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

Report No.: 50-261/78-23

Docket No.: 50-261

License No.: DPR-23

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

Facility Name: H. B. Robinson 2

Inspection at: Hartsville, South Carolina

Inspection Conducted: October 2-6, 1978

Inspection: G. R. Jenkins

Reviewed by: G. J. Sutherland for A. F. Gibson, Chief — 10-27-78 Date
Radiation Support Section
Fuel Facility and Materials Safety Branch

Inspection Summary

Inspection on October 2-6, 1978 (Report No. 50-261/78-23)
Areas Inspected: Routine, unannounced inspection of spent fuel shipments, solid radwaste, personnel overexposure, follow-up on previous inspection items, and IE Circular and Bulletins. The inspection involved about 32 inspector-hours on-site by one NRC inspector.
Results: Of four areas inspected, no apparent items of noncompliance were identified in two areas; two items of noncompliance were identified in two areas (Infraction-Exposure greater than 5(N-18) (78-23-01), Infraction-Waste drums not surveyed for contamination prior to shipment (78-23-02)).

DUPE

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DETAILS I

Prepared by: G. R. Jenkins 10/27/78
G. R. Jenkins, Radiation Specialist Date
Radiation Support Section
Fuel Facility and Materials Safety Branch

Dates of Inspection: October 2-6, 1978

Reviewed by: for A. F. Gibson 10/27/78
A. F. Gibson, Chief Date
Radiation Support Section
Fuel Facility and Materials Safety Branch

1. Individuals Contacted

*R. B. Starkey, Jr., Plant Manager
*D. S. Crocker, E&RC Supervisor
J. A. Eaddy, RC&T Foreman
G. B. Moore, RC&T Foreman
F. Lowery, Training Coordinator
J. Sawyer, Engineering Technician
6 RC&T Technicians

*Denotes those present at Exit Interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Deficiency (78-05-01). Containers not properly labeled. An inspector reviewed corrective actions as described in CP&L's supplemental response of July 18, 1978, and determined that actions taken appeared to be effective. This item is closed (Details I, paragraph 4).

(Closed) Infraction (78-05-03). Respirators not surveyed for fixed contamination. An inspector reviewed recent respirator survey records and found them to be acceptable. Also, during the inspection, respirator storage cabinet shelves were repositioned to preclude the stacking of respirators. This item is closed.

(Closed) Open Item (78-05-04). Whole body counting program. An inspector reviewed Health Physics Procedure HP-32, "Personnel Whole Body Counting", issued July 1, 1978, and had no further questions on this item.

(Closed) Infraction (78-13-01). Radiation area not conspicuously posted. An inspector reviewed corrective actions, as stated in CP&L's letter of July 26, 1978, and had no further questions. All radiation areas observed during plant tours were conspicuously posted.

(Closed) Deficiency (78-13-02). Current copy of 10 CFR 20 not available. An inspector reviewed corrective actions, as stated in CP&L's letter of July 26, 1978. The inspector verified that current copies of 10 CFR 20 are now available. This item is closed.

(Closed) Open Item (78-13-03). Control of TLD badges. The licensee has decided to have TLD badges distributed by security guards at the Unit 2 control point, to begin about mid-October when badge racks are installed. The inspector had no further questions.

(Closed) Open Item (78-13-04). Missing radiation monitor qualification card. An inspector verified that the individual in question had been re-qualified effective July 2, 1978.

(Closed) Open Item (78-13-05). Calibration of containment and plant vent gas monitors. An inspector verified that RMS-12 and RMS-14 were calibrated on August 16, 1978.

(Open) Open Item (78-21-02). Radiological controls associated with fuel cask loading. An inspector discussed this item with RC&T personnel, who agreed to certain improvements. This item remains open pending review of the improved controls (Details I, paragraph 5).

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 6.

4. Labeling of Radioactive Material Containers (78-05-01)

During tours of the auxiliary building, an inspector observed that containers of radioactive material appeared to be properly labeled. The inspector reviewed instruction HPI-2, "Handling of Radioactive Trash" and had no questions. In discussing the scope of 10 CFR 20. 203(f), the E&RC Supervisor said that drums of compacted waste had not been labeled as radioactive material while stored in a locked, posted area of the drumming room waiting shipment. The inspector stated that these should be labeled, and the E&RC Supervisor stated that this would be done. The inspector had no further questions.

5. Radiological Controls Associated with Fuel Cask Loading (78-21-02)

An inspector discussed some specific areas of concern, previously identified in Region II Report No. 50-261/78-21, with RC&T personnel. The E&RC Supervisor stated that improved health physics coverage would be applied to activities in the fuel handling building, and the following specific actions would be taken:

a. A frisking station will be established for personnel involved in fuel cask loading and handling;

b. The hook cables of the cask crane will be surveyed for contamination prior to storage after each cask loading evolution;

c. More specific information linking protective clothing requirements to the type work to be performed will be included on radiation work permits for fuel handling jobs.

The inspector stated that this item will remain open pending review of these controls.

6. Spent Fuel Shipments

a. An inspector reviewed shipping documentation associated with transfers of spent fuel from H. B. Robinson to Brunswick made on September 12, 1978, September 20, 1978, and October 6, 1978. Each shipment includes seven fuel assemblies in Model IF-300 cask transported by railcar. These records indicated that about 40 to 50 points on the cask were checked for surface contamination each shipment, and, prior to shipment, all smears on the cask indicated less than 20,000 dpm per 100 cm^2.

b. In reviewing the radioactive material shipment record for the October 6, 1978 shipment prior to its departure, the inspector stated that the locations of the radiation measurements, as recorded, were not clear. The E&RC Supervisor concurred, and stated that the cask and enclosure would be re-surveyed prior to releasing the shipment. The inspector also determined that no record was maintained of the full radiation survey of the cask and enclosure for this or past shipments. The only recorded radiation data was on the radioactive material shipment records. The E&RC Supervisor stated that detailed radiation survey records for spent fuel shipments would be maintained for subsequent shipments.

c. During a discussion of spent fuel shipment surveys, the E&RC Supervisor disclosed to the inspector an intra-Company memorandum, dated January 25, 1978, which established a CP&L policy that, for the purpose of evaluating surface contamination associated with the Model IF-300 shipping container, the retractable aluminum enclosure is considered the outer surface of the package. Also, based upon that memorandum, the licensee has determined the transport index of shipments to be equivalent to the dose rate at 3 feet from the surface of the enclosure. The memorandum references the definitions of "package" and "packaging" from 10 CFR 71.3, discusses the contents of Certificate of Compliance No. 9001, notes that 10 CFR 20.205(b)(2) addresses the external surfaces of the "package", and concludes that "...the entire unit constitutes the PACKAGE, and the contaminations apply to the outer surfaces of the package, which is the ENCLOSURE". The inspector questioned CP&L's interpretation that the aluminum enclosure, rather than the spent fuel cask, is the package for purposes of determining contamination levels and the transport index of a shipment. The inspector identified this as an unresolved item pending resolution of the interpretation of the meaning of "package" as stated in 10 CFR 20.205(b)(2), 49 CFR 173.389(i) (referenced by 10 CFR 71.5), and USNRC Certificate of Compliance No. 9001 (78-23-03). The inspector also took note of the statement in the CP&L memorandum that, in a few instances, the spent fuel cask has arrived at Brunswick Plant with contamination levels on the cask in excess of the limits of 10 CFR 20, even though considerable decontamination took place at the H. B. Robinson Plant and was shipped with levels less than the limits.

7. Radiation Exposure Exceeding 5(N-18)

a. On July 25, 1978, CP&L Harris Energy and Environmental Center personnel discovered that a contract janitor had received exposure of 5.490 rem, which exceeded the permissible accumulated dose of 5 rem for his age of 19 years at that time. This was verbally reported to Region II and a letter report, dated August 22, 1978, was sent to the Director, OIE, in accordance with the requirements of 10 CFR 20.405. Also, a report was provided to the individual on August 18, 1978, in accordance with 10 CFR 19.13.

b. An inspector discussed the report and the sequence of events with the E&RC Supervisor. The overexposure apparently resulted from erroneous information supplied in computer reports generated at the Harris Center. Through a series of data entry errors, the individual's lifetime dose was equated to his calendar year dose on the computer record issued for March 1978, thereby deleting

his pre-1978 accumulated dose of 1.584 rem. Thereafter, the dose allowable, based on the computer report, was in error by that quantity until the discrepancy was identified during a review of the computer reports on July 25. As indicated in the CP&L report, the underlying cause of this incident is the failure of the review process at the Harris Center to perform adequately.

c. The inspector cited the reported exposure as noncompliance with 10 CFR 20.101(b), and stated that no response to this item in the Notice of Violation would be required since both interim and long-range corrective actions were outlined in CP&L's report (78-23-01). The inspector verified by review of records and discussion with licensee representatives that an interim monthly review of the computer generated record is conducted at the plant, including calculations of accumulated exposure for individuals with a permissible accumulated dose of less than 10 rem. The inspector stated that this item would remain open pending review of the expanded audit program to be implemented at the Harris Center in the first quarter of 1979.

8. Solid Radioactive Waste Shipments

a. An inspector discussed IE Circular 78-03, "Packaging Greater Than Type A Quantities of Low Specific Activity Radioactive Material for Transport", with licensee representatives. The inspector reviewed procedure HP-20, "Shipment of Radioactive Materials", and noted that the procedure specifically cautions against shipping LSA in a non-specification container if the total quantity is Type B. The inspector also reviewed selected radioactive material shipment records covering the period January-June 1978, and had no questions.

b. In reviewing the "Effluent and Waste Disposal Semi-Annual Report, January-June 1978", the inspector noted an apparent error in the total activity of solid waste shipments (p. 14). Licensee representatives stated that the error had been identified by CP&L personnel and that a supplement to the report was being prepared. The inspector stated that the supplemental report would be reviewed when received (78-23-04).

c. An inspector observed packaged drums of radioactive waste being removed from the auxiliary building for storage prior to shipment. The drums were lowered by crane from the second level of the building to the outside paved area. Each drum was placed in a yellow polyethylene bag for storage and shipment. When questioned,

RC&T personnel said that the bags were used to assure no significant removable surface contamination on the exterior of the package, which is a general requirement of 49 CFR 173.393(h), and that no measurements of surface contamination were made. The inspector questioned if the integrity of the plastic bags was maintained throughout the handling, loading, and shipping of the drums. The E&RC Supervisor acknowledged that tears in the bags did occur. He stated that absorbent paper was placed under the drums on the exclusive use truck, but agreed that the plastic bags could not be considered "strong, tight containers". The inspector cited failure to survey the drums for removable contamination prior to shipment as noncompliance with 10 CFR 71.5(b), which requires that the licensee conform to the Department of Transportation requirements (78-23-02); 49 CFR 173.393(n)(9) requires that, prior to shipment of the package, the shipper shall ensure that contamination levels are within the allowable limits. The E&RC Supervisor stated that, thereafter, the drums would be surveyed for contamination prior to shipment.

9. Fire in Ventilation System

On October 4, 1978, a fire occurred inside a ventilation duct in the former laundry area of the auxiliary building. That area was being remodeled to provide shower and change facilities for female workers. In the process of cutting a channel iron sleeve around the duct, a worker cut through the duct with a torch, igniting lint which had accumulated from long-term operation of a clothes dryer. The resulting fire was mostly smouldering material with a lot of smoke and very little flame. The inspector observed the activities of plant personnel while the fire was contained and extinguished, noting particularly that respiratory protection was worn by personnel in the immediate area and that air sampling was done. Thirteen air samples were taken in areas of the auxiliary building where smoke was observed. The maximum gross concentration was 1×10^{-9} uCi/cc; no activity was detected on isotopic analysis of these samples. Two iodine air samples were collected, but no activity was detected. During subsequent discussion, a RC&T Foreman said that the workers had discussed the cutting job with him prior to starting. He said that no radiation work prmit was issued because there was no intent to cut into the duct. The inspector had no further questions regarding the radiological aspects of the response to the fire.

10. IE Bulletin 78-07 - Protection Afforded by Airline Respirators and Supplied-Air Hoods

An inspector discussed CP&L's letter of August 14, 1978, in response to the subject bulletin. Neither supplied air hoods nor respirators in the demand mode are used at H. B. Robinson.

11. IE Bulletin 78-08 - Radiation Levels From Fuel Element Transfer Tube

An inspector discussed CP&L's letter of August 14, 1978, in response to this bulletin, with the E&RC Supervisor. The response stated, in part, that although no portion of the transfer tube is accessible in the unshielded condition, a proposed plant modification will result in fencing and locked gates being placed around the high radiation areas adjacent to the shielded tube to further control personnel access during fuel transfer. The inspector reviewed the record of a radiation survey conducted November 20, 1975, during fuel transfer which showed a maximum radiation level of 350 rem per hour in the space underneath the refueling canal. The inspector reviewed minutes of the PNSC meeting of April 14, 1978, (erroneously stated as April 4, 1978 in the CP&L response) in which the need for the plant modification was discussed. Plant management stated that the modification will be accomplished during the next refueling outage prior to transferring any fuel. The inspector stated that this item would be further reviewed at that time (78-23-05).

12. Effluent Radiation Monitors

a. An inspector discussed with licensee representatives an event which occurred at another facility involving the condenser air ejector monitor. After a significant leak in a stream generator tube, the monitor spiked momentarily but then returned downscale due to saturation of the GM detector due to high radiation. GM detectors are used as gas monitor detectors at H. B. Robinson. Section 7.2 of System Description 7, "Radiation Monitoring System", states that the monitors are of a non-saturating design and will peg full scale if exposed to levels up to 100 times full-scale indication.

b. The inspector also discussed an event at another facility where a continuous iodine stack monitor gave erroneous readings due to detection of noble gases. The E&RC Supervisor said that the stack effluent monitor includes an iodine monitoring channel, but that plant personnel recognize that the iodine monitor responds to noble gases during any high gaseous activity release.

13. Exit Interview

The inspector met with management representatives (denoted in paragraph 1) on October 6, 1978, and summarized the scope and findings of the inspection. Items discussed included two items of noncompliance and one unresolved item discussed in this report.