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REID,P.W. Operating Reactors Branch 4

SUBJECT: Forwards response to NRC 790913 ltr re implementation of NUREG-0578 short-term recommendations.

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VICE PRESIDENT
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TELEPHONE: AREA 704
373-4083

October 18, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. R. W. Reid, Chief
Operating Reactors Branch No. 4

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Sir:

The purpose of this letter is to provide Duke Power Company's response for Oconee Nuclear Station to the NRC Staff's letter dated September 13, 1979 concerning implementation of the recommendations contained in NUREG-0578 and augmented by the Staff's letter.

Our response to the various items is attached. With regard to the implementation schedule it is our intention to proceed as indicated in our responses with our best effort towards implementation of each item, as required. In this regard, the following specific points are pertinent for the items identified by the NRC as requiring completion by January 1, 1980:

1. The description of the relief and safety valve testing program will be provided as part of the industry response to this issue. This is expected to be submitted on or before January 1, 1980.

2. The PORV and relief valve position indication as well as the diverse containment isolation modifications have been identified as requiring unit shutdown to complete installation. It is our current intent to complete these modifications on Oconee 1 and Oconee 2 during the forthcoming refueling outages, anticipated for later this year for Oconee 1 and early 1980 for Oconee 2. For Oconee 3, it is intended to complete installation of these items the first available outage of sufficient duration following receipt of all material, or by May 31, 1980 at the latest.

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For modifications that have been identified in NUREG-0578 and the Staff's letter for completion by January 1, 1981 Duke Power Company will provide a schedule for implementation upon completion of the prerequisite design/ analysis work. It should be noted that following the forthcoming Oconee 2 refueling outage, there could possibly be no subsequent refueling outages during 1980 except for Oconee 3 whose current cycle should terminate late in 1980. Oconee 1 and 2 would be scheduled for refueling early in 1981 given nominal performance during the upcoming cycles. It is anticipated that these modifications will be installed by January 1, 1981; however design efforts, NRC review, procurement of materials and scheduling of unit outages may necessitate some flexibility in this completion date.

Very truly yours,

William O. Parker, Jr.

RLG:scs

DUKE POWER COMPANY

RESPONSE TO NUREG-0578
SHORT TERM RECOMMENDATIONS
FOR
OCONEE NUCLEAR STATION

October 18, 1979

DUKE POWER COMPANY

Response to NUREG-0578
Short Term Recommendations
for
Oconee Nuclear Station

2.1.1 Emergency Power Supply Requirements

- Pressurizer Heaters

  A further review of the power distribution system of Oconee has been conducted. The existing emergency power system, with Keowee Hydro Station as the emergency generation source in the event of loss of offsite AC power has ample capacity to provide emergency power to all pressurizer heaters. Substantial redundancy in paths and connections provides further enhancement in the reliability of the power supply to the pressurizer heaters. No modifications are necessary to meet the requirements of this item.

- Power-Operated Relief and Block Valves

  A review of the requirements of this item indicated the need to improve motor-control center reliability. A modification was initiated (prior to NUREG-0578) to make necessary changes. The completion of this modification brings Oconee into compliance with this recommendation.

- Pressurizer Level Indicators

  A review of the power supply to the pressurizer level indicators verifies that the current system provides adequate reliable power. Power is supplied to the static invertors which feed the associated panelboards from the same instrument and control batteries that supply power to the vital panelboard static invertors. While the AC panelboards are not designated "vital" they are at least as reliable as those which are so designated. It is, therefore considered that the Oconee design meets the recommendations of this item.

2.1.2 Performance Testing for BWR and PWR Relief and Safety Valves

Duke Power Company is supporting the industry-wide efforts associated with the testing of PWR relief and safety valves. A program description and schedule is expected to be available for submittal by January 1, 1980.

The tests are currently planned to be completed by July 1981.

2.1.3 Information to Aid Operators in Accidents Diagnosis and Control

a. Direct Indication of Power-Operated Relief Valve and Safety Valve Position for PWR's and BWR's

Direct indication of valve position will be provided in the control room of each unit. One downstream flow monitor, utilizing accelerometers, will be provided for each PORV and code safety valve. All components will be capable of withstanding containment accident environment commensurate with currently installed safety equipment in containment. The system will have an assured power source with valve position indicated and alarmed in the Control Room. The required modifications will be carried out at the next available outage for each Oconee unit.

b. Instrumentation for Detection of Inadequate Core Cooling for PWR's and BWR's

Duke Power Company is participating with other utilities with B&W nuclear supply systems to provide a generic response to this item.

By January 1, 1980, procedures for use of existing instrumentation in determining adequacy of core cooling will be implemented. Also, as a result of the generic study of inadequate cooling, new instrumentation requirements will be evaluated.

A primary coolant saturation indication and statalarm has been installed at each Oconee unit. Redundant capability is provided with Steam Tables included in appropriate procedures. This capacity has been previously described to the Staff in my letter of April 10, 1979 responding to IE Bulletin 79-05A.

2.1.4 Containment Isolation Provisions for PWR's and BWR's

Containment isolation valves on systems which are determined to be non-essential will be isolated on a signal diverse from the currently utilized containment pressure signal. Design work is in progress to provide for isolation of non-essential systems at the low RCS pressure trip setpoint.

Those systems considered to be non-essential and which will be isolated on either high Reactor Building pressure or low Reactor Coolant System pressure include:

Quench Tank sample
Quench Tank gaseous vent
Reactor Building purge
Reactor Building sump drain
Reactor Building atmosphere sample
Pressurizer sample
OTSG sample
OTSG drain

Those systems considered to be essential include:

Reactor Coolant Pump Seal Return
Component Cooling to Reactor Coolant Pumps
Low Pressure Service Water to the Reactor Coolant Pumps

2.1.5 Post-Accident Hydrogen Control Systems for PWR and BWR Containments

a. Dedicated Penetrations for External Recombiner or Post-Accident External Purge System

The post-accident hydrogen control system which is to be installed at Oconee will utilize existing penetrations currently dedicated to reactor building atmospheric monitoring. The piping will be arranged to allow simultaneous monitoring and hydrogen control through one penetration pair. Redundant isolation valves will be added inside each penetration. A detailed description of this modification will be provided by January 1, 1980.

b. Inerting BWR Containments

Not Applicable to Oconee

c. Capability to Install Hydrogen Recombiner at Each Light Water Nuclear Power Plant

Although this item is the subject of NRC rulemaking, Duke is pursuing a design to provide the capability to install a hydrogen recombiner in the existing hydrogen purge lines.

2.1.6 Post-Accident Control of Radiation in Systems Outside Containment of PWR's and BWR's

a. Integrity of Systems Outside Containment Likely to Contain Radioactive Materials (Engineered Safety Systems and Auxiliary Systems)

Periodic leak detection programs and preventive maintenance programs have been in effect at Oconee.

A Reactor Coolant System leakage test each shift is run to quantify any such leakage. This leakage calculation takes into account the entire RCS including those portions outside the containment. If noticeable change is encountered an evaluation and investigation of possible sources is initiated. Also personnel monitor total water inventory including levels from all waste water collection tanks and sumps. If unusual increases occur, operating shift personnel are notified and they perform a Leakage Identification Procedure. If a significant leak develops in the Auxiliary Building, gaseous activity released will be detected by the multipoint radiation monitor (RIA-32). Also, the ventilation stack monitors may also identify such leakage (RIA-43 (particulate), RIA-44 (Iodine), RIA-45 (gas)).

Annually, a leakage test is run on the entire LPI System. All leaks are carefully measured and recorded. The acceptance criteria for this test is less than 2 gallons per hour.

To augment the leakage detection and formalize the leakage prevention program the following actions will be taken:

a) A review of those systems potentially containing significant levels of radioactive fluids in post-accident conditions will be carried out to establish boundaries and identify potential leakage sources.

b) Administrative action will be taken to establish a requirement for shift personnel to perform periodic visual surveillance of accessible areas containing operating systems defined in (a) to identify and correct leaks.

Both (a) and (b) will be implemented by January 1, 1980.

c) A leakage testing program will be developed to identify leakage in those systems designated above. Such leakage test will be carried out at each refueling outage (nominally 18 months). Initial leak tests will be performed at the first refueling outage after April 1, 1980.

2.1.6 Continued

b. Design Review of Plant Shielding and Environmental Qualification of Equipment for Spaces/Systems which may be used in Post-Accident Operations

A review is in progress to determine post-accident radiation levels throughout the station. Areas and equipment that are vital and require access will be determined. Appropriate actions, including procedure revision, system redesign, or shielding modifications, will be taken to assure accessibility and operability during post-accident radiation conditions. A schedule for the resolution of this item will be provided by January 1, 1980.

2.1.7 Improved Auxiliary System Reliability for PWR's

a. Automatic Initiation of the Auxiliary Feedwater System

The emergency feedwater system at Oconee presently has the automatic initiation capability installed. The turbine driven emergency feedwater pump (TDEFWP) is automatically initiated from low main feedwater pump discharge pressure or closure of steam supply valves to both main feedwater pumps. This initiation is control grade and will be upgraded by the installation of qualified switches, cabling, and other components as required.

The motor driven emergency feedwater pumps (MD EFWP) have a safety grade automatic initiation. The details of this have been provided to the NRC Staff previously. No further upgrade of this initiation system is required.

b. Auxiliary Feedwater Flow Indication to Steam Generators

The emergency feedwater system at Oconee presently has flow indication to the steam generators installed. There are four flow transmitters installed. One transmitter is installed at the discharge of each MD EFWP. Another is installed upstream of the flow control valves in the flow path to each steam generator. Additional details of this installation were provided in a Duke letter dated May 17, 1979 to H. R. Denton.

This system is presently control grade. The two flow transmitters located in the flowpaths to the steam generators will be upgraded to safety grade by January 1, 1981.

2.1.8 Instrumentation to Follow the Course of an Accident

a. Improved Post-Accident Sampling Capability

As stated in our response to Item 2.1.6.b, a review is in progress to determine post-accident radiation levels throughout the station, including sample areas. Appropriate actions will be taken to assure accessibility during post-accident radiation conditions.

Existing procedures provide for prompt radiological spectrum analyses of noble gases, radioiodines, radiocesiums, and other nonvolatile radionuclides. No difficulties are expected in performing these analyses provided samples are promptly prepared in the sample area and the site is accessible since there is a primary and a secondary counting room on site.

Duke will continue to review the requirements of this item, including chemical and spectrum analysis of high level samples to determine the required corrective actions. Results of this review and descriptions of corrective actions will be submitted by January 1, 1980.

b. Increased Range of Radiation Monitors

A vent monitor for noble gases will be provided with a range adequate to cover normal and anticipated conditions. Multiple monitors will be required to cover this range; one decade overlap will be provided.

Redundant containment radiation monitor will be provided to monitor 10^8 R/hr. The installation will be completed by January 1, 1981.

c. Improved In-Plant Iodine Instrumentation

Silver Zeolite radioiodine sampling cartridges are in use at Oconee for sampling air when the presence of noble gases is suspected. Oconee Health Physics personnel are knowledgeable in the appropriate station procedures required and are trained in the equipment required to determine airborne iodine concentration in the plant under all conditions. It is considered that Oconee is presently meeting the requirements of this item.

2.1.9 Analysis of Design and Off-Normal Transients and Accidents

Duke Power Company, in conjunction with the other B&W 177 FA Owners, is supporting the Abnormal Transient Operating Guidelines program to address this concern. This program will utilize plant specific system information and available analytical data to investigate realistically a wide range of reactor plant transients, including failures not normally considered in licensing documentation. The result will be the development of appropriate guidelines to enable plant operators to deal effectively with abnormal transients, as well as the promotion of better operator understanding of system fundamentals and abnormal transient operation. It is anticipated that the operating guidelines resulting from this program will be available by mid-1980.

2.2.1 Improved Reactor Operations Command Function

a. Shift Supervisor Responsibilities

Appropriate directives will be reviewed and revised as necessary to fulfill the intent of this item by January 1, 1980.

b. Shift Technical Advisor (STA)

The two functions of the STA, namely accident assessment and operating experience assessment will be fulfilled in the following manner.

An experienced SRO who has been instructed in additional academic subjects will be provided on each shift by January 1, 1980. It is intended that he will provide the on-shift accident assessment capability. Further training will be conducted through 1980 to meet the intent of this item. These SRO's will be detached from and independent of the normal line function of plant operation. He will be an advisor to the Shift Supervisor.

For the second function, operating experience assessment, an engineer will be assigned from the station. It is anticipated that the individual will have familiarity with plant operations which may be supplemented with some additional training in operations. This engineer would report to station management other than shift personnel. This assignment will be made before January 1, 1980.

c. Shift and Relief Turnover Procedures

Station Directive, "Shift Relief and Turnover" will be revised to fulfill the requirements of this item by January 1, 1980.

2.2.2 Improved In-Plant Emergency Procedures and Preparations

a. Control Room Access

Appropriate procedures and directives will be reviewed and revised as necessary by January 1, 1980 to meet the concern of this item.

b. Onsite Technical Support Center

A separate technical support center will be established by January 1, 1980 to meet the concern of this item. The center will be upgraded, as needed, to meet requirements established in future discussions.

c. Onsite Operational Support Center

An operational support staging area will be established to meet the concerns of this item by January 1, 1980.

Additional Items Described in NRC Letter
of
September 13, 1979

1. Additional instrumentation requirements related to containment pressure, containment water level, and containment hydrogen monitors.

   Pressure

   In addition to the present existing qualified containment pressure transmitters, we will install additional safety grade qualified pressure transmitters capable of displaying in the control room a range of at least 3 times the design pressure of 59 psig.

   Water Level

   In addition to the presently installed non-safety grade sump level indication, we will install the appropriate safety grade instrumentation to indicate in the control room the containment water level.

   Hydrogen Monitors

   A design effort is underway to provide the capability to monitor the containment atmosphere for hydrogen. A system with safety grade hydrogen monitors capable of monitoring 0-10% hydrogen concentration will be provided with readout instrumentation in the control room.

2. Remotely operable high point vent for gas from the reactor coolant system.

Duke Power Company has initiated a major design effort to provide the capability to remotely vent non-condensible gases in the Reactor Coolant system into the containment. The location and size of these vents will be designed to meet the objectives described in the staff letter. A description of the design will be provided by January 1, 1980.

3. Improvements in Emergency Preparedness

Duke Power Company has initiated an extensive review of our emergency preparedness program. The areas of concern within this item will be addressed by this review.