



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

Report No.: 50-416/88-18

Licensee: System Energy Resources, Inc.
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf

Inspection Conducted: August 8-12, 1988

Inspector: L.R. Wiseman 8/24/88
for David Ward Date Signed

Approved by: T. Conlon 8-25-88
T. Conlon, Chief Date Signed
Plant Systems Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of Fire Protection/Prevention.

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

- Staffing of the fire protection group is very good. The group appears knowledgeable of fire protection issues and has adequate manpower to implement the licensee's program.
- The licensee's management appears to be committed to the successful implementation of the fire protection program. This is evident based on their responsiveness to correct the single weakness identified in this report and their approval of plant administrative procedures which effectively implement the fire protection program.
- The licensee has effectively implemented a program of controlling the movement of transient combustible in and out of the plant which insure unsafe fire hazards will not be present. This is evident based on the very good housekeeping in the plant.

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The following potential weakness was identified:

- The licensee's method for inspection of one and three hour fire rated raceway wraps has a potential weakness. The present procedure does not identify those raceways required to be protected, instead the procedure directs the inspector to visually inspect all fire rated assemblies in a given room. Therefore, there is the potential that a fire rated wrap could be removed and not identified during the periodic inspection since the raceways required to be wrapped are not specifically identified in the procedure. This is identified as a potential weakness because the inspector field inspected a number of required wraps and found them all to be intact. In response to this potential weakness, the licensee's management committed to revise the periodic inspection procedure to include the identification of the raceways required to be protected as identified by the Grand Gulf Fire Hazards Analysis.

The remaining areas of the fire protection program reviewed appear to be adequate. No deviations or violations were identified in the areas inspected.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. Brown, Assistant Fire Protection Coordinator
- *B. Hicks, Assistant Fire Protection Coordinator
- *C. Hicks, Operations Assistant
- *V. Holmberg, Fire Protection Coordinator
- *L. Moulder, Operations Superintendent
- *J. Reeves, Manager, Quality Services
- *J. Summer, Compliance Manager

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

NRC Resident Inspector

J. Mathis

*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.</u>	<u>Title</u>
01-S-10-01 (Rev. 8)	Fire Protection Plan
02-S-01-04 (Rev. 2u)	Shift Relief and Turnover
10-S-03-01 (Rev. 7)	Fire Protection System Impairment
10-S-03-02 (Rev. 9)	Response To Fire
10-S-03-03 (Rev. 5)	Control of Ignition Sources
10-S-03-05 (Rev. 3)	Fire Investigation
10-S-03-07 (Rev. 3)	Fire Protection Training Program

Based on this review, it appears that the above procedures meet the NRC guidelines of the document entitled "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance" dated June 1977 and the intent of 10 CFR 50 Appendix R - Fire Protection Programs for Nuclear Power Facilities.

b. Fire Protection Surveillance Procedures

The inspector reviewed the following Fire Protection System Surveillance Procedures:

<u>Procedure No.</u>	<u>Title</u>
06-EL-SP64-SA-0002	Diesel Generator Building Deluge Systems Heat Detector Functional Test
06-EL-SP64-R-0002 (Rev. 23)	CO2 Systems Functional Test
06-ME-SP64-R-0045 (Rev. 25)	Ventilation System Fire Damper Inspection
06-ME-SP64-R-0046 (Rev. 25)	Fire Rated Assembly Visual Inspection
06-OP-SP64-A-0019 (Rev. 26)	Sprinkler System Functional Test
06-OP-SP64-O-0044 (Rev. 25)	Fire Door Check
06-OP-SP64-A-0010 (Rev. 24)	Fire Suppression Water System Loop Flow Test
07-S-12-108 (Rev. 3)	General Inspection and Testing of Emergency Lighting

The above surveillance procedures were reviewed to determine if the various test outlines and inspection instructions adequately implement the surveillance requirements of the plant's Fire Protection Technical Specifications. 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. However, the inspector did identify a potential weakness in the method of performing the 18-month visual inspection of fire rated assemblies, Procedure 06-ME-SP64-R-0046.

This procedure includes the inspection of one and three hour fire rated wraps applied to electrical raceways to meet the intent of Section III.G of 10 CFR 50 Appendix R. The procedure does not presently identify the specific raceways which are to be protected. Instead the procedure instructs the inspector to visually inspect all fire rated assemblies in a given room. The inspector expressed

concern that by not specifically identifying the raceways required to be wrapped in the procedure it is possible that missing wraps may not be identified during the periodic inspection. The licensee agreed with the inspector that the present inspection method does represent a potential weakness and committed to upgrade the procedure to specifically identify those raceways required to be protected by one or three hour fire rated wraps.

c. Fire Protection System Surveillance Inspections and Tests

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

<u>Procedure No.</u>	<u>Test Results</u>
06-EL-SP64-SA-002 (Att. 1)	6/26/86, 12/23/86, 6/19/87 12/9/87, 6/7/88
06-EL-SP64-SA-002 (Att. 2)	6/26/86, 12/23/86, 6/22/87 12/9/87, 6/7/88
06-EL-SP64-SA-002 (Att. 3)	6/26/86, 12/23/86, 6/22/87 12/9/87, 6/7/88
06-ME-SP64-R-045 (Att. 6)	3/6/85, 8/27/86, 7/29/87
06-ME-SP64-R-045 (Att. 7)	2/14/85, 8/3/86, 8/21/87
06-ME-SP64-R-045 (Att. 8)	2/19/85, 8/9/86, 7/30/87
06-ME-SP64-R-046 (Att. 1)	2/20/85, 11/12/86, 1/19/88
06-ME-SP64-R-046 (Att. 2)	2/10/85, 8/1/86, 2/6/88
06-ME-SP64-R-046 (Att. 3)	2/13/85, 8/1/86, 2/7/88
06-OP-SP64-A-0019	3/6/84, 6/4/84, 9/1/84, 12/2/84, 9/1/85, 9/24/86, 9/5/86, 1/22/87 1/27/87, 11/26/87
06-OP-SP64-D-0044	Daily 6/20/88 - 7/5/88

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 plant's Fire Protection Technical Specifications.

d. Fire Protection Audit

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

Annual QA Audit QSA-88/0003 April 22, 1988
Nuclear Mutual Limited Insurance
Inspection by M&MPC February 29 - March 3, 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 correction 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 84 personnel from the Operations staff. The on duty shift fire brigade leader is normally one of the licensed operators and the remaining four fire brigade members are composed of non-licensed operators. The inspector reviewed the on duty shifts for June and July of 1988 and verified that sufficient qualified fire brigade personnel were on duty to meet the provisions of the plant's Technical Specification.

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. 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.

(2) Training

The inspector reviewed the training and drill records for seven brigade leaders and ten brigade members for 1987 and 1988. The records reviewed indicated that each of these leaders and members had attended the required training and participated in the required number of drills. The inspector also verified that a fire brigade drill had been conducted every 92 days for each shift for 1987 and 1988. The fire brigade training records reviewed were found satisfactory.

In addition, the inspector reviewed the licensee's periodic fire brigade training modules. These modules cover the following areas:

Module 1	Self Contained Breaching Apparatus
Module 2	Site Specific Information
Module 3	Gases
Module 4	Fires In Energized Electrical Equipment
Module 5	Fires In Cables and Cable Trays
Module 6	Hydrogen Fires
Module 7	Flammable Liquids
Module 8	Waste and Debris Fires
Module 9	Ventilation

The present training cycle runs on a six week interval and all members participate in all nine modules annually. Based on this review, it appears that the licensee's initial fire brigade training program covers the above required training topics.

(3) Fire Brigade Drill

During this inspection, the inspector witnessed an unannounced fire brigade drill. The drill scenario was a fire in the Division I Diesel Generator Room which was apparently caused by a diesel fuel line break which sprayed fuel oil on the diesel engine and ignited the fuel oil.

Seven fire brigade members responded to the pending fire emergency. The brigade assembled in the fresh air corridor outside the room in full protective firefighting turnout clothing and five brigade members wore self contained breathing apparatus. The fire brigade leader made an initial size-up of the fire and directed brigade members to advance two 1-1/2 inch fire attack hose lines utilizing firefighting foam from the plant fire truck into the area. The fire attack hose lines were placed in service on the fire and the fire was placed under control within 20 minutes. The brigade leader also directed brigade members to isolate the source of the fuel oil leak.

The fire brigade utilized proper manual firefighting methods and reacted to the fire drill scenario in a satisfactory manner.

During this drill, the inspector noted that the fire alarm broadcast over the plant PA system could not be heard in the fresh air corridor of the Diesel Generator Building. In discussions with fire brigade members following the drill, the inspector was told that the alarm also could not be heard in the fire truck house. The inability to hear fire alarms announced over the PA system was also noted as a problem in 10 of the 35 fire brigade drill critiques reviewed by the inspector.

Fire brigade members presently carry radios which the control room uses to advise members of fires in the plant. However, the inspector expressed concern to the plant management that since the fire alarm may also constitute an evacuation alarm, inability to hear the alarm could potentially result in people being trapped by a fire. This concern will be followed up on in a future inspection.

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 Technical Specifications. The three fire pumps were inspected and found to be in service. The diesel fuel tanks for the diesel driven fire pumps were approximately 7/8 full of fuel. In addition, the low pressure CO2 tank was inspected and was found to be 83% full at 300 psi which meet the requirements of the Technical Specifications.

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.</u>	<u>Position</u>	<u>Function</u>
F001A	Open	Diesel Fire Pump A Discharge Isolation
F003A	Open	Diesel Fire Pump A Suction Isolation
F001B	Open	Diesel Fire Pump B Discharge Isolation
F003B	Open	Diesel Fire Pump B Suction Isolation
F108	Open	Electric Fire Pump Suction Isolation
F016	Open	Electric Fire Pump Discharge Isolation
F023	Open	Fire Loop Isolation
F024	Open	Fire Loop Isolation
F025	Open	Fire Loop Isolation

The following fire hydrant equipment houses were inspected:

D008
D009
D020
D021
D023
D024
D025

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:

<u>Fire Zone</u>	<u>Description</u>
OC 115	Corridor, 93' Control Building
OC 125	HBAC Room, 93' Control Building
OC 202	Div. I Switchgear, 111' Control Building
OC 208	Div II Hot Shutdown Panel Rm. 111' Control Building
OC 208A	Div. I Hot Shutdown Panel Rm. 111' Control Building
OC 215	Div. II Switchgear, 111' Control Building
1A301, 1A316, 1A321, 1A322, and 1A314	Auxiliary Building 139'0"
1A417, 1A424, 1A428, and 1A420	Auxiliary Building 166'0"

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

The automatic sprinkler systems, N1P64152 and N1P640153, protecting the northeast corridors of the Auxiliary Building 129'0" and 166'0" elevations 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 very good in the areas inspected.

(3) Appendix R Fire Protection Features

The inspector visually inspected the fire rated raceway fire barriers required for compliance with Appendix R, Section III.G.2 in the following plant areas:

<u>Fire Zone</u>	<u>Location</u>
1A101	93' Auxiliary Building
1A211	119' Auxiliary Building
0C302	133' Control Building

Based on the inspector observations of the above raceway fire barrier enclosures, it appears that the one and 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 Appendix R related sprinkler protection in the following plant areas:

<u>Location</u>	<u>System No.</u>
93' Auxiliary Building NE Corridor	N1P64D150
119' Auxiliary Building NE Corridor	N1P64D151

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>
N1Z92S115B	93' Control Building
N1Z92J302A	133' Control Building
Q1Z92S202A	111' Control Building

These units were in service, lamps properly aligned and appeared to be maintained. However, the inspector did note that some of the lights in the plant appear to be slightly out of alignment. Although this is not a significant problem at this time the inspector recommended to plant management that the alignment of emergency lights be added to the periodic inspection procedure. This would insure that lighting would be realigned if necessary.

Within the areas inspected, no violations or deviations were identified.

3. Followup On Information Notices and Part 21 Reports (92703)

a. Information on Notices on Automatic Sprinkler Corporation Valves

A letter dated March 2, 1984, IE Information Notice No. 84-16, Failure of Automatic Sprinkler System Valves to Operate, was issued. The notice identified that deluge valves manufactured by Automatic Sprinkler Corporation may not open when required due to excessive friction in the operating mechanism. This notice was followed up by letter dated March 24, 1986, which transmitted IE Information Notice No. 86-17, Update of Failure of Automatic Sprinkler System Valves to Operate, which provided additional information on valve failures.

Grand Gulf was the plant which initially discovered the problem with the Automatic Sprinkler Valves. To resolve this problem the licensee implemented a retrofit to their affected valves and replaced the valve clapper assembly and latch arm as directed by the valve manufacturer.

The following maintenance work orders implemented the retrofit of the valves for the affected sprinkler systems:

<u>MWO No.</u>	<u>System No.</u>
M72486	N1P64D110A
M72487	N1P64D110B
M72488	N1P64D110C
M72489	N1P64D110D
M72490	N1P64D111
M72491	N1P64D112
M72493	N1P64D117
M72495	N1P64D142B
M72496	N1P64D142A
M72497	N1P64D142C

Based on the completion of the manufacturer's recommended retrofit the licensee's response to the subject IE Information Notices is acceptable.

These units were in service, lamps properly aligned and appeared to be maintained. However, the inspector did note that some of the lights in the plant appear to be slightly out of alignment. Although this is not a significant problem at this time the inspector recommended to plant management that the alignment of emergency lights be added to the periodic inspection procedure. This would insure that lighting would be realigned if necessary.

Within the areas inspected, no violations or deviations were identified.

3. Followup On Information Notices and Part 21 Reports (92707)

a. Information Notices on Automatic Sprinkler Corporation Valves

By letter dated March 2, 1984, IE Information Notice No. 84-16, Failure of Automatic Sprinkler System Valves to Operate, was issued. The notice identified that deluge valves manufactured by Automatic Sprinkler Corporation may not open when required due to excessive friction in the operating mechanism. This notice was followed up by letter dated March 24, 1986, which transmitted IE Information Notice No. 86-17, Update of Failure of Automatic Sprinkler System Valves to Operate, which provided additional information on valve failures.

Grand Gulf was the plant which initially discovered the problem with the Automatic Sprinkler Valves. To resolve this problem, the licensee implemented a retrofit to their affected valves and replaced the valve clapper assembly and latch arm as directed by the valve manufacturer.

The following maintenance work orders implemented the retrofit of the valves for the affected sprinkler systems:

<u>MWO No.</u>	<u>System No.</u>
M72486	N1P64D110A
M72487	N1P64D110B
M72488	N1P64D110C
M72489	N1P64D110D
M72490	N1P64D111
M72491	N1P64D112
M72493	N1P64D117
M72495	N1P64D142B
M72496	N1P64D142A
M72497	N1P64D142C

Based on the completion of the manufacturer's recommended retrofit the licensee's response to the subject IE Information Notices is acceptable.

b. Part 21 On Ruskin Fire Dampers

Ruskin fire dampers are the subject of a Part 21 report issued by the damper manufacturer on November 6, 1984. The report describes a deficiency with the dampers which may result in the failure of the dampers to close under normal duct pressure.

During this inspection, the inspector verified that the licensee does not have any Ruskin fire dampers installed at Grand Gulf. The inspector reviewed Specification No. 9648-M-617.5 and found that only American Warming fire dampers were specified to be installed at Grand Gulf. Therefore, this Part 21 report is not applicable to the licensee's plant.

4. Exit Interview

The inspection scope and results were summarized on August 12, 1988, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. In response to an inspector concern regarding a potential weakness in the method used for inspecting fire rated assemblies, the licensee's management made a commitment to revise this surveillance procedure to provide specific information as to the raceways required to be protected buy one and three hour fire rated wraps. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.