UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

MAY 27 1980

Report Nos. 50-269/80-14, 50-270/80-09 and 50-287/80-09

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Facility Name: Oconee

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

License Nos. DPR-38, DPR-47 and DPR-55

Inspection at Oconee site near Seneca, South Carolina

Inspector: W. H. Miller, Jr. — 5/20/80 Date Signed

Approved by: T. E. Conlon, Section Chief, RCES Branch — 5/23/80 Date Signed

SUMMARY

Inspection on April 28 through May 1, 1980

Areas Inspected

This special, unannounced inspection involved 33 inspector-hours on-site in the areas of fire protection/prevention.

Results

Of the areas inspected, no items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Licensee Employees

*H. B. Tucker, Manager, Nuclear Production Division
*J. E. Smith, Station Manager
*G. Vaughn, Assistant Manager
*J. T. McIntosh, Supervisor of Administration
*D. Austin, Training and Safety Coordinator
*W. G. Itin, Safety Supervisor
T. King, Fire Protection
*J. McBride, Engineer
S. Baldwin, Engineer
*R. T. Bond, Licensing and Protects Engineer
*T. C. Matthews, Licensing - Technical Specialist
*T. E. Cribbe, Licensing Engineer

NRC Resident Inspectors

*F. Jape
*D. O. Myers

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 1, 1980 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. New unresolved items identified during this inspection are discussed in Paragraphs 5.b and 5.c (seven items).

5. Fire Protection/Prevention Modifications

This inspection evaluated the licensee's progress and corrective action on the fire protection modification and improvement commitments made to the NRC. The NRC Fire Protection Safety Evaluation Report (FPSER) for this facility dated August 11, 1978 (Amendment Nos. 64, 64 and 61 to Operating License No. DPR-38, DPR-47 and DPR-55), and the licensee's Fire Hazards

Analysis (FHA) for Oconee dated December 31, 1976 were used in this evaluation. These documents describe the fire protection modifications and schedule dates for implementation of the modifications. The modifications and findings of this inspection are as follows:

a. Modifications:

Number	Location/Item	FPSER Commitment Paragraph	Status
Reactor Building - Unit 1		5.1	
(1)	RCP oil collection system	3.1.12	*Open
(2)	Hose stations/low pressure service water system	3.1.6	*Open
Reactor Building - Unit 2		5.1	
(3)	RCP oil collection system	3.1.12	Open
(4)	Hose stations/low pressure service water system	3.1.6	Open
Reactor Building - Unit 3		5.1	
(5)	RCP oil collection system	3.1.12	Open
(6)	Hose stations/low pressure service water system	3.1.6	Open
Control Room - Units 1 and 2		5.2	
(7)	Smoke detectors	3.1.1	Open
(7A)	Beneath ceiling		Open
(7B)	In cabinets and consoles		Open
(7C)	Adjacent rooms		Open
(8)	Seal cable penetrations to cable spreading room	3.1.3	Closed
(9)	Fire extinguisher/Class A	3.1.8	Closed
Control Room Unit 3		5.2	
(10)	Smoke detectors	3.1.1	Open
(10A)	Beneath ceilings		Open
(10B)	Cabinets		Open
(10C)	Adjacent Rooms		Open
(11)	Seal cable penetrations to spreading room	3.1.3	Closed
(12)	Fire extinguisher/Class A	3.1.8	Closed

(Cont'd.)

Number	Location/Item	FPSER Commitment Paragraph	Status
Auxiliary Building - 838 Foot Elevation		5.3	
(13)	Fire detectors	3.1.1	Open
(13A)	Storage areas		Open
(13B)	Protective clothing areas		Open
(14)	Hose stations	3.1.6	Open
Auxiliary Building - 796 Foot Elevation		5.4	
(15)	Smoke detectors	3.1.1	Open
(16)	Fire barrier/cable shaft	3.1.3	Closed
(17)	Fire door/HVAC Room - Unit 3	3.1.3	Open
(18)	Hose stations	3.1.6	Open
(19)	Water spray system each equipment rooms and cable shafts	3.1.16	Open
Auxiliary Building - 771 Foot and 783 Foot Elevations		5.5	
(20)	Hose stations	3.1.6	Open
(21)	Smoke detectors/storage areas	3.1.1	Open
(22)	Smoke detectors/shutdown equipment areas	3.1.1	Open
(23)	Hose station connection (EL 771 Foot and 783 Foot)	3.1.2	Closed
Auxiliary Building - 758 Foot Elevation		5.6	
(24)	Smoke detectors	3.1.1	Open
(24A)	High pressure injection pump area		
(24B)	Low pressure injection pump area		
(25)	Hose stations	3.1.6	Open
Cable Spreading Room - Unit 1		5.7	
(26)	Hose stations	3.1.6	Open
(27)	Cable penetration to equipment room	3.1.3	Closed
(28)	Manual water spray system	3.1.16	Open
Cable Spreading Room - Unit 2			
(29)	Hose stations	3.1.6	Open
(30)	Cable penetration to equipment room	3.1.3	Closed
(31)	Manual water spray system	3.1.16	Open

(Cont'd.)

Number	Location/Item	FPSER Commitment Paragraph	Status
Cable Spreading Room - Unit 3			
(32)	Hose stations	3.1.6	Open
(33)	Cable penetration to equipment room	3.1.3	Closed
(34)	Manual water spray system	3.1.16	Open
(35)	Fire door/HVAC room	3.1.3	Open
Battery Rooms		5.8	
(36)	Hose stations	3.1.6	Open
(37)	Smoke detectors/Unit 3	3.1.1	Closed
Penetration Areas		5.9	
(38)	Hose stations	3.1.6	***
Turbine Building		5.10	
(39)	Smoke detectors/area of shutdown cables	3.1.1	Open
(40)	Hose stations	3.1.6	Closed
Yard Area		5.13	
(41)	Propane tanks	3.1.7	Closed
Block Houses		5.14	
(42)	Upgrade bus duct penetration between transformer and switchgear	5.14.6	Closed
Keowee Hydro-Station			
(43)	Hose stations to reach all safety-related areas	3.1.6	Open
General Plant Areas			
(44)	Water flow alarm on sprinkler systems	3.1.5	Closed
(45)	Control room fire alarm signal	4.2	Open
(46)	Dual supply/auxiliary building hose stations	3.1.2	Closed

(Cont'd.)

Number	Location/Item	FPSER Commitment Paragraph	Status
General Plant Areas (Continued)			
(47)	Fire protection control valve supervision	4.3.1.3	Closed
(48)	Fire hose nozzles/spray type	3.1.11	Closed
(49)	Portable smoke removal equipment	3.1.9	**Closed
(50)	Emergency breathing apparatus	3.1.10	Closed
(50A)	Breathing apparatus units		Closed
(50B)	Refill unit		Closed
(51)	Portable hand lights for fire brigade	3.1.4	Closed
(52)	Fire barriers		
(52A)	Replace unlisted fire doors and frames with labeled units	3.1.3	Open
(52B)	Double fire doors/one door latched close	3.1.3	Open
(52C)	Modify fire doors between turbine and auxiliary buildings		Closed
(53)	Fire dampers/all fire barriers	3.1.3	Open
(54)	Interim safe shutdown measures	3.1.17	
(54A)	Dedicated spare cable for low pressure injection pumps		Closed
(54B)	Dedicated spare cable for high pressure injection pumps		***
(55)	Dedicated safe shutdown facility	3.1.14	Open
(56)	Administrative Procedures	3.1.15	Open
(57)	Reactor building communications	3.1.18	**Closed

Notes: *Refer to IE Report Nos. 50-269/80-7, 50-270/80-5 and 50-287/80-5 for details.

**Refer to Paragraph 5.b for additional information.

***This item not inspected.

b. Findings

Additional information on the "open" items and on the "closed items in Paragraph 5.a marked by "**" is listed below. The below listed number correspond to the numbered items in Paragraph 5.a.

(1), (3) and (5) The housings for the oil collection system to the upper and lower bearing oil level devices and upper bearing oil coolers are made of lightweight sheet metal. These housings do not appear capable of meeting the intent of their design for any appreciatable period of time due to their lightweight construction. Also, the drain lines from the housing to the drain tank are only approximately ½ inch tubing which appears too small for removal of an oil discharge into the housings. This item is identified as Unresolved Item (269/80-14-01, 270/80-09-01, 287/80-09-01), Reevaluation of Oil Collection Systems for Reactor Coolant Pumps, and will be reevaluated during a subsequent NRC inspection.

(2) (4) and (6) The standpipe (fire hose) system within the reactor building is supplied from the low pressure service water system. This system normally provided approximately 80 psi pressure at the low pressure service water pumps which are located on the 771 foot elevation of the turbine building with only approximately 50 psi being available at the highest hose system in the reactor building. Section 5-4.2 of National Fire Protection Association Standard 14 (NFPA-14), Standpipe and Hose Systems, requires a minimum water supply at the hydraulically most remote hose connection sufficient to provide a residual pressure of 65 psi with 100 gpm flowing. Section 2-1.10 of NFPA-14 specifies that the minimum size of piping for systems not exceeding 50 feet shall be at least 2 inches in size and if over 50 feet in height the minimum size is required to be 2½ inches. The standpipe system within the reactor building contains extensive amounts of 1½-inch piping which further reduces the pressure and volume of water available to the hose system.

Section E.3 of the FHA does not list the design commitments for the fire hose systems. However, Section 4.3.1.4 of the FPSER states that the fire hose systems meet the requirements of Appendix A of NRC's Branch Technical Position (BTP) 9.5-1, "Fire Protection Program". BTP 9.5-1 references and contains pertinent portion of the NFPA-14 criteria required to be provided to assure that effective fire streams are available from interior fire hose systems. This is identified as Unresolved Item (269/80-14-02, 270/80-09-02 and 287/80-09-02). Interior Fire Hose Systems Do Not Meet NRC Guidelines, pending further review by the licensee and the NRC.

(7) Section E.1 of the licensee's FHA lists the areas in which the fire detection systems deviate from the NRC guidelines of NFPA-72D, Proprietary Signaling Systems. An exception is not taken to the fire detection requirements of Section 3330 of NFPA-72D which requires detection equipment to meet the location and spacing requirements of NFPA-72E, Automatic Fire Detectors. However, the smoke detectors

installed as part of the fire protection modification program as well as those detectors previously installed do not meet the provisions of Section 4-3 of NFPA-72E primarily due to excessive spacing between detectors and improper location of detector. Section 4.2 of the FPSER states that the system "in general" complies with the essential provision of NFPA-72D. This item is identified as Unresolved Item (269/80-14-03, 270/80-09-03 and 287/80-09-03) Fire Protection Smoke Detection Systems Do Not Meet the NRC Guidelines, pending further review.

(10), (13), (15), (21), (22), (24), and (39) Refer to above item No. 7.

(14) The interior fire hose (standpipe) systems do not meet the NRC guidelines of Section C.3.d.1 in Appendix A to BTP 9.5-1 due to the following:

(1) Piping systems utilize extensive amounts of 1½-inch pipe whereas the minimum size permitted is 2½-inch pipe for single hose stations.

(2) Volume of water available in some areas is inadequate to produce effective fire streams.

(3) Hose connections in many areas are located within unoccupied areas whereas the BTP requires these to be located outside the entrances to the areas.

This item is identified as another example of Unresolved Item (269/80-14-02, 270/80-09-02 and 287/80-14-02), Interior Fire Hose Systems Do Not Meet The NRC Guidelines.

(18), (23), (25), (26), (29), (32), (36), (38) and (40). Refer to above item (14).

(17) The door into the HVAC Room on the 796' elevation has not been replaced with a fire rated door. Also, refer to items (52) and (53) for additional information.

(19), (28), (31) and (34) The water spray systems installed in the cable spreading and equipment rooms do not conform to NRC guidelines or any recognized industry standards and the description of the systems in the FPSER is inadequate to permit a detailed inspection and evaluation of the systems. This item is identified as Unresolved Item (269/80-14-04, 270/80-09-04, 287/80-09-04). Water Spray Extinguishing Systems For Cable Spreading and Equipment Rooms Do Not Conform to NRC Guidelines, pending further evaluation.

(43) The hose stations for the Keowee hydro-plant are supplied from the suction piping to the plant fire pump. The pressure on the suction piping to the pump is too low to produce effective fire streams. This arrangement is also prohibited by the fire pump installation criteria

of NFPA-20, Centrifugal Fire Pumps. This is identified as another example of Unresolved Item (269/80-14-02, 270/80-09-02, and 287/80-09-02), Interior Fire Hose Systems Do Not Meet NRC Guides.

(45) A unique alarm signal has not been provided for the fire alarm control panels in the control rooms as stated by Section 4.2 of the FPSER. This is identified as Unresolved Item (269/80-14-05, 270/80-09-05 and 287/80-09-05), Unique Alarm Signal For Fire Alarm Panels Not Provided in Control Rooms, pending further review.

(50) Two portable smoke removal fans have been provided for fire brigade use. However, during this inspection these two fans were being used for removal of welding fumes from operations being conducted in a poorly vented area. The licensee advised that this was a special one time application of these fans and that instructions were to be established to control the future unauthorized use of these fans.

(52) and (53) The FPSER required a number of modifications to be made to the fire barriers within the plant. However, the details provided within the FPSER and the FHA are inadequate to permit an evaluation of the licensee's accomplishments and commitments. This item is identified as Unresolved Item (269/80-14-06, 270/80-09-06 and 287/80-09-06), Fire Barriers Are Not Delineated, pending further review.

(56) Administrative procedure

(1) A new procedure is to be prepared by the licensee for the control of combustible/flammable materials used within the plant. This procedure and its implementation will be reviewed during a subsequent NRC inspection. This item is identified as Inspector Followup Item (269/80-14-07, 270/80-09-07 and 287/80-09-07), Review of Administrative Procedure For Control of Combustible Materials. The licensee advised that the preparation of this procedure should be completed by July 1, 1980.

(2) The procedure for open flame permits requires permits to be approved by a responsible supervisor, but the procedure does not require this supervisor to be trained in the area of fire prevention prior to approving permits. The licensee has recognized this problem and has provided the required training for most of the supervisor. The licensee advised that the remaining supervisors will also be trained and the procedures will be revised prior to July 1, 1980 to restrict open flame approval authority only to those who have completed the required training. This item is identified as Inspector Followup Item (269/80-14-08, 270/80-09-08 and 287/80-09-08), Revisions to Open Flame Permit Procedure, and will be reviewed during a subsequent NRC inspection.

(3) The Keowee Hydro-Plant is considered safety-related; however, the fire protection systems are not included in the Oconee Plant's Technical Specifications. The licensee agreed to review the inspection and test procedures for the fire protection system at

Keowee to assure that these requirements are consistent with the requirements at the Oconee Plant. This item is identified as Inspector Followup Item (269/80-14-09, 270/80-09-09 and 287/80-09-09), Inspection and Test Procedures for Fire Protection Systems at Keowee Plant, and will be reviewed during a subsequent NRC inspection.

c. Plant Tour

A tour was made of the plant to review the above completed fire protection modifications, to verify that the existing fire protection systems were in service and to review the licensee's compliance to the administrative procedures for the control of fire hazards within the plant. The following discrepancies in addition to the above identified items were noted:

(1) Battery Room Ventilation

The ventilation system for Units 2 and 3 battery rooms appear marginal, but the system for Unit 1 battery room appears totally inadequate. There is a mechanical air supply to the room but there is not an exhaust outlet. The licensee advised that a new ventilation system is to be designed (Design No. 1 NSM 1230) for this room by August 1980 with construction scheduled for 1981. This item is identified as Inspector Followup Item (269/80-14-10), Installation of Unit 1 Battery Room Ventilation System, and will be reviewed during a subsequent NRC inspection.

(2) Combustible Fire Loading - Room 347

The combustible fire loading adjacent to the personnel entrance hatch to the Unit 2 reactor building (Room 347) is very high and appear to warrant additional fire protection considerations. Section D.1(6) of the FHA states that the FHA will be reviewed and updated as necessary. Current data in the FHA does not reflect this very high fire loading. The licensee advised that this item would be referred to the corporate office for further review. Therefore, this item is identified as Unresolved Item (270/80-09-11), Review of fire loading room 347 (Unit 2), and will be reevaluated upon completion of the licensee's review.

Within the areas examined, no items of noncompliance or deviations were identified.