



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

Report No.: 50-302/88-13

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Docket No.: 50-302

License No.: DPR-72

Facility Name: Crystal River 3

Inspection Conducted: April 18-22, 1988

Inspector: J. R. Harris
J. R. Harris

May 11, 1988
Date Signed

Approved by: T. E. Conlon for
T. E. Conlon, Chief
Plant Systems Section
Division of Reactor Safety

May 12, 1988
Date Signed

SUMMARY

Scope: This routine, unannounced inspection was in the areas of the Seismic Monitoring Program, the Fire Protection/Prevention Program, followup on Previously Identified Inspection Items and Licensee Event Reports

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. L. Rossfield, Manager Nuclear Compliance
- *J. L. Russel, Senior Fire Protection Specialist
- *K. A. Williams, Fire Protection Specialist
- *M. S. Williams, Nuclear Regulatory Specialist
- *K. R. Wilson, Manager Site Nuclear Licensing

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

NRC Resident Inspector

- *T. Stetka, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 22, 1988, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation Item (302/87-21-01), Failure to Implement Fire Protection Procedure TDP-307. Training Department Procedures TDP-307, Section 6.4 requires that all fire brigade members must complete the fire brigade requalification training program in order to maintain requalification as fire brigade member. Contrary to the above, the fire brigade procedure was not implemented in that not all plant personnel assigned duty as fire brigade members had received the requalification training required by Procedure TDP-307. Corrective action by the licensee included a review of training records to determine if any other personnel were involved. One additional fire brigade member was identified as not having received requalification training. These individuals were removed from the qualified fire brigade list. Nuclear team instructors were counseled on the need to insure an accurate team roster. The nuclear operations tracking information system was modified to automatically drop fire brigade members who do not meet the required qualification. During this inspection the inspector reviewed training records and verified that fire brigade members received the proper training. This item is closed.

4. Independent Inspection Effort (92706)

The inspector discussed the seismic monitoring program with responsible engineers, examined seismic monitoring equipment and reviewed procedures for surveillance of seismic monitoring equipment. The equipment consists of three Triaxial Time-History Accelographs, three Triaxial Peak Accelographs and one Triaxial Seismic Switch. The Triaxial time history Accelographs are located on the 95 foot elevation of the containment vessel foundation, the 267 elevation outside containment on top of the ring girder and on the 145 foot elevation of the control room floor. The Triaxial Peak Accelographs are located in the reactor building at the 140 elevation on top of the reactor, on top of piping of one of the steam generators at the 175 foot elevation, and on top of the Borated Water Storage Tank at the 166 foot elevation. The Triaxial Seismic Switch is located at the 95 foot elevation of the containment vessel foundation. The seismic switch starts all three magnetic time history accelographs whenever the acceleration exceeds .01G. The Triaxial Peak Accelographs are passive instruments set at a measurement range of $\pm 2.0G$. These instruments do not send any type of alarm to the control room when an event is recorded. They merely measure any type of event in the North-South, East-West and vertical direction. The Time History Accelographs send an alarm to the control room when an event of .01g or greater is felt.

The Operating Base Earthquake (OBE) for Crystal River is .05g maximum horizontal ground motion acceleration and .033g maximum vertical ground motion acceleration. This is based on twice the ground acceleration which would have been felt at the plant site as a result of the Charleston South Carolina earthquake of August 31, 1886.

The Safe Shutdown Earthquake (SSE) for Crystal River is .10g maximum horizontal ground motion acceleration and .067g maximum vertical ground motion acceleration. This is based on the maximum acceptable ground motion acceleration according to current criteria developed by Housner.

Procedures reviewed by the inspector for surveillance of seismic equipment are as follows:

SP-154	Testing and calibration of the Triaxial Time-History Accelographs and Triaxial Seismic Switch, Revision 15, October 6, 1987
SP-336	Triaxial Time-History Accelograph Channel Check Revision 12, October 1987
SP-155	Channel Check of the Triaxial Peak Recording Accelographs, Revision 14, December 23, 1987

Within the areas examined, it appeared that FSAR and Technical Specifications for Seismic Monitoring were being met.

5. Fire Protection/Prevention Program (64704)

a. Fire Protection/Administrative Control Procedures

The inspector reviewed the following fire prevention/administrative procedures.

AI-2200 Rev. 2, August 20, 1987, Guidelines For Handling Use and Control of Transient Combustibles

AI-2205 Rev. 4, March 25, 1987, Administration of Fire Brigade Organization

AI-1000 Rev. 22, January 22, 1988, Good Housekeeping

EM-215 Rev. 13, March 25, 1987, Duties of the Nuclear Plant Fire Brigade Interim Change March 13, 1988

TDP-307 Rev. 7, November 1, 1986, and Nuclear Emergency Team Training Program Section 6.4 Fire Brigade Section 6.5 Fire Brigade Team Leader 7.4 Appendix 4 - F.B. Training 7.5 Appendix 5 - FTL Training

CP-118 Rev. 16, September 5, 1986, Fire Prevention Work Permit Procedure

CP-137 Rev. 6, June 23, 1987, Fire Barrier Penetration Breach Report

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."

b. Fire Protection Surveillance Procedures

The inspector reviewed the following Fire Protection System Surveillance Procedures.

SP-363, Fire Protection System Tests, performed every 18 Months, Revision 25, February 1, 1988

SP-364, Fire Hose House Hose Reel Station and Fire Cart Inventory, performed monthly, Revision 25, February 1, 1988

SP-407, Fire Barrier Penetration Seals, performed every 18 months, Revision 14, September 21, 1987

SP-408, Fire System Flow Test, performed every three years, Revision 9, January 29, 1986

SP-411, Sprinkler Systems and Deluge Systems, performed every 18 months, Revision 27, January 8, 1988

SP-502, Fire Pump Diesel Batteries Weekly Check, Revision 13, November 10, 1987

SP-802, Annual Fire Hose Hydro-Test and Hose Reel Inspection, performed every 18 months, Revision 14, September 8, 1987

SP-804, Surveillance of Plant Fire Brigade Equipment Weekly and Monthly Checks, Revision 18, March 25, 1987

SP-190J, Functional and Operability Test of Cable Spreading Room Fire Detection Instrumentation, performed every six months, Revision 0, November 7, 1985

SP-190D, Functional and Operability Test of Technical Specification Fire Detection Instrumentation, performed every six months, Revision 4, December 1, 1987

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 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

SP-363, Fire Protection System Test, performed every 18 months, Reviewed Tests, performed November 1986 and January 1988

SP-367, Fire Service Valve Alignment and Operability Check Test, performed monthly and Semiannually, Reviewed Tests, performed October 23, 1987 November 20, 1987, December 25, 1987, January 28, 1988, February 25, 1988, and March 26, 1988

SP-190A, Functional and Operability Test of the Auxiliary Building Fire Detection Instrumentation, performed every six months, Reviewed Tests, performed March 10, 1987 and November 1987

SP-190D, Functional and Operability Test of Technical Specification Related Fire Detection Instrumentation, performed every six months, Reviewed Tests, performed March 1987 and September 1987

SP-190J, Functional and Operability Test of Cable Spreading Room Fire Detection Instrumentation, performed every six months, Reviewed Tests, performed March 1986, October 1986, March 1987, and October 1987

SP-407, Fire Barrier Penetration Seals, performed every 18 months, Reviewed Tests, performed August 13, 1985 and August 14, 1987

SP-408, Fire System Flow Test, performed every three years, Reviewed Test, performed February 8, 1986

SP-502, Fire Pump Diesel Batteries Check, performed weekly, Reviewed Tests, performed March 7, 14, 21, 28, and April 4, 1988

SP-413, Verification of Alarm Function and Co₂ Flow to Protected Areas, performed every 18 months, Reviewed Tests, performed on January 22, 1986 and December 6, 1987

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 Audits

The most recent audit report of the Crystal River 3 Fire Protection program was reviewed. The audit report reviewed was:

Audit Report QP-87-03, March 9, 1987, to March 27, 1987, This audit evaluated the effectiveness of controls relative to Emergency Preparedness, Industrial Security, and Fire Protection. This audit identified three findings and three concern in the area of Fire Protection. The licensee has either implemented corrective action associated with these audit findings or has scheduled an action completion date for corrective actions. The licensee appears to be taking the appropriate corrective actions.

e. Fire Brigade

- (1) The fire brigade is composed of approximately 83 personnel from the plant staff. The on-duty fire brigade team consists of a fire team leader and four brigade members. The fire team leader is normally the Nuclear Assistant Shift supervisor and the remaining fire brigade members are composed of operations and building service personnel. The inspector reviewed the control center log for the period of February 1988, through April 1988 and verified that sufficient fire brigade personnel were assigned to each on-duty shift to meet the provision of Technical Specification 6.2.2 and that they had received the proper training.

- (2) Training

Procedure TDP-307 outlines the fire brigade training program. Each fire brigade member receives fire brigade training which is designed to provide basic knowledge and manual fire fighting skills. The initial fire brigade training program is approximately 44 hours. It includes 24 hours of classroom training, and

16 hours of hands-on-training at the Florida State Fire College and a four hour plant familiarization session.

The inspector reviewed the licensee's initial fire brigade training program to verify that the following training topics are being covered:

Indoctrination of the plant firefighting plan with specific identification of each individuals responsibilities.

Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.

The toxic and corrosive characteristics of expected products of combustion.

Identification of the location of fire fighting equipment for each area and familiarization with the layout of the plant, including access and egress routes to each area.

The proper use of available firefighting equipment and the correct method of fighting each type of fire. The types of fires include; fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modifications (welding), and record file fires.

The proper use of communication, lighting, ventilation and emergency breathing equipment.

The proper method for fighting fires inside buildings and confined spaces.

The direction and coordination of the firefighting activities (fire brigade leaders only).

Detailed review of firefighting strategies and procedures.

Review of the latest plant modifications and corresponding, changes in fire fighting plans.

Based on this review, it appears that the licensee's initial fire brigade training program covers the above required training topics. In addition, it appears that the licensee's fire brigade training program repeats the basic firefighting skills of the initial program to qualified fire brigade members every two years.

In addition, the inspector reviewed the training and drill records for 16 fire brigade and team leaders for 1987 and 1988. The review indicated that the shift fire brigade members and leaders had completed all required initial training, requalification training and brigade leadership training.

(3) Fire Brigade Fire Fighting Strategies

The inspector reviewed firefighting strategies (pre-fire-plans) for the following plant areas:

AB-95-1	RB-95-1
AB-95-8	RB-160-1
AB-95-14	IB-95-4
AB-119-10	IB-119-1
AB-119-12	

Based on this review, the inspector determined that the above firefighting strategies adequately addressed the fire hazards in the area, the type of fire extinguishants to be utilized, the direction of attack, systems in the room/area to be managed in order to reduce fire damage, heat sensitive equipment in the room/area, and specific fire brigade duties with regard to smoke control and salvage.

(4) Fire Brigade Drill

During this inspection, the inspector witnessed an unannounced fire brigade drill. The drill scenario involved a fire in cable tray ECB 221 on the 124 elevation control complex B 480V switchgear room.

An alarm was sounded at 0857 am and an announcement was made for the fire team to respond to the fire. The fire team leader arrived on the scene and sized up the situation and called the control room for additional backup. Eight fully dressed out members with a fire cart appeared on the scene. The team leader sent two teams to search for fire extension above and below the 124 foot elevation. Four firefighters equipped with a 1-1/2 inch attack line and Halon 1211 fire extinguishers entered the area. The fire was attacked and extinguished with the portable halon extinguishers. Ventilation equipment was setup and smoke was ventilated to the turbine building.

The fire brigade utilized proper manual firefighting methods and reacted to the fire drill scenario in an effective and efficient manner.

f. Plant Tour and Inspection of Fire Protection Equipment

(1) Inspection of Fire Brigade Manual Fire Fighting Equipment

The inspector performed an inspection of the fire brigade equipment consisting of turnout gear (coat, boots, gloves, helmets, etc.) and self contained breathing apparatus (SCBA's) stored at the fire brigade response location on the 95 and 110 elevation of the turbine building and the 119 elevation of the auxiliary building. Additional turnout gear, and fire fighting equipment stored in the hose carts on the 119 and 145 elevation of the turbine building were examined by the inspector.

(2) Fire Service Water Supply and Outside Fire Protection Walkdown

The inspector verified that the two CR-3 service water storage tanks were in service and met the requirements of the Technical Specifications. The two diesel engine driven and one electric motor driven fire pumps were inspected and found to be in service. The inspector verified that the fire service 30 gpm motor-driven Jockey pressure maintenance pump was maintaining a minimum 110 psi in the fire service system.

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

FSV-20	FSP-1 to FSP-28 Discharge Crosstie
FSV-21	FSP-1 to FSP-2A Discharge Crosstie
FSV-22	Pump Discharge Header Isolation to pump House Sprinkler
FSV-40	Pump Discharge Hydrant Outlet To Fire Main North
FSV-47	Pump Discharge Hydrant Isolation To Pump House Sprinkler
FSV-53	Fire main Isolation To Turbine Building South
FSV-54	Fire Main Isolation
FSV-55	Fire Main Isolation To Turbine Building North
FSV-73	Fire Main Isolation To Turbine Building North
FSV-74	Fire Main Isolation
FSV-75	Fire Main Isolation
FSV-76	Fire Main Isolation To Turbine Building North
FSV-85	Fire Main Isolation
FSV-86	Fire Main Isolation

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

Fire Hydrant Hose House FH-1
 Fire Hydrant Hose House FH-2
 Fire Hydrant Hose House FH-3
 Fire Hydrant Hose House FH-5
 Fire Hydrant Hose House FH-6
 Fire Hydrant Hose House FH-7
 Fire Hydrant Hose House FH-8

The equipment houses contained the minimum equipment requirements 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.

b. 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:

Control Complex - Main Control Room/Fire Area CC-145-118B
 Control Complex - Cable Spreading Room/Fire Area CC-134-118A
 Auxiliary Building Elevation 95 Fire Area 3
 Auxiliary Building Elevation 119
 Diesel Generator Rooms
 Fire Area AB-119-7A
 Fire Area AB-119-7B
 Intermediate Building - Elevation 95/Fire Area IB-95-200C

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

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 combustible and flammable materials, liquids and gases, and the general housekeeping were found to be satisfactory in the areas inspected.

No violations or deviations were identified in the areas inspected

7. Licensed Event Reports (LER)

(Closed) LER (87-031) Triaxial Peak Accelerographs were set for a measurement range of $\pm 1.0g$ instead of the Technical Specification requirements of $\pm 2.0G$. Discussions with responsible engineers demonstrated that this item has been corrected. This item is closed.