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February 13, 1981

Docket Nos. 50-364
50-348

Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. A. T. Schwencer
Mr. S. A. Varga

Gentlemen:

JOSEPH M. FARLEY NUCLEAR PLANT - UNITS 1 & 2
CLARIFICATION OF TMI ACTION PLAN REQUIREMENTS
(NUREG-0737)

Based on discussions with NRC Staff personnel during the week of February 9, 1981, additional information was requested with regard to several items in the APCo original submittal of January 14, 1981. Alabama Power Company submits the enclosed revised responses on each of these issues. These positions have been discussed with the NRC Staff and are considered by Alabama Power Company to satisfy the Staff's questions.

If you have any questions, please advise.

Yours very truly,

F. L. Clayton, Jr.

F. L. Clayton, Jr.

FLCjr/BDM:de

Enclosures

cc: Mr. R. A. Thomas (w/enclosures)
Mr. G. F. Trowbridge "
Mr. L. L. Kintner "
Mr. W. H. Bradford "
Mr. E. A. Reeves "

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Previous Response

By letters of June 30, 1980 for Unit 2, and October 24, 1979, December 31, 1979, November 21, 1979 and March 14, 1980 for Unit 1, Alabama Power Company responded to this item for the Farley Nuclear Plant.

Clarification Response

The containment pressure-high (CP-H) setpoint is selected to limit the maximum pressure inside containment following a design basis accident, and to provide early isolation in the event of an accident but must be set high enough to avoid spurious activation. Technical Specification 3.6.1.4 requires that the containment internal pressure be limited to a maximum of 3.0 psig under normal operating conditions. The 3.0 psig limit is required to assure that the containment peak pressure does not exceed the design condition pressure of 54 psig during the LOCA condition.

The instrument error allowances are based on the changes that can occur in the instrument channel as a function of time, environmental conditions, setpoint drift, inaccuracies that are inherently associated with instrumentation, and instrument error in test gear. The above errors, when combined statistically, result in an error allowance of 2.5% of span or 1.8 psig. There is a 95% confidence level in this methodology. This implies that 5% of the time the various errors may combine to be greater than the 2.5% value. The errors during these instances could be as high as 4.25% of span or 3.0 psig.

With the containment purge system inoperable due to preventive maintenance or surveillance testing containment pressure would increase. A typical value of 0.6 psig was used for this discussion; however, a higher value is possible depending upon the time the containment purge is out of service. At this point, assuming the maximum instrument error of 3.0 psig, the rack components could read as much as 3.6 psig which is unacceptably close to the current staff position of 4.0 psig.

For Westinghouse plants, any SI signal actuates containment Phase A isolation along with diesel generator startup and ECCS component initiation. High containment pressure is one of the SI actuating signals. For a typical plant, which bounds the FNP design, SI will occur for a 2" RCS break in about 65 seconds and for a 4" RCS break in about 22 seconds. For containment high pressure to actuate Phase A isolation prior to its being actuated by low pressurizer pressure for a 2" RCS break, the Phase A setpoint would have to be set below 3 psig. This is an unacceptably low value. For the 4" RCS break, a setpoint of approximately 5 psig would result in containment high pressure and low pressurizer pressure initiating containment Phase A isolation at roughly the same time. Since containment isolation is actuated in about 22 seconds from low pressurizer pressure, any reduction of isolation time is insignificant when considering offsite doses particularly since core uncovery doesn't begin until about 400 seconds. Core uncovery (hence fuel damage) is a prerequisite for significant offsite doses. WCAP 9600-1980 provides more information about small break LOCA's.

It is Alabama Power Company's concern that arbitrarily reducing the containment high pressure setpoint will result in an increased number of spurious SI's Spurious SI's result in unnecessary activation of the ECCS system and potential challenges to the PORV's. They result in a plant trip, a reduction in remaining thermal sleeve fatigue cycles and a significant recovery time from a resulting SI. It is the opinion of Alabama Power Company that the minimal benefit, if any, which may be derived from reducing the containment high pressure setpoint is far outweighed by the potential detrimental effects on the plant. It should be noted that reducing the remaining fatigue cycles could impact expected plant lifetime.

It is Alabama Power Company's position that 1.4 psig above the postulated 3.6 psig (which is in no means the maximum possible value) for the typical plant evolution described above is mandatory to allow adequate margin for minor containment pressure increases associated with plant operation thereby preventing spurious safety injections. Alabama Power Company, therefore, proposes to lower the CP-H setpoint to 5.0 psig.

In accordance with NRC Staff request, Alabama Power Company will provide a more definitive response to NUREG-0737 Positions 2, 3, 4, 5 and 7 on Section II.E.4.2. This response will be provided to the NRC by May 1, 1981.

II.K.3.17 REPORT ON OUTAGE OF ECC SYSTEMS - LICENSEE REPORT AND PROPOSED TECHNICAL SPECIFICATION CHANGES

Previous Response

Alabama Power Company's letter dated June 26, 1980 responded to this item for Farley Nuclear Plant Unit 1.

Clarification Response

Table 1 is a listing of ECC systems outages for Farley Nuclear Plant - Unit 1 since December 1, 1977 during modes in which the systems are required to be operable in accordance with technical specifications. Included in this listing is the duration of the outage, the affected ECCS component, the cause of the outage, and corrective action taken to return the component to operable status. ECC system outages routinely required for surveillance testing are not included in the listing. It should be noted that no accurate records exist for the duration of outages of ECCS equipment during modes of operation in which this equipment is not required by technical specifications.

Unit 2 ECCS outages resulting in limiting conditions for operation as defined by technical specifications will be reviewed and documented. This review will be conducted for each five-year time period beginning with initial criticality. This documentation will include the duration and date of the outage, the affected ECCS component, the cause of the outage, and corrective action taken to return the component to operating status. Surveillance testing falling under the above criteria will be included in this review. It should be noted that no accurate records exist for the duration of outages of ECCS equipment during modes of operation in which this equipment is not required by technical specifications. The documentation of this review will be reported to the NRC every five years.

III.A.1.2 UPGRADE EMERGENCY SUPPORT FACILITIES

Previous Response

By letters of August 1, 1980 and June 20, 1980 for Unit 2 and October 24, 1979, December 31, 1979, and March 14, 1980 for Unit 1, Alabama Power Company responded to this item for the Farley Nuclear Plant.

Clarification Response

NUREG 0737 requires no clarification for this item.

TSC Room

Construction of the TSC which consists of the following area has been completed:

1. Monitoring and Display Area
2. Conference Area
3. Planning and Coordination Area
4. Document Room Area

Construction activities are complete and area turnover is in progress. The TSC furniture is scheduled to be in place by February 20, 1981. Selected documents are scheduled to be available in the TSC by February 20, 1981. Transfer of support function from the temporary TSC to the permanent TSC is scheduled for February 23, 1981.

Data Monitoring

The CRT hookup capability is installed and will be tested during the week of February 16, 1981. The Units 1 and 2 line printers are installed and operational. The two-pen recorder was inadvertently omitted in the original design. Design to install a two-pen recorder for each unit has been requested and is scheduled to be completed by February 18, 1981. Installation of the two-pen recorder is scheduled for April 1, 1981. The line printers presently have block trending capability and will be utilized for trending until the two-pen recorder is installed. The TV monitoring system has been installed and is being tested. With the exception of the two-pen recorder the data monitoring is scheduled to be operational by February 23, 1981.

Communications

The TSC communications equipment is scheduled to be installed during the week of February 16, 1981.

Habitability

The habitability system has been installed and is in final testing. Completion of the habitability system is scheduled for February 23, 1981.

Fire Protection

The TSC is enclosed by three-hour fire rated walls with Class A air tight fire doors. A water hose cabinet and CO_2 reel are presently located within the TSC area. One CO_2 and one dry chemical fire extinguisher is scheduled to be installed by February 20, 1981. Emergency breathing apparatus and spare air bottles are now provided for control room personnel.

Electrical Power

Normal and emergency provisions are as follows:

a. Closed Circuit TV and Computer Hardware - Regulated voltage distribution panels 1B and 2B, channel 2.

b. HVAC - 600-V MCCs-1F and 1G. These are shared MCCs and can be powered from the diesel generators upon LOSP.

c. Wall Receptacles - 120/208-V distribution panel LL. This shared panel can be powered from the diesel generator upon LOSP.

d. Lighting - 26 flourescent fixtures, four 40-W lamps each; 277-Vac from MCC-1F and 1G (Unit 1) and MCC-2CC and 2DD (Unit 2); 25-W emergency lighting; 8-hour battery packs, two 2-head tied to MCC-2DD (Unit 2), train B.

The Operational Support Center is scheduled to be completed by February 23, 1981.

The permanent Emergency Operations Facility is scheduled to be completed by May, 1982. The interim Emergency Operations Facility has been established in the startup office complex. The interim EOF contains all necessary support communications and facilities.

II.B.2 DESIGN REVIEW OF PLANT SHIELDING AND ENVIRONMENTAL QUALIFICATION OF EQUIPMENT FOR SPACES/SYSTEMS WHICH MAY BE USED IN POST-ACCIDENT OPERATIONS

Previous Response

By letters of June 20, 1980 and August 1, 1980, for Unit 2 and October 24, 1979, November 21, 1979, December 31, 1979, March 14, 1980, and May 5, 1980 for Unit 1 Alabama Power Company documented commitments and actions taken for the Farley Nuclear Plant related to this item.

Clarification Response

A design review for the Farley Plant - Units 1 and 2 was conducted by Bechtel Power Corporation, using the TID source terms and the 10 CFR 20 and GDC19, 60-64 of Appendix A to 10 CFR 50, dose criteria.

This shielding design review considered several classifications of systems which included recirculation systems, systems which are extensions of the containment atmosphere, portions of the liquid sampling system, and portions of the letdown system.

The liquid and gaseous radwaste systems were not included in these analyses. The gaseous system was eliminated since the reactor vessel head vent would be used for degassing operations rather than the VCT. The leak reduction program instituted at Farley Nuclear Plant, and venting of the reactor by the reactor vessel head vent and/or PORVs rather than the letdown system and VCT, minimized the need for the liquid waste processing system and therefore it was not considered. The high activity radioactive lab and counting room for the affected unit was not included among those areas where access is considered vital after an accident since for two unit operation these areas in the unaffected unit will be utilized for post-accident analyses.

Access areas with their corresponding post-accident occupancy time for Units 1 and 2 are listed below:

Unit 1

Area	Occupancy Period
Control Room	24 hr/day
Health Physics Area	24 hr/day
Primary Access Point	24 hr/day
Passageway to Unit 2	1 hr/day
Hallway 409	1 hr/day
Electrical Penetration Rooms **	1 hr (approximately 1 hr. after accident)

** Design change to eliminate occupancy requirement is being considered. Zone maps will be updated as necessary.

Unit 1

Area	Occupancy Period
Hallway 322 (Outside Sample Room) ***	1 hr/day
Gas Analysis Room ***	1 hr/day
Cable Spreading Room	1/2 hr.*
Filter Rooms	2 hr/day*
Switchgear Rooms (Elev. 121')	1/2 hr.*
Hot Shutdown Panel	24 hr/day*
CCW Pump Room	1/2 hr.*
Corridor 161	1/2 hr.*
RHR Heat Exchanger Room	1/2 hr.*
Stairway No. 1	Transit to elevations at west side of aux. bldg.
Stairway No. 2 ***	Transit to elevations 77'/83'
Stairway No. 8	Transit to elevations at north and east sides of aux. bldg.

* Infrequent-brief access to these areas may be required post-accident.

*** Complete evaluation of these areas is based on resolution of shielding associated with the electrical penetration rooms.

Unit 2

Area	Occupancy Period
Control Room	24 hr/day
Technical Support Center	24 hr/day
Health Physics Area	24 hr/day
Primary Access Point	24 hr/day
Passageway to Unit 1 (2402)	1 hr/day
Hallway 2409	1 hr/day
Electrical Penetration Rooms **	1 hr (approximately 1 hr. after accident)

** Design change to eliminate occupancy requirement is being considered. Zone maps will be updated as necessary.

Unit 2

Area	Occupancy Period
Hallway 2322 (Outside Sample Room for Liquid Sample) ***	1 hr/day
Spectro Photometer ***	1 hr/day
Cable Spreading Room	1/2 hr *
Filter Rooms	2 hr/day *
Switchgear Rooms (Elev. 121')	1/2 hr*
Hot Shutdown Panel	24 hr/day *
CCW Pump Room	1/2 hr *
Corridor 2161	1/2 hr *
RHR Heat Exchanger Room	1/2 hr *
Stairway No. 1	Transit to elevation at west side of aux. bldg.
Stairway No. 2 ***	Transit to elevations 77'/83'.
Stairway No. 8	Transit to elevations at north and east sides of aux. bldg.

* Infrequent-brief access to these areas may be required post-accident.

*** Complete evaluation of these areas is based on resolution of shielding associated with the electrical penetration rooms.

Each of these areas has been analyzed to determine the dose rates following an accident.

The Primary Access Point was not initially considered but was later designated a I-A area for direct radiation. The security center will be included in the radiation zone maps. The main control room and the technical support center were considered as areas requiring continuous occupancy.

As a result of these studies the following shielding modifications are listed for Units 1 and 2:

1. Add shielding to the portion of line 3" GCC-12 which is exposed in the area of the Seal Injection Filter valve station to reduce the dose rate in this area.

2. Place temporary shielding at the containment radiation monitor to reduce dose rate in the corridor (RE-011, 012).

3. Re-route the RCS sample discharge line so that spent samples are returned by a more direct route to the VCT without entering the letdown line.

4. Add additional shielding outside the auxiliary personnel hatch to minimize potential effects at the Elevation 155' for the access control area and Technical Support Center.

5. The requirement to add shielding at hydrogen analyzers; around lines to hydrogen analyzers; and around reactor coolant and containment air sample lines was due to the fact that personnel access was required within one hour after the accident. Further analysis has shown that design modifications which remove the necessity of operator action from this area was more practical than the shielding modifications. These modifications include either the relocation of of eight breakers or the addition of disconnect devices outside the electrical penetration room for the normally locked out valves in the ECCS flow path. One of these modifications will be completed at the first outage of sufficient duration but no later than the first refueling on Unit 2 and third refueling on Unit 1.

The following is a discussion of the computer programs used for these analysis.

1. Source term concentrations in µCi/cc for each isotope along with the volumetric source strengths in Mev/cc/sec. were calculated using the NUCLYD computer program. This program calculates values of the specific activity and volumetric source strength at any given decay time for a given mixture or isotopes. The program also provides an integral energy release for that given mixture of isotopes from t = 0 to any specified time. This computer program is analogous to ORIGEN.

2. Dose rates were calculated with the CYLSO computer program. This program uses the Rockwell Point Kernel theory for one dimensional cylindrical volumetric sources. Self attenuation in the source as well as the shielding effects of various construction materials such as stell, lead, concrete and water are considered in the code. The code output is in terms of dose rate vs. distance, for various piping diameters and shielding configurations.

3. This computer program is similar to the SDC code.

In addition to the above study, the effects of radiation on equipment are being considered as part of the IE Bulletin 79-01B and NUREG-0588 review. Source terms for LOCA events in which the primary system may not depressurize will be addressed during the above review.

The shielding design evaluation is a complex iterative process. All modifications listed above and modifications required to resolve the outstanding design issues will be completed for Units 1 and 2 by January 1, 1982 except the electrical modification described above.

Previous Response

By letters dated August 1, 1980, August 19, 1980, June 20, 1980 and July 24, 1980, for Unit 2 and October 24, 1979, November 21, 1979, December 31, 1979 and March 14, 1980, Alabama Power Company described commitments and actions taken for the Farley Nuclear Plant.

Clarification Response

Noble Gas Effluent Monitor

A. Vent Stack Monitor

Alabama Power Company will install for both units an Eberline Sping 4 sampler to monitor noble gases in the plant vent stack. This sampler has a range of 10^{-7} to 10^{5}uCi/cc using multiple detectors. The monitor draws a sample from the vent stack to a monitor unit located in the mechanical equipment room at elevation 175 of the auxiliary building. The readout for this unit is located in the main control room. An auxiliary readout is located in the low activity counting laboratory.

The noble gas measurement is performed by several detectors viewing a sample volume. The low and medium range detectors view the same sample volume located in the SA-13 sampler assembly. The high range detector views the sample volume located in the SA-9 sampler assembly.

(1) LOW RANGE NOBLE GAS: The gas chamber is monitored by a BETA scintillation detector (Eberline Model RDA-3A). Background correction for this channel is derived from the gamma background detector, an energy-compensated GM detector (Eberline Model 10450-B28). Since the external (ambient) gamma radiation has a measurable effect on the BETA measurement (particulate and gas), the gamma background channel is used as a source of subtraction for both the gas measurement and the particulate measurement.

(2) MEDIUM RANGE NOBLE GAS: An energy-compensated GM detector monitors the gas volume for the medium range noble gas measurement, with its output proportional to the gamma content of the sample. An additional identical detector is provided in the sampler shield as a measure of the external background at the sampler; this is the background detector. Thus the effects of a fluctuating external background on the medium range gas channel are nullified by measuring and subtracting the background.

(3) HIGH RANGE NOBLE GAS: An energy-compensated GM detector monitors the gas volume of a section of 1" stainless steel tubing for the high range noble gas measurement. Its output is proportional to the gamma content of the sample.

An area monitor radiation detector assembly (Eberline Model DA1-1-CC) is mounted on the Sping 4 and provides a measure of the gamma field at the instrument. This detector is an energy-compensated GM tube and is calibrated in radiation dose rate. Calibration is by use of an external calibration source and is performed upon installation and at intervals not exceeding each refueling outage. The Eberline Sping 4 monitor is capable of functioning both during and following an accident. Frequent filter replacement will ensure operability of the monitor's electronics after an accident. The monitor's accuracy is ± 2% of span.

The following list summarized by channel number and type which calibration sources are provided.

CHANNEL		CHECK SOURCE	
Number	Type	Content	Isotope
1	Beta Particulate	30 microcuries	^{137}Cs
2	Alpha Particulate		
3	Iodine (Gamma)	0.5 micurcurie	^{133}Ba
4	Iodine Subtraction (Gamma)		
5	Beta Gas (Low Range Noble Gas)	30 microcuries	^{137}Cs
6	Gamma Area	0.5 microcurie	^{90}S ^{90}Y
7	Gamma Gas (Medium Range Noble Gas)		
8	Gamma Background		
9	Gamma Gas (High Range Noble Gas)	.05 microcurie	^{90}S ^{90}Y

The plant vent noble gas concentration in μCi/ml is determined by sampling and/or by obtaining a value from the plant vent stack high range monitor. The plant vent flow rate is determined by the number of operating auxiliary building exhaust fans. The release rate in curies per second is determined by the following equation:

Release rate (Ci/sec) = Concentration (μCi/ml) X flow rate (cfm) X conversion factor

The above method to determine noble gas release rate is described in emergency implementating procedures. During emergencies the release rate is calculated periodically as directed by the Emergency Director to determine if the accident classification should be upgraded.

The monitors have been environmentally qualified by the vendor for the environment in which it is located.

B. Main Condenser Air Removal Monitor (SJAE)

The main condenser air removal exhause systems for Units 1 and 2 are monitored using the existing monitor (described in the FSAR) on the steam jet air ejector exhaust for the normal range of radioactivity. The accident range of radioactivity will be monitored for Units 1 and 2 by intermediate and high range detectors with overlapping ranges and located at the common vent duct for the turbine building. The accident monitor consist of 2 Eberline detectors and readouts. The intermediate range detector will be model Dal-1CS with an ED1-1 readout module with a range of indication of 0.1 to 100 mR/hr. The high range detector is a model Dal-4CS with an EC1-20 readout module with a range of 10 mR/hr. to 1,000 R/hr. The relationship between mR/hr. and uCi/cc will be established for the noble gas isotopes present during an accident. The range of the accident monitors in uCi/cc is from 10^{-5} to 10^{3} with the normal range monitor measuring concentrations down to 10^{-6} uCi/cc. This is the required range for the case where the SJAE exhaust is combined with turbine building ventilation exhaust. The readout modules will be located in the control room and will provide continuous indication. The accident detectors will be shielded from background radiation with 6 inches of lead. Calibration is by use of an external calibration source and is performed upon installation and at intervals not exceeding each refueling outage.

C. Steam Generator Atmospheric Relief and Safety Valve Monitors

The discharge from steam generator safety relief valves and atmospheric dump valves for Units 1 and 2 will be monitored by measuring the radiation levels from these steam plumes. There will be four Eberline model DA1-4CS detectors per unit mounted on the main steam roof with a range of 10 mR/hr. to 1,000 R/hr. The relationship between mR/hr. and μCi/cc has been established for the noble gas isotopes present during an accident. The range of the monitors in μCi/cc will more than cover the required range from 10^{-1} to 10^{3} for cases with just the PORC open to cases with the PORV and all safties open. Each detector will be connected to an Eberline EC1-20 readout module in the control room, providing continuous indication. Since the safety relief valve and atmospheric dump valve discharges are grouped together for each of the three steam generators, one detector will be used to monitor the combined effluent steam plume from each steam generator. The fourth detector is used to monitor the plume from the steam driven auxiliary feedwater pump turbine exhaust. Each detector is collimated and background shielded with 7.5 inches of lead. Calibration is by use of an external calibration source and is performed upon installation and at intervals not exceeding each refueling outage.

II.F.1 (Continued)
(Noble Gas Effluent Monitor (Continued)

D. Design and Installation Schedule for Nobles Gas Effluent Monitors

The noble gas effluent monitors will be powered from a vital instrument bus. Procedures will be developed for use, calibration of the system, and dissemination of release rate information. The Sping-4 for both units is onsite hardware to support installation of the main condenser air removal monitors and the steam generator atmospheric relief and safety valve monitors are onsite or in the process of being shipped. The installation of the vent stack monitor for Unit 2 is scheduled for March 10, 1981, or prior to exceeding 5 percent power. This instrument is currently scheduled for installation in Unit 1 for prior to the end of the current refueling outage but not later than January 1, 1982. The original Alabama Power Company position was to monitor the main condenser air removal exhaust and the discharge from the steam generator safety relief valves and atmospheric relief valves with a portable gamma survey instrument. Alabama Power Company, however, finalized the above position based on NRC questions during the latter part of 1980. Based on the current material availability and status of the complex shielding design required, installation for both units is scheduled for completion by January 1, 1982. Alabama Power Company purchased the best available monitors upon finalization of this position. In order to ensure accurate reading of each of these monitors, a complex shielding design is required to discriminate actual readings from background including containment shine.

Sampling and Analysis of Plant Effluents

Alabama Power Company has the capability to provide continuous sampling of plant gaseous effluent for post accident releases of radioactive iodine and particulates at the plant vent and the condenser air removal system. The sampling method involves passing the effluent gases through a filter assembly and transporting the filter to a counting room for analysis. The sampling system has the following capabilities:

(1) Effective iodine absorption of greater than 90% for all forms of gaseous iodine.

(2) Greater than 90% retention of particulates for 0.3 micron diameter particulates.

(3) Design intent meets sampling requirements of ANSI N 13.1-1969.

(4) Continuous collection whenever exhaust flow occurs.

(5) Analytical facilities and procedures considered the design basis sample.

(6) Shielding factors were considered in the design.

On-site laboratory capability exists to analyze or measure these samples. The sampling system design is such that plant personnel can remove samples, replace sampling media, and transport the samples to the on-site analysis facility with radiation exposures that are not in excess of the GDC 19 criteria of 5 rem whole body and 75 rem to the extremities during the duration of the accident assuming the design basis shielding envelope of NUREG-0737.

The Eberline Sping 4, which samples vent stack effluents, uses an isokinetic nozzle in the stack to draw its sample into its filter system and the flow rate can be adjusted at the pumping unit to attain a sample velocity that will match stack flow rates. There are presently two exhaust fans that determine effluent velocities. In addition, there will be a Victoreen vacuum pump with charcoal filters that will allow the Chemistry and Health Physics Group to draw 15 minute iodine and particulate samples to be analyzed in the laboratory. This pump has bypass lines that allow drawing an isokinetic sample by passing portions of the sample back to the stack.

The steam jet air ejector sample point is located on the vertical section of the turbine building exhaust ventilation duct. Locating the sample point on the vertical section of the exhaust duct ensures that the absorber material is not degraded with entrapped water.

Sampling and Analysis of Plant Effluents (Continued)

The primary sampling system for the vent stack (Sping-4) is scheduled to be installed by March 10, 1981, but prior to exceeding 5 percent power for Unit 2 and prior to return to power in Unit 1 following the current refueling outage but no later than January 1, 1982, to provide indication (μCi/ml) in the main control room and the counting room.

The sampling system for the condenser air removal system is scheduled to be installed by March 10, 1981, but prior to exceeding 5 percent power for Unit 2 and prior to return to power in Unit 1 following the current refueling outage, but no later than January 1, 1982.

Containment Pressure Monitor

The present containment pressure indication provides continuous redundant indication in the main control room and has an indication range of -5 psig to 60 psig. Additional monitoring capability with control room indication having a range of 0 to 210 psig is scheduled to be installed for Unit 1 by return to power after the current refueling outage but no later than January 1, 1982, and for Unit 2 by March 10, 1981, but no later than exceeding 5 percent power. Continuous display and recording of the containment pressure is provided in the control room. The indication accuracy of both the wide and narrow range instruments is ±3.5% with a response time of less than 180 milliseconds for a 10% to 90% step function change in pressure.

The environmental qualfication for these items are being addressed as a part of Alabama Power Company's response to I.E. Bulletin 79-01B and NUREG-0588.

Alabama Power Company will respond to or provide a justification for NUREG-0737 Appendix B requirements by June 1, 1981. Any modifications required as a result of the above review will be completed by January 1, 1982 or as soon as equipment meeting the requirements of NUREG-0737, Appendix B is available.

Containment Water Level Monitor

The Farley Nuclear Plant present design has two wide range containment (ECCS sump) water level detectors. These detectors provide indication in the main control room that meets the wide range requirements as specified in the various clarification letters. These level transmitters and associated readout are safety grade and measure volumes up to and above 600,000 gallons. In addition, a narrow range containment (reactor vessel cavity sump) level system meeting the various clarification letters is scheduled to be installed for Unit 1 by return to power after completion of the current refueling outage but no later than January 1, 1982. The schedule for Unit 2 installation is March 10, 1981, or no later than exceeding 5 percent power. The accuracy of the narrow range level instrumentation is ± 1/2 inch with an instantaneous response time. Qualification will be addressed in Alabama Power Company's response to IE Bulletin 79-01B and NUREG-0588.

Alabama Power Company will provide a description of the train separation for the containment water level monitors by June 1, 1981. Any required modifications will be completed by January 1, 1982, based on equipment availability.

II.F.1 (Continued)

Containment Hydrogen Monitor

Two independent, redundant systems for containment hydrogen monitoring are provided for Units 1 and 2. The design of these systems meets the requirements for safety-related protective systems as defined by IEEE 279-1971. The output signal of the analyzers are indicated at the analyzer panel location and are alarmed and recorded in the main control room. Each system is supplied electrical power from an independent and redundant Class 1E Power Supply. The system meets the single failure criteria and remains operable under the postulated accident. Any single failure in one hydrogen monitoring system does not affect its redundant and independent counterpart. The accuracy of the hydrogen monitor is ±2% of span with a response time of 0.45 minutes. The range of indication is 0-10%. Qualificaton requirements are being addressed in Alabama Power Company's response to I.E. Bulletin 79-01B and NUREG-0588.

The indication and recording of hydrogen concentration will be initiated as required by emergency procedures in less than one hour after a safety injection initiation.

Alabama Power Company will respond to or provide justification for NUREG-0737 Item II.F.1 Attachment 6 clarifications 2 and 3 including the hydrogen recombiners functioning within 30 minutes. This response or justification will be submitted by June 1, 1981. Any required modifications will be completed by January 1, 1982, based on equipment availability meeting the NUREG-0737 requirements.

II.F.1 (Continued)

Containment High-Range Radiation Monitor

Alabama Power Company has ordered redundant Victoreen Model 875 Radiation Detection Systems to meet the requirements for a high containment radiation monitor. Each system consists of an ion chamber detector, readout panel, and interconnecting cables. The monitors will be located inside containment about six feet above the operating deck and approximately 90° apart. These locations ensure the monitors are not protected by massive shielding and that they will provide a reasonable assessment of area radiation conditions inside the containment during and following an accident.

(a) Each detector is designed to measure gamma radiation.

(b) The range of each detector is 1 R/hr. to 10^7 R/hr. for photon radiation.

(c) The energy response is -15% to 80 kev and 8% from 100 kev to 3 Mev.

(d) The calibration frequency will be at a maximum interval of 18 months. Presently it will be necessary to return the monitors to the vendor for calibration.

(e) The containment high radiation monitors are being installed and should be operational for Unit 2 by March 10, 1981, or prior to exceeding 5 percent power. Such monitors are being installed and should be operational prior to return to power following the current refueling outage for Unit 1 but no later than January 1, 1982.

Victoreen has completed the preliminary qualification review and is near completion for the final qualification program. The radiation monitors satisfy the requirements of the vendor qualification program. The only remaining component to be qualified is the electrical connection between the power cable and the radiation monitor. Victoreen is currently in the process of qualifying this component. Alabama Power Company will update the NRC on the qualification program as information becomes available.

Capability exists for on-site calibration of the radiation monitor to 10R/hr. Calibration above 10R/hr. will be completed by utilizing an electronic signal. As part of the vendor testing program, Victoreen has stated that at least one point per decade of the range between 1 R/hr. and 10^3 R/hr. had the calibration certified.