April 28, 1989

Docket Nos.: 50-269, 50-270,
and 50-287

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

SUBJECT: CORRECTION TO FACILITY OPERATING LICENSE AMENDMENTS
(TACS 61377/61378/61379)

Ms. Helen Pastis's April 30, 1987, letter forwarded Amendments 158, 158, and 155 to Facility Operating Licenses DPR-38, DPR-47, and DPR-55 for the Oconee Nuclear Station, Units 1, 2, and 3. Enclosed with the amendments were revised Technical Specification pages. Please replace pages 4.4-17 and 4.4-18 which were forwarded with that letter with the enclosed revised pages.

Ms. Pastis's December 11, 1987, letter forwarded Amendment Nos. 165, 165, and 162 to Facility Operating Licenses DPR-38, DPR-47, and DPR-55. Please replace page 4.1-3 which was forwarded with that letter with the enclosed revised page.

Sincerely,

/s/

Darl S. Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
As stated

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

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APL Hood

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Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
As stated

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Units Nos. 1, 2 and 3

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Honorable James M. Phinney
County Supervisor of Oconee County
Walhalla, South Carolina 29621

4.4.3 CONTAINMENT HYDROGEN CONTROL SYSTEMS

Applicability

Applies to the Containment Hydrogen Control Systems.

Objective

To verify that the Containment Hydrogen Control Systems are operable.

Specifications

4.4.3.1 Containment Hydrogen Recombiner System In-place Testing

During each refueling outage, an in-place system test shall be performed on a recombiner unit. This test shall consist of:

a. Visual inspection of the system.

b. Connection of the hydrogen recombiner unit to the Reactor Building.

c. Hydrogen recombiner unit operation in the post-LOCA configuration with flow greater than 50 SCFM. Operation at recombination temperature is not required by this test.

4.4.3.2 Containment Hydrogen Recombiner System Operational Performance Testing

a. The testing requirement of this section may be performed without connecting the system to one of the Reactor Buildings.

b. The isolation flanges on the Containment Hydrogen Recombiner System permanent piping shall be leak tested on each unit at refueling to ensure adequate isolation.

c. At a refueling outage frequency:

1. Calibrate all recombiner instrumentation and control circuits.

2. Operate a recombiner unit at design flow rate ±10% and allow unit to reach recombination temperature.

4.4.3.3 Reactor Building Hydrogen Purge System Testing

a. Prior to declaring this system operable, a system test shall be performed.

b. This test shall consist of:

1. Visual inspection of the system.

2. Installation of new carbon and HEPA filters and in-place filter leakage test per ANSI-N510-1975 (minimum DOP efficiency 99%, minimum halogenated hydrocarbon removal 99%).

3. Connection of the system to a Reactor Building.

4. Flow measurement using flow instruments in the portable purging station.

5. Verification that the pressure drop across the combined HEPA filters and charcoal absorber banks is less than six inches of water at the system design flow rate (±10%).

6. Verification of the operability of the heater at rated power when tested in accordance with ANSI N510-1975.

Bases

The control panel mounted near the recombiner enables the operator to control and monitor system parameters for all functions of the recombiner system except containment isolation valve operation. The control and monitor functions include: process temperature indications, temperature control, flow indication, start/stop switch, low temperature timer and various annunciators. Therefore, the operational performance testing ensures operability.

The penetrations to and from the hydrogen recombiner are shared with the gaseous radiation monitoring pump. Since this pump is normally in operation and since there is no system isolation valve on the supply branch to the recombiner, the blind flanges are the only means of system isolation. Therefore, these flange joints should be leak tested periodically to ensure adequate isolation.

The hydrogen recombiner unit performance test should be conducted with full flow and with the heaters energized. The capability of the recombiner to achieve the required recombination temperature and flow rate is considered an adequate test of recombination efficiency. Gas inlet and outlet sampling is not required.

The pre-operational testing requirements for the Reactor Building Hydrogen Purge System are applicable only when the system is required to be operable as required by Technical Specification 3.16.1.c. Requirements for interim surveillance testing of the Reactor Building Hydrogen Purge System during any period of its required operability will be reported to the NRC as described in Technical Specification 3.16.1.d.

New carbon and HEPA filters are installed during pre-operational testing. HEPA filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential release of radioiodine. Bypass leakage for the charcoal adsorbers and particulate removal efficiency for HEPA filters are determined by halogenated hydrocarbon and DOP, respectively.

Table 4.1-1
INSTRUMENT SURVEILLANCE REQUIREMENTS

Channel Description	Check	Test	Calibrate	Remarks
1. Protective Channel Coincidence Logic in the Reactor Trip Modules	NA	MO	NA	
2. Control Rod Drive Trip Breakers, SCR Control Relays E and F	NA	MO(1)	NA	(1) This test shall independently confirm the operability of the shunt trip device and the undervoltage device.
3. Power Range Amplifier	ES(1)	NA	(1)	(1) Heat balance check each shift. Heat balance calibration whenever indicated core thermal power exceeds neutron power by more than 2 percent.
4. Power Range	ES	MO	MO(1)(2)	(1) Using incore instrumentation. (2) Axial offset upper and lower chambers after each startup if not done previous week.
5. Intermediate Range	ES(1)	PS	NA	(1) When in service.
6. Source Range	ES(1)	PS	NA	(1) When in service.
7. Reactor Coolant Temperature	ES	MO	RF	
8. High Reactor Coolant Pressure	ES	MO	RF	
9. Low Reactor Coolant Pressure	ES	MO	RF	
10. Flux-Reactor Coolant Flow Comparator	ES	MO	RF	
11. Reactor Coolant Pressure Temperature Comparator	ES	MO	RF	

Amendment No. 165 (Unit 1)
Amendment No. 165 (Unit 2)
Amendment No. 162 (Unit 3)

Correction Letter of 4-28-89

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 158 TO FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 158 TO FACILITY OPERATING LICENSE NO. DPR-47

AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2, and 3

DOCKET NOS. 50-269, 50-270 AND 50-287

I. INTRODUCTION

By letter dated February 12, 1986 as revised on October 10 and supplemented on October 20, 1986. Duke Power Company (the licensee) proposed changes to the Technical Specifications (TSs) of Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units 1, 2, and 3. These amendments would change the station's common TSs 3.16 and 4.4.3 to describe the operation and maintenance of the Containment Hydrogen Recombiner System (CHRS) which will serve as the primary method for maintaining hydrogen concentration in the post-accident containment atmosphere below the deflagration limit. The October 10, 1986 letter revised the February 12, 1986 application and submitted TS 4.4.3 which was rewritten and rearranged for clarity. The October 20, 1986 letter responded to our request for additional information.

II. DISCUSSION

The Oconee Final Safety Analysis Report (FSAR) describes both purging and recombination as methods for controlling post-accident containment hydrogen concentrations. However, the CHRS is a preferable method of post-accident hydrogen control because it produces no radioactive gaseous release to the atmosphere.

The Hydrogen Purge System which presently contributes to hydrogen control will be available as a backup system, if needed. The licensee has indicated that the assignment of the primary control function to the CHRS will improve the safety of the plant because its capacity for handling containment gases is larger than that of the Hydrogen Purge System. Also, the resulting gases will be recirculated back to the containment after recombination, thus no radioactivity will be released to the atmosphere.

III. EVALUATION

One of the requirements specified in 10 CFR 50.44(c)(3)(ii) "Standards for combustible gas control system in light-water cooled power reactors," of the hydrogen control rule is that plants with purge and repressurization systems

for hydrogen control following a loss of coolant accident (LOCA) must provide an internal recombiner or have the capability for installing an external recombiner following the start of an accident. The licensee chose the latter option and has capability for installing external recombiners in all of the Oconee units. A single recombiner will be shared by the three units. Although the capability for hydrogen recombination is already implemented in the Oconee plant, the present TSs still identify the Hydrogen Purge Systems as the primary method for controlling post-accident hydrogen concentration.

Description of the Containment Hydrogen Recombiner System

The licensee requested that TS 3.16 and 4.4.3 be changed to make hydrogen recombination the primary method for controlling hydrogen concentration in the containment after an accident and relegating containment purge as a backup mode of operation. The proposed TS changes are consistent with the standard TS. The recombiner used in the Oconee Nuclear Station is of a standard design - a thermal recombiner of a type presently used in several other plants. The recombiner itself and the power and control cabinet are mounted on two separate skids. The recombiner can be easily moved to the affected unit, anchored to its foundation and connected by flexible metal piping to the Penetration Room Ventilation System (PRVS) piping which runs to and from the containment penetrations. The power and control cabinet will be locally mounted near the recombiners. The recombiner is designed to process 90 scfm of containment gases, however, because of significant pressure drops in the connecting ducts, its actual output will be lower, but will exceed 50 scfm. This flow rate is higher than the operating flow rates in the Hydrogen Purge System. Recombination of hydrogen-air mixtures containing more than 0.5 v/o hydrogen can be made with 95% efficiency.

When connected to the PRVS piping, the recombiner will take the gases containing hydrogen from the containment building, recombine the hydrogen with oxygen from air, and return the resulting gas mixture back to the containment. In this way, no gases containing radioactivity will leave the containment building. All the piping and equipment associated with the recombiner system are designed to withstand a safe shutdown earthquake without a loss of function except for electric power which when interrupted can be manually restored using alternate power sources. Therefore, the design of the recombiner is suitable for performing its intended function.

Conclusion

Based on the above considerations, the staff concludes that the assignment of the primary post-accident hydrogen control function to the CHRS and relegation of the Hydrogen Purge System as a backup meet the requirements of General Design Criterion (GDC) 41, "Containment atmosphere cleanup." The staff further concludes that the proposed revision to TS 3.16 and 4.4.3 satisfactorily reflects this change in systems and is consistent with the Standard Technical Specifications. The proposed revisions to the TSs also meet the requirements of GDC 42, "Inspection of Containment atmosphere cleanup systems," and GDC 43 "Testing of containment atmosphere cleanup systems" for inspection and testing of containment atmosphere cleanup systems. The staff, therefore, finds the change to the TS for hydrogen control to be acceptable.

IV. ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

V. CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (52 FR 5853) on February 26, 1987, and consulted with the state of South Carolina. No public comments were received, and the state of South Carolina did not have any comments.

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: April 30, 1987

Principal Contributors: K. Parczewski
H. Pastis