



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

Report No.: 50-424/88-39

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

Docket No.: 50-424

License No.: NPF-68

Facility Name: Vogtle 1

Inspection Conducted: August 29 - September 2, 1988

Inspector: *A. E. Conlon for* 9/26/88
D. C. Ward Date Signed

Approved by: *A. E. Conlon* 9/26/88
T. E. Conlon, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of Fire Protection/Prevention and follow-up on previously identified inspection items.

Results: The inspector identified the following strengths in the implementation of the licensee's fire protection program:

- The licensee's training program for the fire brigade leader and fire brigade members appears to be very effective. This is evident based on the quality of the fire brigade performance in drills witnessed by the inspector during this inspection and in a previous inspection (87-71).
- The licensee's management program for ensuring fire brigade members attend the required training and for documenting brigade qualifications appears to be effective. This is evident based on the quality of the fire brigade training records reviewed.
- The licensee's management is responsive to NRC initiatives. This is evident based on the licensee's procurement of two firefighting foam carts and radios for fire brigade use which were recommendations in a previous inspection report. In addition, the licensee actively pursued the resolution of all previous open items identified in the fire protection area.

The following weakness was identified.

- The licensee's FSAR action statement for compensatory measures to be taken when fire detection instrumentation becomes inoperable does not appear adequate to implement the defense-in-depth concept outlined in NUREG 0800, Section 9.5-1, "Standard Review Plan - Fire Protection Program."

Within the areas inspected, the following violation was identified:

- Failure to Implement Action Statement for Inoperable FSAR Fire Hydrant.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. Burns, Manager, Nuclear Licensing
- *H. Butterworthy, Supervisor, Operations
- *P. Cail, Senior Training Specialist
- *S. Driver, Superintendent, Plant Training
- *G. Frederick, Manager, Site Quality Assurance
- *W. Gabbard, Senior Regulatory Compliance Specialist
- *T. Greene, Manager, Plant Support
- *A. Mosbaugh, Assistant Manager, Plant Support
- *W. Nicklin, Supervisor, Regulatory Compliance
- *R. Sprankle, Senior Plant Engineer
- *J. Swartzwelder, Manager, Regulatory Compliance
- *H. Varnadoe, Supervisor, Plant Engineering

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, mechanics, security force members, technicians, and administrative personnel.

NRC Resident Inspectors

- *J. Rogge
- *R. Aiello

*Attended exit interview

2. Fire Protection/Prevention Program (64704)

a. Fire Prevention/Administrative Control Procedures

The inspector reviewed the following Fire Prevention/Administrative Procedures:

<u>Procedure No. Revision</u>	<u>Title</u>
00350-C/Rev. 13	Maintenance Program
92000-C/Rev. 4	Fire Protection Program
92005-C/Rev. 3	Fire Response Procedure
92010-C/Rev. 3	Weekly Fire Inspections
92026-C/Rev. 3	Fire Protection Work Evaluation
92027-C/Rev. 4	Fire Watch Program
92035-C/Rev. 3	Fire Protection Operability Requirements

Based on this review, it appears that the above procedures meet the NRC guidelines of NUREG-0800, Section 9.5-1, "Standard Review Plan - Fire Protection Program," and the licensee's commitments outlined in the Vogtle Final Safety Analysis Report (VEGP FSAR), except the operability requirements for fire detection instrumentation in Procedure 92035-C and Section 9.5-1 of the VEGP FSAR.

These operability requirements presently allow up to one half of the Function A, alarm only, detectors to be inoperable without requiring any compensatory measures to be established. The inspector noted that some detection zones at Vogtle include a large number of detectors (examples are Zones 99 and 46). Detectors in these zones provide coverage to large areas which include a number of small rooms. Under the present operability requirements, it is possible for a number of individual rooms to be without detection and without compensatory measures being implemented. This does not appear to adequately implement the "defense-in-depth" concept outlined in Section 9.5-1 of the Standard Review Plan. In addition, the inspector noted that the licensee's operability statement was not consistent with the operability statement for fire detection instrumentation in Revision 5 of the Standard Technical Specifications. Section 3.3.3.8, Action Statement b, of the Standard Technical Specifications requires an hourly fire watch to be established when any two or more adjacent fire detection instruments are inoperable. Based on these concerns, the inspector requested the licensee evaluate the need to add the requirements to establish an hourly fire watch whenever any two or more adjacent detectors are inoperable with respect to their fire detection operability requirements. This is identified as an Inspector Followup Item (IFI) 88-39-01, Evaluate Need To Upgrade The Fire Detection Operability Requirements.

b. Fire Protection Surveillance Procedures

The inspector reviewed the following Fire Protection System Surveillance Procedures:

<u>Procedure No. Revision</u>	<u>Title</u>
92403-C/Rev. 6	Hydrant Hose House Monthly Visual Inspection
92413-C/Rev. 2	Fire Pump Batteries Quarterly Inspection
92431-C/Rev. 1	Deluge System - Annual Visual Inspection and Cleaning
92433-C/Rev. 3	Fire Hydrant Annual Flow Check and Hose Hydro Inspection
92443-C/Rev. 1T	Fire Dampers - 18 Month Visual Inspection

92445-C/Rev. 2	Fire Rated Cable and Conduit Wrap and Radiant Energy Shield Assemblies - 18 Month Visual Inspection
92499-C/Rev. 3	Fire Suppression System - Weekly Surveillance

The above surveillance procedures were reviewed to determine if the various test outlines and inspection instructions adequately implement the surveillance requirements of VEGP FSAR. In addition, these procedures were reviewed to determine if the inspection and test instructions followed general industry fire protection practices, NRC fire protection program guidelines and the guidelines of the National Fire Protection Association (NFPA) Fire Codes. Based on this review, it appears that the above procedures are satisfactory.

c. Fire Protection System Surveillance Inspections and Tests

The inspector reviewed the following surveillance inspection and test records for the dates indicated:

<u>Procedure No.</u>	<u>Test Results Reviewed</u>
92403-C	1/27/88, 2/22/88, 3/28/88, 4/26/88, 5/25/88, 6/24/88, 7/26/88
92413-C	8/29/86, 11/17/86, 2/16/87, 6/20/87, 8/10/87, 11/6/87, 3/1/88, 5/9/88
92431-C	7/10/87
92433-C	9/22/86, 8/23/87, 8/16/88
92499-C	5/11/88, 5/18/88, 5/25/88, 6/1/88 6/8/88, 6/15/88, 6/22/88, 6/29/88 7/6/88, 7/13/88, 7/20/88, 7/27/88, 8/3/88

The surveillance test record data and testing frequency associated with the above fire protection system surveillance test/inspections were found to be satisfactory with regard to meeting the requirements of the VEGP FSAR.

In addition, the inspector witnessed the weekly surveillance of the Fire Suppression System conducted under Procedure 92499-C. During the test, it was noted that a portion of the procedure for testing the electric fire pump could not be run in the step sequence outlined in the procedure. Specifically, for restoring the pump the procedure instructs the operator to place the pump in "Auto" prior to

realigning system valves. The pressure tap which provides the start signal to the pump controller on low header pressure is on the pump side of the loop isolation valve which is closed during the test. Therefore, whenever the operator attempted to place the pump in "Auto", the pump would start on low header pressure. The fire protection engineer generated a temporary change to the procedure to instruct the operator to realign the system valves prior to placing the pump in the "Auto" mode. This will eliminate the problem. The inability to perform the surveillance in the sequence outlined in the procedure had no impact on the acceptability of the test results.

d. Fire Protection Audit

The most recent audit reports of the Vogtle Fire Protection Program were reviewed. These audits were:

QA Audit of Fire Protection Program, April 7-21, 1988,
OP20-88/14

Nuclear Mutual Limited Periodic Inspection, January 19-22, 1988

These audits identified several fire protection program discrepancies and unresolved items, and recommended several program improvements. The licensee has either implemented the corrective actions associated with these audit findings or a scheduled date for completion of the corrective actions had been established. The licensee appears to be taking the appropriate corrective actions on these audit findings.

e. Fire Brigade

(1) Organization

The total station fire brigade is composed of approximately 120 personnel from the Operations staff. The on duty shift fire brigade leader is one of the licensed operators and the remaining four fire brigade members are composed of plant equipment operators. The inspector reviewed the on duty shifts for the following dates and verified that sufficient qualified fire brigade personnel were on duty to meet the provisions of the plant's Technical Specification and VEGP FSAR.

June 1988

July 1988

In addition, the inspector verified that sufficient personnel were assigned to each shift to meet the minimum operating and fire brigade staff requirements of the Technical Specifications and VEGP FSAR. Therefore, it appears based on the review of the duty rosters associated with the above dates, that there was sufficient manpower on duty to meet both the operational and the fire brigade requirements of the plant's Technical

Specifications and VEGP FSAR. One minor clerical error was identified during this review in the assignment of fire brigade members in the Shift Supervisor log for the AM shift June 2, 1988. However, the inspector was able to verify that five qualified brigade members were available on shift. This was considered an isolated incident and is, therefore, not identified as an inspector finding.

(2) Training

The inspector reviewed the training and drill records for six brigade leaders and nine brigade members for calendar years 1987 and 1988. The records reviewed indicated that each of these leaders and members had attended the required training and had participated in the required number of drills. The inspector also verified that a fire brigade drill had been conducted every three months for each shift for fourth quarter 1987 through second quarter 1988. The fire brigade training records which were inspected were found satisfactory.

In addition, the inspector reviewed the licensee's new training program for fire brigade leaders. The lesson plans for the program have been approved and the Training Department is presently determining how to effectively implement the program. The training is presently planned to be made up of an initial 14-16 hours of training and followed up by retraining to be conducted on a two year cycle.

The inspector reviewed the following lesson plans:

<u>Lesson Plan</u>	<u>Title</u>
FP-LP-01101-00	Introduction and Overview
FP-LP-01102-00	Fire Team Captain; Functions and Responsibilities
FP-LP-01103-00	Fire Ground Command Systems
FP-LP-01104-00	Emergency Scene Sizeup
FP-LP-01105-00	Manpower and Resource Utilization and Allocation
FP-LP-01106-00	Fire Scene Safety
FP-LP-01107-00	Strategy and Tactics
FP-LP-01108-00	Fire Cause and Determination
FP-LP-01109-00	Brigade Leader Simulator Training

These lesson plans appeared to be complete and should be very beneficial to the brigade leaders once the training program is implemented.

(3) Fire Brigade Drill

During this inspection, the inspector witnessed an unannounced fire brigade drill. The drill fire scenario was a fire in the Train A Electrical Chase (Room 19) of the Auxiliary Building which was apparently caused by an intentionally set flammable liquids fire in the room.

Five fire brigade members responded to the pending fire emergency. The brigade assembled outside the Electrical Chase in full protective firefighting turnout clothing and self contained breathing apparatus. An initial size-up of the fire condition was made by the fire brigade leader. The leader determined that the Electrical Chase was inaccessible at that time to safely initiate manual fire fighting activities within the chase. Therefore, the leader initiated fire fighting activities around the perimeter of the Electrical Chase to prevent the fire from spreading outside the chase until offsite assistance arrived. In addition, the brigade leader directed the brigade to trip the preaction sprinkler systems in adjacent areas. After approximately twenty minutes, the drill controller allowed the brigade to simulate entering the electrical chase. At this time, the brigade leader directed the brigade to enter the room with one 1-1/2 inch fire hose and the fire was placed under control.

The overall performance of the fire brigade was very good. The brigade utilized proper manual firefighting methods and reacted to the drill scenario in an effective and efficient manner. The performance of the fire brigade leader was excellent. The leader performed an effective size-up of the fire and clearly and consistently directed the brigade in their duties. In addition, the leader established a command post near the fire area and maintained constant and effective communications with the control room, and brigade members.

f. Plant Tour and Inspection of Fire Protection Equipment

(1) Outside Fire Protection Walkdown

The inspector verified that the two water storage tanks contained sufficient water to meet the requirements of the VEGP FSAR. The three fire pumps were inspected and found to be in service. The diesel fuel tanks for the diesel driven fire pumps were above the minimum fill line established to satisfy the requirements of the VEGP FSAR.

The following sectional control valves in the outside fire protection water supply system were inspected and verified to be properly aligned and locked in position:

<u>Valve No./Position</u>	<u>Description</u>
T02/Open	Diesel Fire Pump #1 Suction
T03/Open	Diesel Fire Pump #2 Suction
T04/Open	Electric Fire Pump Suction
O11/Open	Electric Fire Pump Discharge
O14/Open	Diesel Fire Pump #2 Discharge
O26/Open	Diesel Fire Pump #1 Discharge

The following fire hydrants and fire hydrant equipment houses were inspected:

<u>Hydrant Number</u>	<u>Location</u>
C-2301-U4-941	SSE of NSCW Tower A
C-2301-U4-943	ESE of NSCW Tower A
C-2301-U4-946	SE of DG Building
C-2301-U4-994	SW of NSCW Tower B

During the fire hydrant inspection, the inspector noted that loop isolation Valve 639 was closed and as a result it appeared Hydrant C-2301-U4-994 was isolated from the VEGP FSAR water supply. This fact was confirmed through discussions with the Vogtle Fire Protection Engineer (FPE) and site engineers involved in the flushing of Unit 2 fire protection systems. Hydrant C-2301-U4-994 is isolated from the VEGP FSAR water supply on a daily basis to facilitate the Unit 2 flushing. The isolation is implemented by closing three loop isolation valves, 639, 650, and 791.

Hydrant C-2301-U4-994 is one of four hydrants the licensee requires in Section 9.5-1, Table 9.5.1-10 of the VEGP FSAR to be maintained operable or to implement compensatory measures when the hydrant is inoperable. Contrary to this requirement, Hydrant C-2301-U4-994 was found inoperable, isolated from the VEGP FSAR water supply, without the compensatory measures outlined in Action Statement 6.3 of Table 9.5.1-10 being implemented. This item is identified as a Violation (88-39-02), Failure to Implement Action Statement for Inoperable FSAR Fire Hydrant.

In response to this finding, the licensee immediately implemented the requirements of Action Statement 6.3 by placing additional fire hose at Hydrant Hose House C-2301-04-941 within one hour of the inspectors finding. Full compliance with the VEGP FSAR was achieved at this time. In addition, the licensee's FPE had detailed discussions with the site engineers conducting the Unit 2 flushing to ensure that similar problems would not occur. The inspector noted that the licensee's failure to implement the Action Statement was of minor safety significance since Hydrant C-2301-U4-994 protects the yard area around the "B" Nuclear Service Cooling Water Tower. If a fire had occurred the fire

brigade could easily have used additional hose to reach the area from an operable hydrant with only minimal delay. Based on licensee's immediate corrective actions, actions taken to prevent similar violations and the minor safety significance, of the deficiency, no violation is being cited.

The equipment houses contained the minimum equipment requirement of that specified by NFPA-24, Private Fire Service Mains and Their Appurtenances, and/or the FSAR commitments. The equipment appeared to be adequately maintained.

A tour of the exterior of the plant indicated that sufficient clearance was provided between permanent safety-related buildings and structures and temporary buildings, trailers, and other transient combustible materials. The general housekeeping of the areas adjacent to the permanent plant structures was satisfactory.

(2) Permanent Plant Fire Protection Features

A plant tour was made by the inspector. During the plant tour, the following safe shutdown related plant areas and their related fire protection features were inspected:

Auxiliary Feedwater Pump House
Diesel Generator Building

The fire/smoke detection systems, manual fire fighting equipment (i.e., portable extinguishers, hose stations, etc.) and the fire area boundary walls, floors and ceiling associated with the above plant areas were inspected and verified to be in service or functional.

The automatic sprinkler systems installed for protection of the Train C Auxiliary Feedwater Pump Room (053), the Train A Diesel Generator Room (032) and the Train B Diesel Generator Room (031), and the Halon system protecting the Train B Remote Shutdown Panel Room were inspected and found to be in service.

Based on this inspection, it appears that the fire protection features associated with the above plant areas are satisfactorily maintained.

The plant tour also verified the licensee's implementation of the fire prevention administrative procedures. The control of combustibles and flammable materials, liquids and gases, and the general housekeeping were found to be satisfactory in the areas inspected.

One welding operation was observed on level C of Auxiliary Building. An approved "Hot Work" permit had been issued for each of the welding operations and the work practices met the licensee's fire prevention control procedures.

During the plant tour, the inspector's escort from the Fire Protection Group noted that a fire alarm in Level 1 of the Control Building had come in on the Control Room fire protection computer. The inspector and his escort investigated the alarm and found that a false alarm had occurred. Through discussions with crafts personnel working in the area, it was determined that the craft working under Maintenance Work Order (MWO) 28808587 had wired Unit 1 detector 1S34-119-6 into the detection zone which was in false alarm. As a direct result of this work the detection system went into alarm and could not be reset. A review of the MWO found that Item A on the MWO Continuation Sheet specifically stated that Unit 1 equipment, or systems were not to be touched, altered or modified. The foreman in charge acknowledged that the wiring of the detector was clearly out of the scope of the MWO.

Technical Specification 6.7.1 requires written procedures to be implemented covering activities as recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1988. This Regulatory Guide recommends procedures be developed which govern plant maintenance. Plant Procedure 00350-C, Maintenance Program, implements this Technical Specification and requires work to be limited to the scope outlined in the MWO or the MWO must be revised. Therefore, the crafts failure to limit work to the scope of the MWO represents a violation of Procedure 00350-C and plant Technical Specification 6.7.1.

The licensee immediately implemented corrective action of placing a stop work order on the MWO and implementing compensatory measure for the inoperable detection zone. Deficiency Card (DC) 1-88-2462 was issued by the licensee to document the violation and the review of the DC will include a root cause evaluation of the violation.

In light of the above, this violation was discussed with the resident inspector and Regional personnel and since all the requirements for a licensee identified violation specified in 10 CFR Part 2, Appendix C, Section V, were satisfied, this violation is not cited.

(3) Appendix R Fire Protection Features

The inspector visually inspected the following fire rated raceway fire barriers required for compliance with NUREG 0800 Section 9.5-1, Position C5.5.2:

<u>Raceway</u>	<u>Building/Room</u>
1BE311RS123	Control/B42&B50
1BE311RS124	Control/B42&B50
1BE311RR314	Control/B42
1BE311RS130	Control/B42
1BE311RS149	Control/B42
1BE311RS184	Control/B42
1BE321RS172	Control/B42
1BE311RX217	Control/B42
1CE331RX167	Control/B62
1AE321RX324	Control/B77
1AE321RX325	Control/B77

Based on the inspector's observations of the above raceway fire barrier enclosures, it appears that the three hour fire barrier integrity associated with the above fire barrier assemblies was being properly maintained in a satisfactory condition.

The inspector made a walkdown of the sprinkler protection provided in the following plant areas to meet the guidelines NUREG 0800, Section 9.5-1:

<u>System No.</u>	<u>Area Protected</u>
059	Level A&B Control Building
062	Level B Control Building
068	Level A Control Building

Based on this walkdown, the inspector determined that the sprinkler protection provided for the areas identified above provided sufficient protection with respect to controlling an exposure fire.

The following eight-hour emergency lighting units were inspected:

<u>Unit No.</u>	<u>Location</u>
47-6-4	Train C Auxiliary Feedwater
50-6-3	Train C Auxiliary Feedwater
47-4-5	Train B Diesel Generator
47-4-6	Train B Diesel Generator
32-1-1	Train B Remote Shutdown Panel
32-1-2	Train B Remote Shutdown Panel
28-1-3	Train A Remote Shutdown Panel
29-1-4	Train A Remote Shutdown Panel

These units were in service, lamps properly aligned and appeared to be properly maintained.

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

3. Action On Previous Inspection Findings (92701 and 92702)

- a. (Closed) IFI 424/87-02-01, Fire Brigade And Other Operational Employees Are Not Respirator Qualified. This item was identified in an inspection report prior to Unit 1 commercial operation when not all fire brigade and other operation personnel had completed respirator training.

The inspector verified that 15 fire brigade/operations personnel had received respirator/SCBA training and that retraining was conducted annually.

- b. (Closed) IFI 424/87-71-01, 18 Month Fire Pump Surveillance Does Not Include Recording Driver Speed As Required By NFPA 20. The inspector verified that Revision 3 of procedure 92437-C issued on February 15, 1988 included recording driver speed.

- c. (Closed) Violation 424/87-71-02, Failure To Properly Document On Shift Plant Operations and Fire Brigade Assignments. The inspector reviewed the Shift Supervisor's Log entries for the months of June and July 1988 and verified that operations and fire brigade assignments were being properly documented. With the exception of one minor clerical error, the log was found complete and accurate.

- d. (Closed) Violation 424/87-71-03, Failure To Maintain A Fully Qualified Five-Man Fire Brigade Onsite At All Times. This violation was a result of the licensee's failure to man the fire brigade exclusive of the minimum technical specification operating staff as required by VEGP FSAR Section 9.5.1.5.3. In a subsequent inspection the licensee demonstrated that facility shutdown could be carried out with a minimum of three operators. Therefore, VEGP FSAR Section 9.5.1.5.3 was revised under LCDR FS-88-055 to state that the fire brigade shall be manned exclusive of the three man shutdown crew. This requirement has also been included in Procedure 10303-C, Manning the Shift, which states the OSOS, RO and BOP cannot serve fire brigade duty.

The inspector verified that for the months of June and July 1988 a five man qualified fire brigade had been assigned exclusive of the three man shutdown crew in the Shift Supervisors Log. With the exception of one minor clerical error, the log entries were found to meet the procedural requirements.

4. Exit Interview

The inspection scope and results were summarized on September 2, 1988, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed

below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Description and Reference</u>
424/88-39-01	IFI - Evaluate Need To Upgrade t's Fire Detection Operability Requirements, Paragraph 2a.
424/88-39-02	Violation - Failure To Implement Action Statement For Inoperable FSAR Fire Hydrant, Paragraph 2.f.(1).