



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-424/86-81 and 50-425/86-39

Licensee: Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Docket Nos.: 50-424 and 50-425

License Nos.: CPPR-108 and CPPR-109

Facility Name: Vogtle 1 and 2

Inspection Conducted: August 28 and September 2-5, 1986

Inspector:

W. H. Miller, Jr.
W. H. Miller, Jr.

9-29-86
Date Signed

Approved by:

T. E. Conlon
T. E. Conlon, Chief, Plant System Section
Engineering Branch
Division of Reactor Safety

9-29-86
Date Signed

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of fire prevention/protection and followup of previous NRC identified items.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. F. Belflower, QA Site Manager/Operations
- *R. H. Blount, Mechanical Field Operations
- N. Brooks, Civil Engineering Section Manager
- A. Ebrahimi, Civil Engineer
- *M. H. Googe, Project Construction Manager
- *E. D. Groover, QA Site Manager/Construction
- *C. Hayes, QA Manager
- D. Hall, Mechanical Engineer
- D. Innes, Civil Engineering Section Supervisor
- *R. W. McManus, Assistant Project Construction Manager
- *W. T. Nickerson, Assistant to Project Director
- *D. P. Ross, Electrical Field Operations
- *R. Sprankle, Senior Engineer - Fire Protection

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, mechanics, security force members, and office personnel.

Other Organizations

- *R. L. George, SCS Engineering Manager
- *J. M. Maddry, SCS - Fire Protection Engineer
- J. N. McLeod, SCS - Licensing
- D. Schooner, Pullman - QA
- R. Shpall, Bechtel, Engineering
- *A. J. Strunk, Bechtel - Fire Protection
- *B. C. Woodley, Bechtel - Fire Protection Coordinator

NRC Resident Inspectors

- *J. Rogge
- *H. Livermore

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 5, 1986, with those persons indicated in paragraph above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new item was identified during this inspection.

- Inspector Followup Item (424/86-81) Resolve Conflicts Between FSAR Fire Protection Commitments and As-Built Plant Conditions. These include the following:
 - ° Area photoelectric fire detectors are not to be provided for containment as stated by FSAR 9B C.7.a.
 - ° Manual deluge systems are not provided for charcoal filter units as stated by FSAR 9B C.5.f(4).
 - ° Photoelectric smoke detectors are provided in Zone 141A of the purge exhaust area in lieu of both ionization and photoelectric type detectors as stated by FSAR 9A.1.33.M.
 - ° Smoke detection system is not provided for control room complex as stated by FSAR 9A.1.81.M.
 - ° Automatic sprinkler protection is not provided for nuclear service cooling water pumps as stated by FSAR 9B C.7.k.
 - ° Seismic fire hose system is not provided for the nuclear service cooling water pump house as stated by FSAR 9A.1.125.
 - ° An interior fire hose system is not provided for the nuclear service water pump house as stated by FSAR 9A.1.125.N.
 - ° Flame type detector are installed over the nuclear service cooling water pumps in lieu of ionization type detectors as stated by FSAR 9A.1.125.M. - paragraph 5.b.

This item is an inspector followup item in lieu of an enforcement item since the plant is not yet licensed or operating.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Operational Fire Prevention/Protection Program (Module 64704)

a. Fire Brigade Training and Drills

Following the NRC Region II inspection of July 21-25, 1986 (Report No. 424/86-64), the licensee initiated an extensive fire brigade training and drill program for the operations fire brigade. This

training included dress out procedures in fire fighting turnout gear, fire fighting strategies, fire brigade leadership training and practice fire drill sessions for all operations fire brigade members. Plant Procedure 92030-C, Fire Drill Program, is being prepared to describe fire drills, fire brigade duties and means of implementation of the fire brigade drill program. The implementation of the fire brigade drill program has been transferred from the Training Department to the Plant Engineering Department.

During this inspection, the inspector witnessed an announced fire brigade drill. The drill fire scenario was a fire in the nuclear fuel receipt building. The apparent drill fire condition was caused by a fire involving a truck delivering nuclear fuel. Five fire brigade members responded to the pending fire emergency. The brigade assembled outside the fuel receipt area in full protective firefighting turnout clothing and self contained breathing apparatus. An initial size-up of the fire conditions was made by the fire brigade leader and two 1½ inch fire attack hose lines were advanced into the area. The fire attack hose lines were placed in service on the fire and the fire was placed under control in 21 minutes.

The fire brigade utilized proper manual firefighting methods and reacted to the fire drill scenario in an effective and efficient manner. However, the following problems were encountered during the drill:

- Control room operator did not obtain name of person reporting the fire by phone.
- Security personnel entered the fire area.
- Health physics personnel did not respond to the fire emergency.
- Radio communications in some areas of the plant were not possible or radio transmission was not clear.

The performance of the brigade and other plant personnel during fire drill conditions is expected to continue to improve with increased training. The fire brigade performance will be reviewed during future NRC inspections.

b. Permanent Plant Fire Protection Features

The status of the construction and installation of the permanent plant features for Unit 1 is as follows:

- Fire pumps and tanks: construction is complete and preoperational tests are in process.

- Yard main, hydrants, hose houses, etc.: construction is complete, except approximately 10% of the hose houses are not yet installed and the equipment has not yet been installed in approximately 30% of the hose houses.
- Automatic sprinkler systems: construction is approximately 95% complete but 15 of the installed systems require some rework. No preoperational functional tests have been conducted.
- Halon systems: electrical and piping system installations are complete, but supply cylinders for two of the five systems are not yet installed. No preoperational functional test have been conducted.
- Fire detection system: construction is approximately 80% complete and only approximately 5% of the system has been functionally tested.
- Fire doors: construction is approximately 95% complete, but none of the doors have received a surveillance verification.
- Fire dampers: construction is approximately 75%. No preoperational tests are required for the dampers.
- Penetration seals: construction is approximately 50% complete.
- Cable raceway fire barrier: construction has not yet started on these fire barriers.

The inspector reviewed the fire protection features provided in the following plant areas to verify that the "as-built" features met the FSAR fire protection commitments. The areas inspected were found satisfactory except as noted.

<u>Plant Area/Fire Protection Feature</u>	<u>FSAR Commitment</u>	<u>Status</u>	<u>*Comment Notes</u>
Containment (1-CTB)			
Oil Collection System	9B C.7.a	Complies	1
Fire Hose Station	9B C.7.a & 9.5.1.2.2.6	Complies	NA
Seismic Fire Hose Station	9A.1.111	Complies	NA
Fire Detection	9A.1.111		
- Line type	9B C.7.a	Complies	2
- Flame detectors	9B C.7.a	Not inspected	3
- Photoelectric detectors	9B C.7.a	Not inspected	4
Water Spray System			
- Charcoal filter units	9A.1.111	Complies	5

<u>Plant Area/Fire Protection Feature</u>	<u>FSAR Commitment</u>	<u>Status</u>	<u>*Comment Notes</u>
Purge Exhaust Area (1-AB-L2-A)			
Automatic Sprinkler System	9A.1.33	Complies	NA
Fire Hose Station	9A.1.33	Complies	NA
Seismic Fire Hose Station	9A.1.33	Complies	NA
Water Spray System			
- Charcoal filter units	9B C.5.f.(4)	Non-compliance	6
Fire Detection System		Non-compliance	7
Fire Barriers		Incomplete	3
Control Room Complex (1-CB-L1-A)			
Fire Detection	9A.1.81		
- Control room		Non-compliance	8
- Peripheral rooms		Complies	NA
Fire Hose Stations		Complies	NA
Fire Barriers		Incomplete	3
Carpet		Not installed	NA
Nuclear Service Cooling Water Pump House (9A.1.125)			
Automatic Sprinklers			
- Pump room	9B C.7.k	Non-compliance	9
- Tunnel 1T5A (Zone 145)	9A.1.125.N	Complies	NA
Fire Hose Station	9A.1.125.N		
- Pump room		Non-compliance	10
- Tunnel 1T5A		Complies	NA
Seismic Fire Hose Station	9A.1.125.N	Non-compliance	10
Fire Detection System	9A.1.125.M	Non-compliance	11
Auxiliary Feedwater Pump House (1-AFB-A)			
Automatic Sprinkler System	9A.1.121.N	Complies	NA
Fire Hose Station	9A.1.121.N	Complies	NA
Fire Detection System	9A.1.121.M	Complies	NA
Auxiliary Feedwater Pump House (1-AFB-C)			
Automatic Sprinkler System	9A.1.123	Complies	NA
Fire Hose Station	9A.1.123	Complies	NA
Fire Detection System	9A.1.123	Complies	NA

*Comment Notes:

1. Walkdown inspection was made of the oil collection system for reactor coolant pump No. 1. This systems appears to meet the FSAR commitments.
2. Line type fire detectors are to be installed within each safe shutdown cable tray. Tray 1AE50ATLBB was inspected and verified to include line type fire detector system. Installation of these detectors were in process.
3. These items had not yet been installed or construction was incomplete.
4. FSAR 9B C.7.a states that photoelectric fire detectors are provided for area coverage. However, FSAR 9A.1.111 does not identify were the detectors are to be installed.
5. Charcoal filter unit 1504-N7-001 was inspected and verified to have a manufacturers installed water spray system supplied from the containment fire protection water system. The system is designed to be manually actuated from the control room.
6. FSAR 9B C.5.f.(4) states that the charcoal filter units at Vogtle are protected by manual deluge systems. The systems outside of the containment are being modified by placing a blank in a flange joint on the water supply pipe side of the deluge valve or by removing a spool piece in the piping between the deluge valve and the filter unit and proving pipe caps on each ends of the pipes. This arrangement has reduced the effectiveness of the deluge valves since the systems can no longer be manually operated from the control room. This arrangement does not appear to meet the intent of the NRC guidelines or FSAR commitments.
7. FSAR 9A.1.33.M states that zone 14¹/₂ in this fire area is to be provided with ionization and photoelectric smoke detectors. However, only photoelectric detectors are indicated on the drawings.
8. FSAR 9A.1.81.M and 9B C.7.b state that the control room is provided with a smoke detection system. However, the smoke detectors are installed above the suspended ceiling. This arrangement does not meet installation code requirements of NFPA 72E, Automatic Fire Detectors. This item was previously identified by NRC Report 424/86-64.
9. Automatic sprinkler protection is not provided for the nuclear service cooling water pumps as stated by FSAR 9B C.7.k.

10. A seismic hose station system and an interior fire hose system are not provided for the nuclear service cooling water pump house structure as stated by FSAR 9A.1.125.N.
11. Flame type fire detectors are installed over the nuclear service cooling water pumps in lieu of ionization type detectors as stated in FSAR 9A.1.125.M.

The above identified items which do not meet the FSAR commitments are identified as Inspector Followup Item (424/86-81-01), Resolve Conflicts Between FSAR Fire Protection Commitments and as-built plant conditions.

The inspector reviewed the QA/QC documentation records for the following components and verified that these features were installed under a QA program which met the FSAR commitments:

<u>Location/Component</u>	<u>Identification No.</u>
Containment Building	
Fire hose station	1-2301-R4-201 1-2301-031-01
Seismic standpipe system	1K4-2303-001-01 1K4-2303-002-01
Feed to filter unit	1J4-2301-235-04
Feed to containment	1K3-2301-063-01
Control Building	
Seismic standpipe system	1K2-2303-013-02
Feed to filter unit	1J2-2301-220-01
Auxiliary Feedwater Pump House	
Fire hose stations	1K5-2301-117-01 1K5-2301-113-01
Tunnel 1T5A	
Fire hose stations	1K5-2301-084-01 1K5-2301-085-02

c. Fire Protection QA Program

The inspector reviewed the licensee's draft Fire Protection Quality Assurance Program Evaluation dated September 2, 1986. This evaluated reviewed the existing QA program applied to the design, construction, installation and testing of the fire protection features being provided at Vogtle. The evaluation confirmed that the following three construction features, identified by NRC Report 424/86-64, were not installed under a QA program which met the FSAR commitments: seismic gap fire barrier penetration seals; structural steel fire proofing installed since April 1986; and, portions of the electrical component installations. Two additional features, fire doors and 3-hour metal

stud-plaster walls, were also identified as not being installed under a QA Program. These are considered another example of Deviation (424/86-64-05 and 425/86-30-01), QA Program for Fire Protection Systems Installation Does Not Meet NRC Branch Technical Position CMEB 9.5.1. The evaluation included a number of recommendations that the Vogtle QA Department should consider to implement in order to enhance the existing program and to provide a satisfactory QA program for the existing deficient areas. The licensee's action on this evaluation report will be reviewed during subsequent NRC inspections.

Except as noted above, no additional violations or deviations were identified within the areas examined.

6. Inspector Followup Items (IFI)

- a. (Closed) IFI 424 and 425/84-34-02, Fire Pump Installation Discrepancies. The licensee has corrected the previously identified discrepancies, except for the replacement of one unapproved valve in the suction pipe of the electric driven pump. Replacement of this valve is in process. A point by point comparison of the installed electric fire pump controller to the requirements of NFPA-20 has been made by the licensee and the installed controller has been found acceptable by the NRC/NRR staff (SER dated June 1985). The flywheels to both diesel driven fire pump engines were examined, found to be cracked, and replaced as stipulated in IE Information Notice 84-92. One pump has been functionally tested and the remaining pump is to be tested by early October 1986. The functional tests for all pumps will be reviewed during a subsequent NRC inspection. This item is closed.
- b. (Closed) IFI 424/86-13-01 and 425/86-07-01, Implementation of Fire Protection System Valve Alignment and Control Verification Procedures. Procedure 92449-C, Fire Suppression System Monthly Valve Position Verification (Rev. 0) has been issued and implemented for valves associated with the fuel storage portion of the plant. The entire procedure will be implemented prior to fuel load and licensing. This item is closed.
- c. (Closed) IFI 424/86-13-02 and 425/86-07-02, Fire Main Yard Piping Discrepancies from Guidelines of NFPA-24. The licensee has evaluated the fire protection yard piping at Vogtle and determined that the methods of pipe joint restraints meet or exceed the requirements of NFPA-24. It appears that the unanchored piping noted by the inspector involved work in process and in which the pipe joint restraints had not yet been installed. The methods of joint restraint are detailed on construction drawing No. CX20990005. This item is closed.
- d. (Open) IFI 424/86-13-03 and 425/86-06-03), Engineering, Analysis, Testing and Justification of Non-Standard Penetration Seal Configuration. A number of fire barriers penetrations exceed the largest size approved by the manufacturer of the penetration seal material. This item requires a FSAR deviation request.

Fire barrier seals are being provided for the high voltage bus-duct openings. Cable tray supports, installed within the fire barrier penetration openings, have been evaluated by the licensee and are considered to be no greater hazard than other mechanical penetrations. Combustible styrofoam or other combustible materials are not used in the seismic gap seals that separate two fire areas.

However, this item remains open pending licensee's FSAR documentation of the large excessive sized fire barrier penetration seals and NRR approval of these penetrations.

- e. (Closed) IFI 424/86-55-01 and 425/86-28-01, Development and Implementation of Periodic Inspections of the Plant for Compliance with All Fire Protection Requirements. Procedure 92010-C, Weekly Fire Inspections is being issued by the licensee and is to be implemented in areas of the plant turned over to operations. Implementation of this procedure should resolve the inspectors concerns. This item is closed.
- f. (Closed) IFI 424/86-55-03, Verification of Fire Brigade Personnel Qualification and Shift Fire Brigade Drills. The licensee has reviewed the qualifications and training of all fire brigade members and provided a list of personnel who are qualified for fire brigade duties. Sufficient qualified fire brigade members have been assigned to each shift to assure that a minimum of five fire brigade members will be available for fire fighting duties on each shift. The fire brigade organization and training will continue to be reviewed during future NRC inspections. Therefore, this item is closed.
- g. (Open) IFI 424/86-55-04, Verification of Corrective Action on QA Audit Items. The licensee's fire protection audit of July 16, 1986, identified seven problems. Corrective action on these items are in process. This item remains open.
- h. (Closed) IFI 424/86-55-05, Functional Testing of Hydrogen Gas Excess Flow Valve. The licensee conducted a functional test of excess flow valve No. PCV-19674 by work order MWO-A-86-02319, but the valve failed to function. The hydrogen gas supply piping inside the auxiliary building has been analyzed by the licensee to the project criteria for seismic Category 2 piping in seismic Category 1 structures or areas. This consisted of stress analysis to insure that the piping is supported such that the integrity of the pressure boundary is maintained. Although, this analysis does not assure that the system meets seismic Category 1 criteria, it indicates that in the event of a seismic event the hydrogen piping system should not fail and damage safety related components and that hydrogen leakage will not occur. The hydrogen system appears to meet the intent of FSAR Appendix 9B Section C.5.d(5) without the excess flow control valves. Therefore, this item is closed.