



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

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Report Nos. 50-325/80-03 and 50-324/80-03

Licensee: Carolina Power and Light Company  
411 Fayetteville Street  
Raleigh, North Carolina 27602

Facility Name: Brunswick

Docket Nos. 50-325 and 50-324

License Nos. DPR-71 and DPR-62

Inspection at Brunswick site, near Wilmington, North Carolina

Inspector: *L. L. Jackson* 2/11/80  
for L. L. Jackson Date Signed

Approved by: *A. F. Gibson* 2/11/80  
for A. F. Gibson, Section Chief, FFMS Branch Date Signed

SUMMARY

Inspection on January 23-25, 1980

Areas Inspected

This special, unannounced inspection involved 22 inspector-hours onsite in the areas of packaging low-level radioactive waste for transport and burial (IE Bulletin No. 79-19) and onsite radioactive waste storage.

Results

Of the two areas inspected, no items of noncompliance or deviations were identified in one area; two apparent items of noncompliance were found in one area - Infraction - Failure to label containers of radioactive material - paragraph 6.a.(1); Infraction - Failure to survey - paragraph 6.a.(2).

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*A. C. Tollison, Jr., Plant Manager
- \*R. M. Poulk, NRC Coordinator
- \*J. L. Kiser, RC&T Engineer
- \*L. F. Tripp, Environmental and Radiation Control Supervisor
- \*W. M. Tucker, Manager, Technical and Administration
- B. Failor, RC&T Foreman
- J. B. Cook, RC&T Foreman
- W. L. Johnson, Radwaste Coordinator

Other licensee employees contacted included two operators.

#### Other Organizations

A. Brock, Mobile Solidification Unit Operator, Chem Nuclear Systems, Inc.

#### NRC Resident Inspector

\*M. J. Davis

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on January 25, 1980, with those persons indicated in Paragraph 1 above. The items of noncompliance were discussed with the Plant Manager. The inspector informed those present that poor housekeeping in the outdoor radwaste handling areas and lack of a plan for onsite storage of low level radwaste were problems needing immediate attention.

### 3. Licensee Action on Previous Inspection Findings

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Followup on IE Bulletin 79-19, Packaging of Low-Level Radioactive Waste for Transport and Burial

- a. The inspector reviewed the licensees letter of December 4, 1979, which revised responses to certain of the items in Bulletin 79-19, which had

been given in a letter dated September 21, 1979. The revised responses satisfactorily addressed the requirements of the Bulletin.

- b. To determine if the licensee had performed the actions required by the Bulletin, the inspector reviewed the results of quality assurance audits of the radwaste handling activities, procedures for radwaste processing (OP-6) and shipping (RC&G 0510), and training records for Radiation Control and Test (RC&T) personnel and Operations personnel involved in processing and packaging radwaste for shipment. The requirements of the Bulletin appear to have been satisfactorily met; however, management representatives were cautioned that the mobile solidification unit (MSU) operator who is an employee of Chem-Nuclear Systems, Inc., had not been included in the required training. The MSU and its operator are operating under the license issued to Carolina Power and Light Company and are subject to those requirements placed on the Brunswick facility. The inspector determined from discussions with the operator of the MSU that the individual was sufficiently knowledgeable in his area of radwaste operations to perform his duties safely. A management representative stated that the MSU operator would be included in future training programs. The inspector concluded that failure to include this particular individual in the training program did not adversely affect the safety of radwaste shipments and this situation is not likely to recur thus no further NRC action is necessary.
- c. The inspector, with a licensee representative, opened two containers of solidified radwaste and one container of dry rags, paper, etc. The two containers of solidified radwaste were approximately 200 cubic foot, right circular cylinders containing evaporator concentrates solidified in urea-formaldehyde. The visible portion of the solidified material was dry. The inspector probed the visible surface area with a piece of rigid plastic pipe to a depth of several inches to ascertain the consistency of the solidified material. There appeared to be a uniform consistency within the area probed. The inspector found some condensation on the inner surface of the caps of the liners and noted that the caps had not been sealed as if ready for shipment. It appears that the liners could be pulling in moisture laden air at night as they cool and expelling the air during the day when they heat up. Since the containers may set for several weeks prior to shipment, this "breathing" cycle may cause an unacceptable level of condensation to collect in the liner. It appears that some small amount of radioactive material could escape during this "breathing" cycle; however, sealing the containers properly will eliminate both condensation and the escape of radioactive material.

The one container of dry rags, paper, etc., was a rectangular metal box with approximate dimensions of 4 ft x 4 ft x 8 ft. No water or other prohibited materials were observed in this package. The inspector had no further questions concerning this area.

6. Plant Tour

- a. The inspector toured the east side of the plant extensively to assess the amount of radwaste stored outside. Two compliance problems were discovered while touring these areas.
- (1) Several containers of radioactive waste including 200 ft<sup>3</sup> and 300 ft<sup>3</sup> liners and some expended disposable demineralizers were not labeled in accordance with 10 CFR 20. 10 CFR 20.203(b) which requires that containers bear a label with the radiation caution symbol and the words CAUTION RADIOACTIVE MATERIAL or DANGER RADIOACTIVE MATERIAL and sufficient information to permit individuals handling or using the containers or working in the vicinity thereof, to take precautions to avoid or minimize exposures. There are some exemptions from this requirement but the containers in question do not meet the criteria for exemption. These containers had contact dose rates ranging from 40 - 100 mR/hr at contact. This is noncompliance with 10 CFR 20.203(b) (Infraction - 50-325/80-03-01 and 50-324/80-03-01).
  - (2) A contaminated fire hose was found on the ground near the base of the plant stack. The dose rate on this hose was approximately 40 mR/hr at contact. This hose was not tagged or bagged. A second hose, similarly uncontrolled, was found lying on top of a radwaste container. The second hose was also contaminated, however, the exact dose rate was not determined due to background interference from the radwaste container. Failure to evaluate and identify the radiation hazards associated with these hoses is in noncompliance with 10 CFR 20.201(b) which states that each licensee shall make or cause to be made such surveys as may be necessary for him to comply with the regulations in this part. (Infraction - 50-325/80-03-02 and 50-324/80-03-02).
- b. The inspector noted a relatively large area around the auxiliary boilers which was roped off and controlled as a contaminated area. It was determined that both auxiliary boilers were contaminated. The eastern most unit was shutdown but the other unit was operating. The operating unit is sufficiently contaminated that it is causing a radiation area to exist in the vicinity of the boiler and some of the piping. The inspector measured a dose rate of approximately 40 mR/hr at the north end of the mud drum on the operating unit. Because of contamination in the boiler, the mud drum is not being blown down in a manner consistent with good chemistry control. This increases the likelihood of having a boiler tube leak. If the boiler develops a leak, the contaminated water may leak directly to the ground and enter the ground water or be washed into the storm drain system. Two storm drains are located inside the contaminated area. They carry yard drainage to a pump lift station which pumps the water to a large holding pond (approximately 60 acres). This pond is sampled for radioactivity on a weekly basis and flow from the pond, as measured by

a vee-notch weir, is recorded. Another aspect to this problem is that the safety valves discharge directly to the atmosphere over the boilers. If the safety valves lift, low-level contamination could be scattered over a wide area around the auxiliary boilers. These concerns were expressed to the Plant Manager. The inspector will followup on this problem (IFI 50-325/80-03-03) during subsequent inspections.

7. General Discussion of Radwaste Problems

- a. The inspector discussed with management representatives, the impact of the current radwaste burial allocations being imposed on the licensees by Chem-Nuclear Systems, Inc., the operator of the burial ground at Barnwell, South Carolina. The allocations appear to be very cumbersome to manage and to penalize a licensee for failure to meet certain time tables even when the cause for such failure is beyond the control of the licensee. The availability of trucks and casks, the weather, the status of the plant and other factors affect the establishment of a shipping schedule. At the time of the inspection, there had been over 100 revisions to the schedule for radwaste shipments. This allocation system coupled with a significant reduction in the amount of waste allowed to be buried at the Barnwell, South Carolina burial ground is contributing to the accumulation of radwaste in significant quantities at the Brunswick facility. Various types of radioactive waste are being stored at scattered locations in the plant yard with no protection from the elements, no routine monitoring for leaks, etc. The inspector expressed concern to the Plant Manager that there is no plan in effect for reducing the volume of radwaste or for storing large quantities of radwaste onsite. Upon returning to the NRC regional office, the inspector discussed the problem of onsite storage of radwaste with NRC regional management and also with a member of the Nuclear Reactor Regulation staff in NRC Headquarters. As a result of these conversations, the inspector notified the Site Environmental and Radiation Control Supervisor, by telephone on January 31, 1980, that the plant staff should conduct a review of the present storage activities to determine if an unreviewed safety question exists. The requirement to conduct such a review is found in 10 CFR 50.59. As a minimum, a review of any future storage plans should be conducted in accordance with 10 CFR 50.59. This item will be followed up (IFI-50-325/80-03-04) during future inspections.

8. Detection of Iodine-131 in Milk Samples

While onsite, the inspector was informed that low levels of Iodine-131 had been confirmed in milk samples from one cow located approximately 0.6 miles from the plant. The highest level detected was 6.9 pCi/l in a sample taken on January 18. The inspector was informed that samples of forage and samples from the environmental monitoring stations in the area were being analyzed. The presence of iodine in the environment was attributed to high levels of iodine activity in the reactor building exhaust due to a combination of fuel cladding leaks and reactor coolant leaks. Licensee representatives had estimated that doses to the individuals drinking the milk would

be approximately 1 mrem if the 6.9 pCi/l of iodine-131 persists for a year. This is a conservative estimate since the iodine-131 is not expected to remain detectable due to rapid radioactive decay and the termination of releases from the plant. Environmental Technical Specifications require a 30 day written report for this occurrence. There will be additional followup of this occurrence after receipt of the written report (50-324/80-03-03).