provided to ensure that the turbine overspeed protection instrumentation and the turbine speed control valves are OPERABLE and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety related components, equipment or structures.

INSTRUMENTATION

3/4.3.4 TURBINE OVERSPEED PROTECTION*

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Enclosure

Joseph M. Farley Nuclear Plant

Turbine Overspeed Reliability
Assurance Program

1.0 Introduction and Summary

The Alabama Power Company "Turbine Overspeed Reliability Assurance Program" includes a comprehensive program of maintenance, calibration and testing of the turbine overspeed protection system. This program is based on recommendations by Westinghouse regarding valve maintenance and on operating experience at the Farley Nuclear Plant. The overall objective of this program is to maintain the high reliability of the turbine overspeed protection system.

The maintenance program is discussed in Section 2.0 and includes inspection and maintenance of the throttle, governor, reheat stop and intercept valves. The schedule and scope of the inspection and maintenance is in accordance with Westinghouse recommendations.

The calibration program is discussed in Section 3.0 and includes calibration of the turbine overspeed protection system. Calibration is performed during each refueling outage or following major maintenance on the turbine generator or the overspeed protection system.

The testing program is discussed in Section 4.0 and includes testing of the turbine valves and the turbine overspeed protection system. Testing is performed during each turbine startup, unless tested within the previous seven (7) days, including startup after each refueling outage. The testing program includes a complete test of all turbine valves on an approximate interval of four (4) months unless plant operating conditions necessitate an extension to this interval.

The governor, throttle, intercept, and reheat stop valves are in the process of being added to the Nuclear Plant Reliability Data System (NPRDS) in order that deficiencies may be reported and reviewed and appropriate changes may be made in the Farley Nuclear Plant program based on reliability information (Section 5.0).

This comprehensive program is the subject of on-going review and evaluation. The schedules and/or scope of the maintenance, calibration and testing are subject to revision as appropriate based on operating experience or changes to the manufacturer's recommendations. The program will be performed in accordance with procedures, maintenance work requests and/or outage work schedules as appropriate. This program and any subsequent changes will be reviewed and approved as specified in existing plant administrative procedures. All deviations from the program and deficiencies identified through the specified maintenance, calibration or testing activities will be evaluated by Alabama Power Company to determine appropriate action to be taken such as correcting the deviation or deficiency, performing compensatory action or removing the turbine from service.

2.0 Maintenance Program

The maintenance program includes inspection and maintenance of the governor, throttle, intercept and reheat stop valves. The governor and throttle valves are inspected at least every 39 months and the intercept and reheat stop valves are inspected at least every 60 months. This schedule is based on a recommendation by Westinghouse, the valves' manufacturer.

Figure 1 shows the schedule for inspection of each of the valves over the next 5 years. This schedule will be adjusted as necessary based on inspection results during each refueling outage; however, each valve will be inspected within the 39 or 60 month period, as appropriate.

The scope of the inspections and maintenance is discussed below.

2.1 Governor Valve Program

The inspection of the governor valves includes removing the valve and bonnet assembly, disassembly of the valve, cleaning the valve components, dust blast and NDE of vital valve components, and repair and replacement of components as required. This inspection is performed on each governor valve at least every 39 months. The projected schedule for inspection is shown in Figure 1.

2.2 Throttle Valve Program

The inspection of the throttle valves includes removing the valve assembly, disassembly of the actuator and linkage, removal of the valve bonnet and valve assembly, removal of the valve and stem from the valve bonnet, dust blast and NDE of components, repair and replacement of components as-required, recording of vital clearances as-found and as-left, and checking seat pins for integrity and condition of peening. This inspection is performed on each throttle valve at least every 39 months. The projected schedule for inspection is shown in Figure 1.

2.3 Intercept and Reheat Stop Valves Program

The inspection of the intercept and reheat stop valves includes removing the valve assembly, disassembly of the spring housing and actuator, disassembly of the valves, removal of the seal assembly, and inspection and repair of parts as necessary. This inspection is performed on each intercept and reheat stop valve at least every 60 months. The projected schedule for inspection is shown in Figure 1.

TURBINE/GENERATOR OUTAGE ACTION PLAN

ESTIMATED OUTAGE DATE	Oct. 82		Jan. 83		Sept. 83		Mar. 84		Feb. 85		Sept. 85		Aug. 86		Feb. 87		Feb. 88		Sept. 88			
UNIT	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I
REFUELING OUTAGE #	1	4	2	5	3	6	4	7	5	8	6	9	7	10	8	11						
LP_1 - MAIN TURBINE	Y		G	Y			Y			Y			Y			Y						
LP_2 - MAIN TURBINE	Y		G	Y			Y			Y			Y			Y						
HP - MAIN TURBINE			G	G	X	P					X	X										
#1 - GOVERNOR VALVE	S	M	X	X	X			X	X			X	X			X						
#2 - GOVERNOR VALVE	S	M	X	X	X			X	X			X	X			X						
#3 - GOVERNOR VALVE	S	X	X	X		X	X			X	X			X	X							
#4 - GOVERNOR VALVE	S	X	X	X		X	X			X	X			X	X							
#1 - THROTTLE/STOP VALVE			X	X	X			X	X			X	X			X						
#2 - THROTTLE/STOP VALVE			X	X	X			X	X			X	X			X						
#3 - THROTTLE/STOP VALVE		X	X	X		X	Y			X	X			X	X							
#4 - THROTTLE/STOP VALVE		X	X	X		X	Y			X	X			X	X							
#1A - INTERCEPT VALVE	X		X	X			X	R	R	X			X	R	R	X						
#1B - INTERCEPT VALVE	X	X		X			X			X			X			X						
#2A - INTERCEPT VALVE	X		X	X			X			X			X			X						
#2B - INTERCEPT VALVE	X	X		X			X			X			X			X						
#1A - REHEAT/STOP VALVE			X			X			X			X			X							
#1B - REHEAT/STOP VALVE	X	X			X			X			X			X								
#2A - REHEAT/STOP VALVE			X			X			X			X			X							
#2B - REHEAT/STOP VALVE	X	X			X			X			X			X								
GENERATOR - FULL INSPECTION		X	O					X	X					X	X							
GENERATOR - CRAWL THROUGH	X			X	X	X	X			X	X	X	X			X						
EXCITER - FULL INSPECTION		X	X					X	X					X	X							
EXCITER - PARTIAL INSPECTION	X			X	X	X	X			X	X	X	X			X						
MSR - TEST & INSPECTION	U	U	≠	≠	X	X	X	X	X	X	X	X	X	X	X	X						
A - F.P. TURBINE		X		V	X			X			X			X								
B - F.P. TURBINE			X			X			X			X			X							

KEY:
- X = ROUTINE OUTAGE INSPECTION/TESTING
- Y = REPLACEMENT
- P = TILT PAD BEARING INSTALLATION
- O = FULL INSPECTION PLUS BLOWER REPLACEMENT
- S = VALVE INSPECTION PLUS 1/3 BAFFLE INSTALLATION, MUFFLER MOD. AND GROOVE MOD.
- U = MSR MOD. PLUS CRAWL THRU AND PRESSURE TEST
- R = ARBITRARY (SELECT ONE OR MORE AS NECESSARY)
- ≠ = MSR UPGRADE
- M = MUFFLER INSPECTION ONLY
- G = GLAND INSPECTION ONLY
- V = T/S VALVE REPAIR
- B = BACK SEAT & STEM LEAKAGE CHECKS

NOTE: IF DISTRESS IF FOUND DURING AN INSPECTION OF ANY ITEM, ALL SIMILAR ITEMS WILL BE INSPECTED AT THAT OUTAGE.

Figure 1

2.4 Example Outage Maintenance Program

Attachment 1 to this Enclosure is the maintenance program performed on Unit 1 valves during the 4th refueling outage.

3.0 Calibration Program

The turbine electric and mechanical overspeed trip calibration tests are performed at each refueling outage in conjunction with the turbine overspeed and protection device testing described in section 4.2.

The scope of the calibration testing is discussed below.

3.1 Electrical Overspeed Trip Calibration

The electrical overspeed trip test is designed to verify calibration of the digital speed indicator on the turbine, the trip value (111.5%) on the turbine overspeed trip channel, and the gap clearance on the speed pickup device. The as-found values are recorded and compared to expected values. If any as-found values are out of tolerance, the equipment is adjusted and the testing is repeated. This testing assures proper calibration of the electrical overspeed trip devices.

3.2 Mechanical Overspeed Trip Calibration

The mechanical overspeed trip test is designed to verify calibration of the turbine mechanical overspeed trip system. The turbine is manually controlled up to 111% of rated speed to observe an actual overspeed trip and the value at which the turbine trip occurs is recorded. If the as-found trip value is out of tolerance, the trip setpoint is adjusted and the test is then repeated. This testing assures proper calibration of the mechanical overspeed trip devices.

4.0 Testing Program

The testing program includes testing the turbine valves and the turbine overspeed protection system. Testing is performed during each turbine startup, unless tested within the previous 7 days, including startup after each refueling outage. This program also includes a test of all the turbine valves on an approximate interval of four (4) months.

The scope of the testing is discussed below.

4.1 Turbine Generator Startup Testing

The turbine generator startup testing is performed during each startup unless performed within the previous seven (7) days. This testing includes:

a. Manual Trip Test

The turbine is manually tripped from rated speed using the Main Turbine Emergency Trip Switch on the Main Control Board or by use of the hand trip device on the Governor End Pedestal. Proper operation of the trip system and the turbine valves is verified.

b. Mechanical Overspeed Trip Device Test*

The appropriate oil pressure is applied to the mechanical overspeed device to verify that the mechanical device functions properly. The turbine is at rated speed when this test is performed. The trip signal causes the interface valve to open but the trip oil is blocked such that the turbine does not actually trip.

c. Overspeed Protection Control (OPC) Test

The OPC (103% turbine overspeed protection feature) is tested to ensure proper operation. The OPC key switch is turned to the test position to verify that turbine governor and intercept valves close.

4.2 Turbine Overspeed and Protection Device Testing **

The turbine overspeed trip system functional test is performed each refueling outage or when major maintenance is performed on the turbine. This test involves manually controlling turbine speed up to 111% of rated speed to observe an actual overspeed trip of the turbine.

*Westinghouse recommends that this test be performed monthly.

**Westinghouse recommends that this test be performed every six (6) months.

4.3 Shutdown Turbine Trip Verification

The shutdown turbine trip verification is performed during each planned shutdown of the unit. This test requires an Operator to verify by observation that the turbine valves actually close during each planned shutdown. This test also requires the Plant Operator to verify that the turbine valve positions are properly indicated on the monitor light boxes immediately after each shutdown.

4.4 Turbine Valve Test ***

The turbine valve test is performed on all turbine valves on an approximate interval of four (4) months. This test requires each of the turbine valves to be cycled to demonstrate free operation as the valves close and reopen. This test is run from the Main Control Room with an Operator verifying valve operation by direct observation.

***Westinghouse recommends that this test be performed monthly.

5.0 Nuclear Plant Reliability Data System (NPRDS) Applicability

Alabama Power Company is in the process of adding the Farley Nuclear Plant governor, reheat stop, intercept, and throttle valves to the NPRDS data base. This process is expected to be complete by November 1, 1983. In addition, Alabama Power Company will formally request in September 1983 that these valves be added to the nuclear industry data base. Alabama Power Company will monitor the reliability of these valves by the results obtained from the NPRDS and Farley Nuclear Plant valve experience. Changes will be made in the "Turbine Overspeed Reliability Assurance Program" as appropriate based on this information.

6.0 Conclusion

The "Turbine Overspeed Reliability Assurance Program" provides a mechanism to maintain the high reliability of the Farley Nuclear Plant turbine overspeed protection system. This program is based on recommendations by Westinghouse regarding valve maintenance and on actual operating experience at the Farley Nuclear Plant. This comprehensive program is the subject of on-going review and evaluation such that changes in scope and schedule may occur as appropriate; however, the objective of maintaining the high reliability of the turbine overspeed protection system will be met. This program and any subsequent changes will be reviewed and approved as specified in existing plant administrative procedures. All deviations from the program and deficiencies identified through the specified maintenance, calibration or testing activities will be evaluated by Alabama Power Company to determine if operability of the system has been affected and appropriate action taken such as correcting the deviation or deficiency, performing compensatory action or removing the turbine from service.