



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

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

Docket No.: 50-302/89-033

License No.: DPR-72

Facility Name: Crystal River 3

Inspection Conducted: December 11 - 15, 1989

Inspector: J. E. Conlon Jr 1-12-90  
J. R. Harris Date Signed

Approved by: J. E. Conlon 1-12-90  
T. Conlon, Chief Date Signed  
Plant Systems Section  
Engineering Branch  
Division of Reactor Safety

SUMMARY

Scope:

This routine, unannounced inspection was in the areas of fire protection and followup of LER Fire Barrier deficiency, personnel failing to build masonry fire barriers within design requirements.

Results:

In the areas inspected, violations or deviations were not identified.

During this inspection, the licensee was very cooperative in providing the inspector with applicable procedures, records and walkdown inspection of fire protection equipment and response to previously identified items. No weaknesses were identified during this inspection.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. Cooper, Nuclear Technical Support Superintendent
- \*G. Cowles, Senior Nuclear Results Engineer
- \*G. Becker, Manager Site Nuclear Engineering
- \*W. Bandhauer, Operations Superintendent
- \*D. Black, Nuclear Result Specialist
- \*J. Brandely, Manager Nuclear Internal Planning
- \*S. Johnson, Manager Site Nuclear Services
- \*H. Moon, Assistant Nuclear Maintenance Superintendent
- \*P. Lancaster, Manager Site Nuclear Quality Assurance
- \*K. McKee, director Nuclear Plant Operations
- \*J. Russei, Senior Nuclear Fire Protection Specialist
- \*W. Rossfield, Manager Nuclear Compliance
- \*R. Thompson, Nuclear Plant Senior Engineer Supervisor
- \*K. Wilson, Manager Nuclear Licensing
- \*R. Widell, Director Nuclear Operations Site Support
- \*M. Williams, Nuclear Regulator Specialist

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, technicians, and office personnel.

#### NRC Resident Inspectors

- \*P. Holmes-Ray, Senior Resident Inspector
- \*W. Bradford, Resident Inspector

\*Attended exit interview

### 2. Fire Protection/Prevention Program (64704)

#### a. Fire Protection/Administrative Control Procedures

AI - 1000, Good Housekeeping

AI - 2200, Guidelines for handling use and control of Transient Combustibles

EM - 215, Duties of Nuclear Plant Fire Brigade

CP - 118, Fire Protection work permit procedure

CP - 137, Fire Barrier Penetration Breach Report

TPD - 307, Revision 9, March 17, 1989, Nuclear Emergency Team 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.

b. Fire Protection Surveillance Procedures

The inspector reviewed the following Fire Protection System Surveillance Procedures:

SP-190A	SP-190J	SP-411A	SP-502
SP-190B	SP-363	SP-11B	SP-503
SP-190C	SP-364	SP-411C	SP-607
SP-190D	SP-367	SP-411D	SP-800
SP-190E	SP-404A	SP-411E	SP-802
SP-190F	SP-404B	SP-411F	SP-804
SP-190G	SP-404C	SP-411G	SP-805
SP-190H	SP-407	SP-413	SP-805A
SP-190I	SP-408	SP-501A	SP-807

The above surveillance procedures were reviewed to determine if the various test outlines and inspection instructions adequately implement the surveillance requirements of the plants fire protection 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.

SP - 367, Fire Service Valve Alignment and Operability Check Test, performed monthly and semi-annually.

SP - 190A, Functional and Operability Test of the Auxiliary Building Fire Detection Instrumentation, performed every six months.

SP - 190D, Functional and Operability Test of Technical Specification Related Fire Detection Instrumentation, performed every six months.

SP - 190J, Functional Operability Test of Cable Spreading Room Fire Detection Instrumentation, performed every six months.

SP - 407, Fire Barrier Penetration Seals, performed every 18 months.

SP - 408, Fire System Flow Test, performed every three years.

SP - 502, Fire Pump Diesel Batteries, checked weekly.

SP - 413, Verification of Alarm Function CO<sub>2</sub> Flow to Protected Areas, performed every 18 months.

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 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 89-06 conducted by Site Support, June 12 through June 30, 1989. The audit evaluated the emergency preparedness and fire protection programs for conformance to regulatory procedural requirements. This audit also assessed the implementation of the activities of the Compliance and Licensing Organization as well as Quality Assurance Program presently in place for the Nuclear Operations Site Support Organization.

During the course of this audit, four nonconformances, thirteen audit findings, and six concerns were issued. All the fire protection findings have been addressed or closed out. The licensee appears to be taking the appropriate corrective actions on these items.

e. Fire Brigade

- (1) The fire brigade is composed of approximately 115 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 November 26, 1989 through December 12, 1989, 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 hands-on-training at the Florida State Fire College and a four hour plant familiarization session.

The inspector reviewed the training and drill records for 20 fire brigade shift members and 7 team leaders for 1988 and 1989. The review indicated the 20 fire brigade shift members and 7 team leaders had completed all required initial training, requalification training, and brigade leadership training and participated in the required number of drills.

## (3) Fire Brigade Fire Fighting Strategies

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

AB-75-1	RB-95-1
AB-95-1	RB-119-1
AB-95-4	RB-160-1
AB-95-8	TB-95-1
AB-95-9	TB-95-3
AB-95-12	TB-95-5
AB-119-1	TB-119-4
AB-119-4	TB-145-1
AB-119-8	TB-145-2
AB-119-12	CC-95-1
AB-143-2	CC-108-1
AB-143-5	CC-124-6
AB-162-2	CC-134-1
AB-162-3	CC-145-1

Based on this review, the inspector determined that the above fire fighting strategies adequately addressed the fire hazards in the area, the type of fire extinguishments 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 was that there was a Classes A and C fire in the HVAC equipment room on the first floor

of the administration building. Electrical breaker cabinet AHCP-24 was overloaded thus igniting cable insulation. The room was fully engulfed in heavy smoke. No automatic sprinkler system is installed in the room.

An alarm was sounded at 10:10 a.m. The building fire alarm was sounded inside the building. The office personnel began to evacuate the building. The alarm could not be heard on the west side of the building. The fire team leader arrived on the third floor through the turbine building. Five security guards arrived at the staging area (southwest of the administration building).

One security guard called the control room at 10:12 a.m. and reported smoke escaping from under the doors of the HVAC equipment room. The fire team leader reported to the control room that he had finished searching the administration building and had found no signs of fire. He also reported that he had cleared the alarm and was leaving the building to check the HVAC equipment room.

The fire team leader arrived at the drill scene at 10:14 a.m. He slowly cracked the door, only for a few seconds, to the HVAC equipment room. The fire team leader radioed the control room and advised them of the situation. He requested that the power supply to the building be de-energized. He also requested that the fire brigade be called out. The control room received the message and announced the drill as a fire emergency.

The announcement was made over the plant PA System at 10:15 a.m. The fire team leader instructed security guards to seal off the area.

The fire team leader at 10:10 a.m. began to reel off a hose line from FH-2 but did not finish.

The fire team leader was informed that at 10:17 a.m. that this was a drill, and not a fire emergency. He in turn informed the control room and a second announcement was made over the plant PA system correcting the fire emergency to a fire drill. The location of the staging area was also announced.

The fire cart driver, and assistant fire team leader and two fire brigade members with bunker gear arrived at the staging area at 10:20 a.m. The fire team leader ordered a hose line be laid from a hose reel just inside the turbine building.

At 10:21 a.m., the fire brigade members cut a rope that was keeping the turbine building door tied shut. A third fire team leader arrived on the scene and immediately assumed the duties of a second assistant fire team leader. Two additional fire brigade members arrived fully dressed out.

At 10:22 a.m., the fire team leader assembled the first four responding fire brigade members and explained his attack strategy. A final inspection of the teams equipment was made by one of the assistant fire team leaders. One dry chemical fire extinguisher and a 1-1/2" hose was in place near the entrance to the room.

At 10:23 a.m., one fire brigade member, with a fire extinguisher was assigned to lead the attack teams. This man checked the room temperature by feeling the door's surface with the back of his hand. He opened the door slowly, then entered the room with a fire extinguisher and 1-1/2" hose line.

At 10:24 a.m., six fire brigade members arrived. The fire team leader assigned two of them to help man the 1-1/2" attack line. The other four members and one assistant fire team leader were assigned to Fire House 2 to finish laying and to man a 1-1/2" back-up line for the attack team.

At 10:25 a.m., four additional fire brigade members arrived. The attack team advised the fire team leader of the room conditions and that they were going to remove the front panel of the cabinet. The fire team leader dispatched three fire brigade members to search the inside of the building for any fire extension.

At 10:26 a.m., two additional fire brigade members arrived. The attack team reported the fire had been extinguished by first applying a fire extinguisher, then following up with a hose stream.

At 10:30 a.m., the attack team withdrew from the room. The fire team leader assigned two other fire brigade members as a fire-watch on the 1-1/2" hose line.

At 10:35 a.m., the fire drill was terminated. All personnel were allowed to enter the building. All equipment was returned to service.

During this drill, the fire team leader demonstrated confidence in himself as a leader and strong tactical knowledge of advanced fire fighting. His instructions to the team members were clear and to the point. His response actions were very good.

The fire brigade members demonstrated a high degree of knowledge and experience with the attack tactics, and familiarity with the equipment and its location. They conducted themselves well as a team. The overall rating for this drill was very good.

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 (coats, boots, gloves, helmets, etc.) and self contained breathing apparatus (SCBA's) stored at the fire brigade ready stores warehouse building north mezzanine on the 120 elevation. Additional turnout gear, and fire fighting equipment are stored in 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 Specification. 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 110psi 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.

FSU-20	FSP-1 to FSP-2B Discharge Crosstie
FSU-21	FSP-1 to FSP-2A Discharge Crosstie
FSU-22	Pump Discharge Header Isolation to House Sprinkler
FSV-40	Pump Discharge Hydrant Outlet to Fire Main North.
FSU-47	Pump Discharge Hydrant Isolation to Pump Sprinkler
FSV-53	Fire Main Isolation to Turbine Building
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-4  
 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.

- (3) 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 Elevation 108 Battery Room, Fire Area 3A CC-108-404

Control Complex Elevation 108 Battery Room, Fire Area 3B CC-108-103

Control Complex Elevation 108 Battery Charger Room, Fire Area 3B  
 CC-108-106

Control Elevation 4160V Switchgear Bus Room, Fire Area 3B-CC-108-107

Control Complex Elevation 4160V Switchgear Bus Room, Fire Area  
 3A-CC-108-103

Control Complex Elevation 108 Inverter Room, Fire Area 3B-CC-108-104

Control Complex Elevation 108 Inverter Room, Fire Area 3A-CC-108-110

Control Complex Elevation 124480V Emergency Switchgear Bus Room, Fire Area  
 3B-CC-124-116

Control Complex Elevation 124V Emergency Switchgear Bus, Fire Area  
 3A-CC-134-117-A

Control Complex Elevation 134 Cable Spreading Room, Fire Area 3A-CC-118A

Control Complex Elevation Main Control Room, Fire Area 3-CC-124-117

Auxiliary Building Elevation 95 North Hallway, Fire area 3

Auxiliary Building Elevation 119 Emergency Diesel Generator Control Room, Fire Area AB-119-7A

Auxiliary Building Elevation 119 Emergency Diesel Generator Room, Fire Area AB-119-7B

Intermediate Building Elevation 95 Motor Driven Emergency Feedwater Pump Room, Fire Area IB-95-200C

Turbine Building Elevation 95 Basement Floor, Fire Area IB-95-400A

Turbine Building Elevation 119 Turbine Building Mezzanine Floor, Fire Area TB-1194000E

Turbine Building Elevation 145 Turbine operation Floor, Fire Area TB-145-600F.

The fire/smoke detection systems manual firefighting equipment (i.e. portable extinguishers, hose stations, etc.) and the fire area boundary walls floors 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.

### 3. Licensed Event Report (LER) (92701)

LER 89-005 Fire Barrier Deficiency caused by construction personnel failing to build masonry fire barriers in accordance with all design requirements. This involves doors C-124 and C-105 on the 95 foot elevation of the Auxiliary Building. The inspector examined ongoing repair to door C-124. Completion date for this door is December 16, 1989. Completion date for door C-105 is December 31, 1989. The completed work will be reviewed during a future inspection.

#### 4. Exit Interview

The inspection scope and results were summarized on December 15, 1989, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. The licensee did not identify as proprietary any of the material provided or reviewed by the inspector during this inspection.