UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Docket No. 50-348

Mr. F. L. Clayton, Jr.
Senior Vice President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

Dear Mr. Clayton:

Enclosed for your information is the staff's evaluation of the actions you have taken to satisfy the TMI Lessons Learned Category "A" items on Joseph M. Farley Nuclear Plant Unit 1. This evaluation is based on your submitted documentation and the discussion between our staffs at a meeting on February 29, 1980. A list of meeting attendees is attached.

Generally we conclude that you have satisfied all Category "A" requirements. Certain items, such as the adequacy of procedures will be verified by the Office of Inspection and Enforcement. These items are indicated in an attachment to the evaluation. This evaluation does not address the Technical Specifications necessary to ensure the limiting conditions for operation and the long-term operability surveillance requirements for the systems modified during the "Category A" review. You should be considering the proposal of such Technical Specifications. We will be in communication with you on this item in the near future.

Should you have any questions regarding our evaluation, please contact us.

Sincerely,

A. Schwencer

A. Schwencer, Chief
Operating Reactors Branch No. 1
Division of Operating Reactors

Enclosures:
1. Evaluation of Compliance with Category "A" Lessons Learned Requirements
2. Attendance List for February 29, 1980 Meeting

cc: See Page 2

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ENCLOSURE 1

EVALUATION OF LICENSEE'S COMPLIANCE WITH CATEGORY "A" ITEMS OF NRC RECOMMENDATIONS RESULTING FROM TMI-2 LESSONS LEARNED

ALABAMA POWER CO.
JOSEPH M. FARLEY NUCLEAR PLANT
UNIT 1

DOCKET NO. 50-348

Date: March , 1980

I. INTRODUCTION

By letters dated October 24 [1], November 21 [2], December 31, 1979 [3], and January 21, 1980 [4], Alabama Power Co. submitted commitments and documentation of actions taken at Joseph M. Farley Nuclear Plant Unit 1 to implement staff requirements resulting from TMI-2 Lessons Learned. To expedite review of the licensee's actions, members of the staff met with the licensee on February 29, 1980. This report is an evaluation of the licensee's efforts to implement each Category "A" item which was to have been completed by January 1980.

II. EVALUATION

Each of the Category "A" requirements applicable to PWRs is identified below. The staff's requirements are set forth in reference 5; the acceptance criteria is documented in reference 6. The numbered designation of each item is consistent with the identifications used in NUREG-0578. Lessons Learned items 2.1.7.a, and 2.1.9 are being reviewed separately and are not discussed in this report.

2.1.1 EMERGENCY POWER SUPPLY PRESSURIZER HEATERS

The Westinghouse Owner's Group analysis has determined in order to establish and maintain natural circulation for a 3-loop plant with a 1400 cubic foot pressurizer, a heater of 125 kw capacity would be required to be placed in service within one hour. Two backup heater groups each rated at 270 kw can be energized from separate 600 volt emergency power trains. These trains are energized from separate diesel generators upon loss of offsite power. Three additional backup heater groups (270 kw) energized from the diesel generators, are also available.

The pressurizer heater groups are load-shed from the buses on loss of offsite power. There are procedures for the control room operator to reload the heaters back on the emergency buses within one hour to prevent degradation of natural circulation.

The pressurizer heater groups are connected to the emergency 600 volt buses through safety grade circuit breakers. The licensee has satisfied the short term Lessons Learned requirements for emergency power supply for the pressurizer heaters.

PRESSURIZER RELIEF AND BLOCK VALVES AND PRESSURIZER LEVEL INDICATORS

The two power-operated relief valves (PORVs) are pneumatically operated from the instrument air system upon actuation of solenoid control valves which are energized from redundant 125 volt plant batteries.

The instrument air system is charged from the plant air system which is supplied from four compressors. The instrument air header inside

containment is isolated on phase B isolation or loss of power to isolation valves. In the case of automatic safety injection, this isolation remains until safety injection is reset and instrument air is restored to the containment by selectively opening the instrument air isolation valves. The installation of gas bottles as a backup system to the instrument air system for operating the PORVs is presently in the design stage, and is scheduled for installation during the next refueling outage in October 1980.

The block valves for the PORVs are motor operated valves (MOV) energized from redundant emergency 600 volt buses which are energized from diesel generators upon loss of offsite power. This changeover is accomplished automatically.

The PORVs and their associated block valves are connected to the emergency source of power through safety grade circuit breakers. The design of the PORVs and block valves is such that they can be opened in the event of loss of offsite power.

Three pressurizer level transmitter instrument channels indicate pressurizer level in the control room. These level instrument channels are independently powered from different vital instrument buses. Each of three buses is inverter fed from the two 125v plant batteries. The licensee has satisfied the short term Lessons Learned requirements for emergency power supply for the pressurizer power-operated relief valves and block valves and pressurizer level indicators.

2.1.2 PERFORMANCE TESTING FOR PWR RELIEF AND SAFETY VALVES

All PWR licensees are required to functionally test reactor coolant system relief and safety valves to demonstrate operability under expected operating conditions. The Category "A" requirement is for the licensee to commit to perform an appropriate test program.

Alabama Power has referenced the Electric Power Research Institute's (EPRI) "Program Plan for the Performance Verification of PWR Safety/Relief Valves and Systems," as the program description and schedule to meet this requirement.

2.1.3.a DIRECT INDICATION OF POWER-OPERATED RELIEF VALVES AND SAFETY VALVES FOR PWRs

NUREG-0578 requires PWR licensees to provide positive position indication for reactor coolant system relief and safety valves.

Alabama Power has installed seismic and environmentally qualified limit switches (supplied by NAMCo) on both the power-operated relief valves and the safety valves.

These limit switches, which indicate position and alarm on open position, meet Lessons Learned Requirements for this item.

2.1.3.b INSTRUMENTATION FOR INADEQUATE CORE COOLING (SUBCOOLING METER)

Alabama Power Co. has installed two saturation meters (designed by Westinghouse), each of which calculates the margin to saturation using redundant safety grade pressure inputs and temperature inputs from multiple core exit thermocouples and hot and cold leg Resistence Temperature Detectors (RTDs). This system is powered from a vital instrument bus and meets the electrical separation criteria.

The subcooling monitoring systems for Farley 1 meets Lessons Learned requirements for this item.

2.1.4 CONTAINMENT ISOLATION

All containment isolation valves (CIVs) in non-essential systems that were originally designed to close upon receipt of an automatic isolation signal meet the Lessons Learned position on diversity. Diversity is provided on these valves by use of a safety injection signal, which has diverse input. CIVs associated with steam generator isolation close upon receipt of either a safety injection signal or another signal which receives diverse input for actuation (e.g., steam line isolation actuation signal).

Alabama Power Company (APC) has identified all essential and nonessential systems. A basis for selection of each essential system was provided.

The licensee has identified several nonessential systems that are not automatically isolated by the containment isolation signals. The staff has determined in all cases that sufficient isolation provisions exist and that the intent of Lessons Learned requirements is met.

The containment isolation design at Farley precludes automatic reopening of any containment isolation valve upon reset of the isolation signal. All automatic CIVs are controlled by "three-position" valve control switches with seal-in relays. No modifications were required to meet the staff's position in this area.

Farley has no valve control switches which control the reopening of more than one valve.

Farley is in compliance with short term Lessons Learned requirements for containment isolation provisions.

2.1.5 HYDROGEN CONTROL SYSTEMS

The Farley plant has two electric recombiners located inside the containment that can be operated from the main control room. The hydrogen concentration can be monitored from the control room.

The hydrogen control system, and procedures for use of the system, meet Lessons Learned requirements and is acceptable.

2.1.6.a INTEGRITY OF SYSTEMS OUTSIDE CONTAINMENT

A leakage reduction program has been developed and implemented at Farley. A list of systems excluded from the program has been submitted and justified. Letdown and the waste gas systems are included. The inability to use any of the excluded systems would not preclude any option for cooling the reactor core nor prevent the use of any safety system. Leak rate measurements were made and reported. A preventive maintenance program has been established; it consists largely of regular surveillance for leaks, periodic leak tests and repair as soon as practicable. No leakage criteria have been established but leakage will be kept as low as practicable. No helium leak testing is planned so no special training or equipment is required. Farley is in compliance with this Lessons Learned requirement.

OIE will verify implementation of leakage reduction program and review leak test and surveillance program procedures.

2.1.6.b DESIGN REVIEW OF PLANT SHIELDING AND ENVIRONMENTAL QUALIFICATION

A design review was conducted by Bechtel Corp. Detailed maps showing dose rates were developed but no formal report was written. The NRC-specified source terms were used. The General Design Criteria 19 dose criteria were used, with maximum exposure rates not exceeding 15 mrem/hr in areas requiring continuous occupancy. All systems that would contain high levels of radioactivity after an accident were considered as sources. The facility was physically inspected to ensure that all sources, such as sample lines and field-run piping, were included. All vital areas were considered. The control room and the technical support center are adequately shielded for continuous occupancy and other vital areas are accessible for the necessary time periods; included are the motor control centers, the hot shutdown panel, emergency power supplies and sampling and sample analysis stations. An evaluation of the environmental qualification of safety equipment for the specified radiation source terms is in progress; Farley is committed to completing and reporting this evaluation by April 30, 1980. Farley is in compliance with these short-term Lessons Learned requirements.

OIE will verify that the review of radiation environmental qualification of equipment is completed and submitted by April 30, 1980.

2.1.7.b AUXILIARY FEEDWATER FLOW INDICATION TO STEAM GENERATORS

The auxiliary feedwater flow systems, one for each of the three steam generators, indicate flow in the control room. The three instrument channels receive their power from vital instrument buses which are inverter fed from station battery A. The auxiliary feedwater flow indication is backed up by redundant safety-grade steam generator level channels (three per

steam generator) to satisfy the single failure criterion. Testability and calibration exists for the auxiliary feedwater flow instrumentation. The accuracy of the instrument flow loop is ±2.1% of full scale which is well within the ±10% range.

The licensee has satisfied the short term Lessons Learned requirements for auxiliary feedwater flow indication to steam generators for PWRs.

2.1.8.a IMPROVED POST-ACCIDENT SAMPLING CAPABILITY

A design review has been conducted. Interim procedures have been written and minor modifications have been made for post-accident conditions. Samples of both reactor coolant and containment atmosphere can be taken within one hour of an accident. Provisions have been made to keep radiation exposures within the GDC 19 limits. The samples can be analyzed within one hour of the time they are taken. The containment atmosphere sample can be analyzed for radioisotopic composition and for hydrogen content. The reactor coolant sample can be analyzed for radioisotopic composition, boron and chloride content and for pH; gases are separated from the coolant and analyzed for hydrogen, oxygen and noble gas. The minor modifications made include modifying and shielding the existing sampling system. The analysis facilities will be habitable after an accident but the background radiation levels may be too high in the counting room so a backup has been provided. The licensee is in compliance with the short term Lessons Learned requirements.

OIE will verify that the modifications to the sampling system have been made and will review the procedures for post-accident sampling and sample analysis.

2.1.8.b INCREASED RANGE OF RADIATION MONITORS

Interim methods for determining high-level releases have been developed and implemented. Most releases at Farley are through the plant vent stack so all release points are covered by monitoring the stack, the main steam dump, secondary safeties and the main condenser air ejector. The stack is monitored by a Jordan Rad-Gun and the other two release points are monitored by portable instruments. Procedures have been developed for the stack monitor and Farley is committed to having procedures for the air ejector and for the steam line releases in effect by April 18, 1980. The interim methods for monitoring noble gases meets the required range (10,000 Ci/sec), reading frequency (every 15 minutes) and for power supply (30-day DC). The interim methods for particulates and radioiodines utilize the normal sampling system with minor modifications. Silver zeolite cartridges are used for iodine monitoring to control noble gas interference. Sampling times are reduced to avoid saturation of the Ge (Li) spectroscopy system. Farley is in compliance with these short term Lessons Learned requirements.

OIE will verify that the equipment for monitoring high-level releases is installed on the vent stack and is available for the other release points and will verify that interim procedures for monitoring high-level releases are in effect by April 18, 1980.

2.1.8.c IMPROVED IN-PLANT IODINE INSTRUMENTATION

Portable air monitors have been obtained. Both silver zeolite cartridges and single channel analyzers are used to minimize noble gas interference. Procedures for the use of this equipment are in effect. The necessary training has been provided. Thus the capability exists for accurately monitoring iodine in the presence of noble gases. Farley is in compliance with Lessons Learned requirements.

OIE will verify that portable air monitoring systems with single channel analyzers and silver zeolite cartridges are available.

2.1.9 REACTOR COOLANT SYSTEM VENT

The licensee has provided the design for the reactor coolant system (RCS) vent and has addressed all of the clarification items in the October 30 letter. We have reviewed the licensee's response and find the design acceptable.

2.2.1.a SHIFT SUPERVISOR RESPONSIBILITIES

Alabama Power Company has implemented all Lessons Learned requirements. Administrative directives and operating procedures have been initiated or revised to clearly emphasize the authorities and responsibilities of the shift supervisor. Corporate management has reviewed duties of the shift supervisor and all duties which distract from his primary function have been delegated to other personnel.

The licensee is in full compliance with Lessons Learned requirements.

2.2.1.b SHIFT TECHNICAL ADVISOR (STA)

The licensee has implemented the short term STA program. At all times during plant operation, an STA is on shift and available to report to the control room within 10 minutes.

During accident or abnormal conditions the STAs are required to report to the control room and act in an advisory capacity to the shift supervisor. The STAs have no responsibility for manipulation of controls or other duties which detract from their primary function.

The licensee has revised plant administrative directives to specifically define the duties and responsibilities of the STA. The licensee is in essential compliance with the short term Lessons Learned position on Shift Technical Advisors.

OIE will verify that the administrative procedures specifying duties of the STAs is written and reflects staff position.

2.2.1.c SHIFT AND RELIEF TURNOVER PROCEDURES

The licensee utilizes a checklist for shift turnover at the plant which includes the requirements of the staff position. Logs are provided and signed by both ongoing and offcoming auxiliary operators at each shift change.

A system has been established to evaluate the effectiveness of the shift and relief turnover procedure.

The licensee is in compliance with the short term Lessons Learned position.

2.2.2.a CONTROL ROOM ACCESS

An administrative procedure has been developed that establishes the authority and responsibility of the shift supervisor to limit access to the control room.

Procedures have been developed which establish clear line of authority and responsibility under emergency conditions.

The licensee is in essential compliance with the Lessons Learned requirements for this item.

OIE will review the administrative procedure that established authority and responsibility of shift supervisor and procedures that establish line of authority under emergency conditions.

2.2.2.b ONSITE TECHNICAL SUPPORT CENTER

The interim onsite technical support center (TSC) has been established in an office on the west side of Unit 1 control room. Unit 2 control room adjacent to this office will be used as an extension to the TSC. Documents pertinent to plant operation are stored in the office or available in the service building located at the south end of the turbine building. Procedure FNP-0-EIP-0 provides plans for activating and staffing the TSC.

Radiation equipment for monitoring airborne contamination and direct radiation is available at the TSC. Three communication links exist between the TSC and the control room: a dedicated telephone link (PAX), the regular station telephone (Bell System) and two GA-tronics telephones. Dedicated communication between the TSC and NRC Operations Center in Bethesda has been established.

The licensee has the capability to relocate a spare CRT from Unit 1 control room to Unit 2 control room within 30 minutes. This unit will augment the information transmittal. Readout from this computer provides approximately twenty channels of twenty plant parameters per channel.

The licensee has satisfied the short term Lessons Learned requirements for the onsite technical support center.

2.2.2.c ONSITE OPERATIONAL SUPPORT CENTER

The southeast area of the control room area has been designated the onsite operational support center (capacity 12 to 18 people) for operations, chemistry, and health physics personnel. The ground gloor (capacity 35 to 40 people) of the service building has been designated as the operational support center for maintenance and I&C personnel. Procedure FNP-O-EIP-10 provides plans for activating and manning these areas in an emergency. Communication between the operational support center areas and the control room are established with the plant PAX telephone and the plant PA system.

The licensee has satisfied the short term Lessons Learned requirements for onsite operational support center.

REFERENCES

1. Letter, F. L. Clayton, Jr., APC, to D. G. Eisenhut, Acting Director, DOR, Dated 10/12/79.

2. Letter, F. L. Clayton, Jr., APC, to H. Denton, Director, NRR, dated 11/21/79.

3. Letter, F. L. Clayton, Jr., APC, to D. G. Eisenhut, Acting Director, DOR, dated 12/31/79.

4. Letter, F. L. Clayton, Jr., APC, to H. Denton, Director, NRR, dated 1/21/80.

5. NUREG-0578.

6. Letter, Director, NRR to Alabama Power Co. dated 10/30/79, Subject, "Clarification of NUREG-0578 Requirements."

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ENCLOSURE 2

TMI IMPLEMENTATION MEETING
FEBRUARY 29, 1980
ATTENDANCE

Name	Affiliation
N. Anderson	NRC/Lessons Learned
M. Fields	NRC/Lessons Learned
J. F. Burdoin	NRC/Lessons Learned
J. Kerrigan	NRC/Lessons Learned
D. Crowe	SCS
R. L. Kinsand	SCS
B. D. McKinney	Alabama Power Company
J. N. Epps	Alabama Power Company
O. D. Kingsley, Jr.	Alabama Power Company
W. G. Gripentoy	Alabama Power Company
M. Asztalos	Westinghouse
A. Vizzi	Bechtel
M. Iosefsohn	Bechtel
J. Love	Bechtel
H. G. Huff	Bechtel
S. Z. Dubow	Bechtel
K. W. McCracken	Alabama Power Company
W. J. Ross	NRC/DOR