



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

Report No. 50-302/80-10

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

Facility Name: Crystal River 3

Docket No. 50-302

License No. DPR-72

Inspection at Crystal River, Florida

Inspector: William J. Mulesoff 11 July 80  
for J. M. Puckett Date Signed

Approved by: William J. Mulesoff 11 July 80  
for A. F. Gibson, Section Chief, FFMS Branch Date Signed

SUMMARY

Inspection Dates May 24-28, 1980

Areas Inspected

This special, unannounced inspection involved 44 inspector-hours on site in the area of radioactive contamination control and the release of contaminated material to the unrestricted area.

Results

In the area inspected, one apparent item of noncompliance was found (infraction - failure to mark and identify radioactive material in compliance with 10 CFR 20.203 (80-10-01) paragraph 6.a)

## DETAILS

### 1. Persons Contacted

- \*D. C. Poole, Plant Manager
- \*P. F. McKee, Operations Superintendent
- \*G. R. Westafer, Maintenance Superintendent
- \*T. C. Lutkehaus, Technical Service Superintendent
- \*K. F. Lancaster, Compliance Supervisor
- \*G. M. Williams, QA/AC Supervisor
- \*G. H. Ruzala, Chem/Rad Protection Engineer
- \*G. D. Perkins, Health Physics Supervisor
- \*D. Wilder, Health Physics Supervisor
- \*J. L. Bufi, Compliance Auditor

Other licensee employees contacted included five technicians.

NRC Resident Inspector

- \*T. F. Stetka
- \*B. W. Smith

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on May 28, 1980 with those persons indicated in Paragraph 1 above. Licensee management acknowledged the single item of noncompliance.

### 3. Licensee Action on Previous Inspection Findings

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Radioactive Material Discovered in the Unrestricted Area

The inspector discussed with the Rad/Chem Protection Engineer the licensee identified occurrence involving the discovery of a radioactively contaminated piece of plywood in an employee's backyard. The employee had taken the wood from the plant onsite waste dump to his home, having thought it was scrap. The plywood was contaminated in one place to a level of 187 d/m/100 cm<sup>2</sup>. Since the wood was removed from the dump at night, the employee failed to notice a radioactive material tag affixed to the surface of the board. The following morning, when he found the tag, he notified the site health physics organization and the wood was retrieved by site personnel. Surveys performed by the licensee and the State of Florida at the employee's

residence revealed one area, approximately four by four inches, that was contaminated to a level of approximately 20,000 dpm. This section of sod was removed for analysis and it was determined to be composed of radio-nuclides typical of activated corrosion products from the licensee's plant. No other significant contamination was found at the residence.

The licensee surveyed the on site dump on the same day and discovered four bags of contaminated waste which were retrieved and disposed of properly. The licensee performed a radiation survey of the dump and found no radiation levels above normal background levels.

The licensee attributes the cause of this loss of contaminated material control to a lack of communication between a health physics technician and the personnel who removed the waste from the restricted area. Corrective action has already been taken by the licensee in that a health physics technician is required to survey and approve each vehicle before it leaves the plant restricted area.

The inspector performed a radiation survey of the plant's on site waste dump, examined the survey records of the occurrence, interviewed the health physics supervisor and Rad/Chem protection engineer, and determined that the corrective action taken was adequate to prevent this type of event from recurring. The inspector had no further questions.

#### 6. In-plant Radioactive Material Control

a. The inspector spent approximately 28 hours on site during the back shifts examining the overall control of radioactive material and contaminated items. Three areas of weakness were identified.

- (1) Chem/rad Procedure RP-217 requires the use of yellow polyethylene for packaging of contaminated or radioactive items. On or about May 22, 1980 the plant storehouse ran out of yellow bags and the Health Physics section arbitrarily substituted clear polyethylene bags in their place without a temporary procedure change or scrutiny by the Plant Review Committee. Yellow polyethylene is specified by the procedure because its use is a distinctive marker enabling easy and prompt identification of potentially or actually contaminated items. Three clear polyethylene bags of waste were found in the auxiliary building hot machine shop by the inspector. The inspector measured these bags to have a contact reading of approximately 1.0 mrem/hr. above the background radiation level.
- (2) These same bags, due to their radiation level, were determined by the inspector to contain greater than 10 CFR 20 Appendix C quantities of radioactive material. 10 CFR 20.203 (f) requires containers of radioactive material in excess of Appendix C quantities to bear a distinctive tag or label with the words "Caution or Danger Radioactive Material" and also to have information regarding the contents of the container enabling an individual

handling the item or container to minimize or avoid exposure. The three bags in the machine shop were not marked in accordance with 10 CFR 20.203(f). A similar discrepancy was identified in IE Report 50-302/79-54. Although the overall control of containers with regard to the requirements of 10 CFR 20.203(f) has improved since that report, the inspector noted that additional work was needed to achieve full compliance. Another example of a problem in this general area of concern involved drums of laundry returned to the plant by a contractor. 10 CFR 20.203(f) permits, as an exception to the marking requirement, a DOT labeled container to not be marked so long as it is packaged for transport. The inspector discovered that drums marked "Radioactive LSA" were standing open or had the drum seal-ring removed and thus were not packaged for shipping and were not marked as required by 10 CFR 20.203(f). Also, one fiber drum containing laundry was not marked at all. These drums typically were measured by the inspection to be 4-5 mrem/hour above the background radiation level.

The preceding examples constitute an item of noncompliance with 10 CFR 20.203(f) (50-302/80-10-01). A similar item was addressed to the licensee in IE Report No. 50-302/79-54 dated January 18, 1980.

- b. On May 25, 1980 a licensee representative stated to the inspector that during rush hours regular employees, not specifically trained in radiation survey techniques, are sometimes allowed to perform surveys for the unconditional release of items to the unrestricted area. The inspector discussed this finding with the Chem/Rad protection engineer and was informed that this practice, though not forbidden by plant procedures, was contrary to policy. The Chem/Rad protection engineer sent, on May 27, 1980, a memo to all health physics supervisory personnel requiring unconditional release surveys to be performed by health physics technicians only. The inspector had no further questions.
- c. The inspector tested the response of the licensee's portal monitors located at the radiation controlled area exit and at the plant security guardhouse on May 25, 1980. The portal monitors would not alarm with a 0.2 mrem/hour source placed on contact with the detector face, and only intermittently would detect a 10.0 mrem/hour source in the inspector's pocket or briefcase. The health physics supervisor stated that the calibration of the portal monitors was done in accordance with the monitor manufacturer's technical manual and that he felt they were set as low as possible to avoid spurious alarms. As a precautionary measure, the Rad/Chem protection engineer decided to have a health physics technician, routinely available at the security guardhouse during normal working hours, perform random frisking of personnel as they left the plant site. The inspector also surveyed approximately 50 individuals on May 27, 1980, and discovered no radiation levels above normal background levels. The inspector had no further questions.

- d. The inspector performed radiation surveys of the mechanical and electrical shops and clean tool storage areas on May 26 and 27, 1980. No radiation levels were noted. A survey of the clean instrument shop revealed a circuit board with a contact dose rate of 4.0 mrem/hour. The source of this radiation field was discovered to be a tantalum capacitor, apparently activated by the reactor neutron flux about 25 feet from the reactor vessel head. The circuit board had been part of an area radiation monitor located on the refueling bridge crane and had been exposed to the neutron flux since plant start up. This circuit board also contained, at one time, a Sr-90 check source. Upon survey for release to the unrestricted area, the health physics technician performing the survey erroneously attributed the radiation measured to the Sr-90 check source, believing it to be Cs-137. The actual Sr-90 source was installed on the replacement circuit board, and the board was retained in the instrument shop. Though 4.0 mrem/hour is in excess of plant procedural requirements for unconditional release of items to the unrestricted area, the unusual circumstances and relative insignificance of this isolated aberrant occurrence led the inspector to determine that there was no noncompliance.
- e. The inspector observed and duplicated surveys of three vehicles leaving the restricted area. No problems were noted. The inspector was satisfied that the techniques employed were adequate to avoid unauthorized removal of radioactive material from the restricted area.
- f. The inspector noted that due to primary to secondary coolant leaks portions of the steam and condensate systems contained low-level radioactive contamination. Of particular concern are areas or components which tend to concentrate very low contamination into quantities which would necessitate control for radiological purposes. Such components should be recognized by the licensee and surveys taken to determine appropriate control measures. The inspector questioned health physics personnel regarding the condensate full-flow demineralizer, the resin columns in the secondary sample system, the turbine building sump, miscellaneous components in secondary systems, and various component drains. The Rad/Chem protection engineer stated that the condensate demineralizer resins are routinely disposed of by burial at an approved burial site. The inspector determined that the sample resin column waste was properly disposed of and treated as radioactive waste. The health physics supervisor explained the sump sample compositor's operation to verify adequacy of the monitoring of this effluent pathway. The inspector had no other questions.
- g. An area related to radioactive contamination control is housekeeping. Though the plant was in the middle of a refueling outage, a time when housekeeping is particularly difficult to maintain, housekeeping and general cleanliness were good. Three areas, however, were lacking in this respect: the waste solidification and drumming area operated by a contractor; the high-level drum and cask storage area; and the decay heat pump pit area. The Chem/Rad protection engineer stated that he was aware of these problem areas and was continuing efforts to keep



such areas clean. The inspector noted that it was the responsibility of all plant personnel to maintain housekeeping at as high a level as possible.

- g. The inspector performed a radiation survey in the boilermaker's workshop located outside the protected area. No radiation levels above normal background levels were found.

7. Other Areas Examined

- a. The inspector discovered a plant maintenance worker reclining on the floor near the reactor building access control point with his feet resting upon a bag of used rubber gloves. The bag was measured by the inspector to have a dose rate of 3.5 mrem/hour. The individual, though it appeared to the inspector that he was somnolent, maintained that he was only resting. A licensee representative accompanying the inspector chastized the individual and told him to return to work. In the absence of a regulatory requirement regarding keeping exposure to radiation as low as reasonably achievable (ALARA), the inspector could only emphasize the advantages of this principle to plant management. He did so.
- b. The inspector identified a second ALARA concern when observing the contractor work in progress on the control rod mechanisms. Workers were donning protective clothing in an area near the exposed mechanisms. This was marked as a high radiation area. The inspection pointed out to a licensee representative that dressing could be performed at a nearby low exposure-rate area, and this suggestion was accepted. The inspector was informed by the health physics supervisor that low dose-rate "waiting areas" had been established in the reactor building as a means to improve ALARA efforts, but no formal program for overall dose reduction existed. The inspector discussed this concern with plant management and was assured that it is the licensee's policy to maintain personnel exposure ALARA.