UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JI 31 PDR (2) Brunswick

AUG 1 1980

Docket Nos: 50-325
50-324
EA-80-41

DOCKETED
USNRC

'85 JAN -8 P3:04

Carolina Power and Light Company
ATTN: J. A. Jones
Senior Executive Vice President
and Chief Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

During an inspection on April 28, 1980, an NRC Region II inspector discovered licensed material from your Brunswick facility improperly disposed of at the Brunswick County sanitary landfill near Southport, North Carolina. Subsequently, other items contaminated with licensed radioactive material were found to have been sold by the Carolina Power and Light Company to salvage dealers in Wilmington and Goldsboro, North Carolina. This breakdown of contamination control measures at the Brunswick facility was discussed with you by telephone on April 28 and May 2, 1980, by James P. O'Reilly, Director of our Region II office. The results of this conversation and our understanding of your planned corrective actions were also discussed in letters to you from James P. O'Reilly dated April 29 and May 2, 1980. Your initial corrective actions were confirmed by our onsite inspection personnel.

The improper disposal of licensed material in a sanitary landfill and the release of radioactively contaminated scrap to salvage dealers indicate a serious breakdown in your control of radioactively contaminated material at the Brunswick facility. Weaknesses in the radioactive contamination survey practices at this facility resulted in the improper transfer of contaminated trash and scrap to unrestricted areas on at least sixteen occasions from mid-1978 through April 1980. Although the actual quantities of radioactive material found in unrestricted areas were relatively small, the public health and safety could have been adversely affected had some of these articles found their way into personal use in the private sector.

The factors which contributed to the improper disposal of licensed material coupled with the failure of workers to employ proper techniques in the use of anti-contamination clothing and self-monitoring practices, indicate a breakdown in the implementation and management of your radiation protection program.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

50-400OL I-JI-31

9/13/84



NUCLEAR REGULATORY COMMISSION
Official Exh. No. J/31
Docket No. 50-400
In the matter of Shearon Harris #1

| | |
|---|---|
| Staff | IDENTIFIED ✓ |
| Applicant ✓ | RECEIVED ✓ |
| Intervenor | REJECTED |
| Cont'g Gov't | DATE 9-13-84 |
| Contractor | Witness |
| Other | |
| Reporter CRR | |

Therefore, we propose to impose civil penalties for the items of noncompliance set forth in Appendix A to this letter in a total amount of Eighty-Nine Thousand Dollars. Appendix B to this letter is a Notice of Proposed Imposition of Civil Penalties. You are required to respond to this letter and in preparing your response you should follow the instructions in Appendices A and B.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the Commission's Public Document Room.

Sincerely,

Victor Stello, Jr.,
Director
Office of Inspection
and Enforcement

Enclosures:
1. Appendix A - Notice of Violation
2. Appendix B - Notice of Proposed Imposition of Civil Penalties

cc w/encl:
A. C. Tollison, Jr.
Plant Manager
Box 458
Southport, N.C. 28461

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Brunswick

Docket Nos: 50-324
50-325

EA-80-41

Based on the NRC inspection conducted on April 26 to May 16, 1980, certain of your activities apparently were not conducted in full compliance with NRC requirements as indicated below.

A. 10 CFR 20.301 prohibits a licensee from disposing of licensed material except as authorized by 10 CFR Parts 20, 30, 40, and 70. In addition, 10 CFR 20.201 requires that surveys be made as may be necessary to comply with 10 CFR Part 20.

Contrary to the above, on at least 16 separate occasions during the period from mid-1978 through April 1980, licensed material (in the form of contaminated equipment) was disposed of without authorization. In addition, surveys conducted for the purpose of detecting and identifying items radioactively contaminated with licensed material were inadequate, thereby contributing to the unauthorized disposal of licensed material. These 16 occasions consisted of the following disposals: at least 13 times during mid-1978 through April 1980, to the Brunswick County sanitary landfill; once during April 1980, to the North Carolina Salvage Company in Goldsboro; once during May 1979, to the Horton Iron and Metal Company; and, once prior to May 1980, to the Merrit Holland Company in Wilmington, North Carolina.

Each of these 16 occasions (inadequate surveys and resulting unauthorized disposals) constitutes a separate infraction and a civil penalty of $4,000 is proposed for each. (Cumulative civil penalty - $64,000).

B. BSEP Technical Specification (T.S.) 6.8.1.a requires that written procedures be established, implemented, and maintained covering the activities and procedures recommended in Appendix A of Regulatory Guide 1.33, November 1972. This Regulatory Guide requires radiation protection procedures for control of radioactive materials to prevent release to the environment and minimize personnel exposure.

1. Licensee procedure BSEP Vol. VIII, RPM, paragraph 6.2.2, requires that equipment to be unconditionally released from the "Radiation Control Area" to the "clean area" have less than 200 dpm/100cm$^2$ loose surface contamination and less than 0.25 mR/hr fixed contamination measured at one inch from the surface of the item. The "clean area" is defined as any area within the "Controlled Access Area" in which contamination levels are less than those specified above. The "Radiation Control Area" is defined as any area to which access is controlled for the purpose of limiting radiation exposure or preventing the spread of contamination.

Contrary to the above, on April 29, 1980, this procedure was not implemented in that criteria used by contract workers would have permitted the release of items to the clean area with levels of loose surface contamination in excess of the above limits.

2. BSEP Vol. VIII, RPM, paragraph 6.6.6, requires personnel leaving the Radiation Control Area to monitor themselves for contamination.

   Contrary to the above, on April 27, 1980, two workers exiting the reactor building 50' elevation near the torus access (a Radiation Control Area) failed to monitor themselves for contamination at the monitor station provided.

3. BSEP Vol. VIII, RPM, paragraph 10.1.1, requires personnel to be assisted by the Radiation Control and Test Group (RC&T) in cases of skin contamination.

   Contrary to the above, on April 29, 1980, three non-RC&T individuals at the personnel decontamination station were engaged in decontamination of their skin. The workers failed to notify RC&T to gain assistance although a call button was provided for workers' use.

4. RC&T Procedure 0110, paragraph 8.5, requires personnel to use portal monitors.

   Contrary to the above, on April 29, 1980, an individual bypassed the portal monitor at the construction exit from the restricted area.

5. RC&T Procedure 0211, paragraph 3, requires protective clothing to be removed in such a way as to minimize the spread of contamination. Paragraph 8 of the same procedure requires that gloves and coveralls be removed in such a way that only the inside surfaces are touched with the hands.

   Contrary to the above, on April 27, 1980, workers were observed touching potentially contaminated outside surfaces of coveralls and gloves with their hands as they undressed at the Unit 2 torus checkpoint.

6. RC&T Procedure 0110, paragraph 8.3.3, requires the instrument probe to be moved slowly when performing a whole body frisk.

   Contrary to the above, on April 27, 1980, at the frisker station on the 50' elevation exit from the reactor building, workers surveying themselves at this station moved the instrument probe over their bodies so quickly that low levels of contamination would not be detected.

7. RC&T Procedure 0302, paragraph 2.1.1 requires the portal monitor alarm setpoint to be approximately 0.1 mR/hr.

Contrary to the above, on April 26, 1980, a portal monitor located at the main control point failed to alarm at 0.2 mR/hr.

8. BSEP Vol. VIII, paragraph 6.5.[illegible] requires protective clothing radiation levels be less than [illegible].5 mR/hr above background at one inch before issue to personnel for use.

Contrary to the above, on May [illegible], 1980, does rates of 1.0 and 2.4 mR/hr (above background) at one inch were measured on coveralls ready for issue.

Each of these 8 items constitutes a separate infraction and a civil penalty of $4,000 is proposed for each. (Cumulative civil penalty - $32,000)

C. 10 CFR 20.203(b) requires areas with whole body exposure rates in excess of 5.0 mR/hr to be posted as a "Radiation Area."

Contrary to the above, on April 30, 1980, the laundry shipping preparation area in which the dose rate to a worker was measured to be 25.0 mR/hr, was not posted as a "Radiation Area."

This is an infraction (Civil Penalty - $4,000.00).

D. 10 CFR 20.103(a)(3) requires that airborne radioactive material surveys be taken in restricted areas to evaluate workers' exposure to radioactive materials in air.

(1) Contrary to the above, on April 24, 1980, airborne surveys were not conducted at the cleanup area on the reactor water cleanup system building roof (a restricted area) when work was underway which could cause high levels of airborne contamination.

(2) Contrary to the above, on April 30, 1980, airborne surveys were not conducted in the Health Physics Systems Laundry trailer facility (a restricted area) when the potential for high levels of airborne contamination existed due to the work in progress.

Each of these 2 items constitutes a separate infraction and a civil penalty of $4,000 is proposed for each. (Cumulative civil penalty - $8,000)

Although the total civil penalties amount to $108,000, pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (42 USC 2282), the total civil penalties for any thirty-day period cannot exceed $25,000. Consequently, civil penalties in the amount of $89,000 are proposed for the above.

This Notice of Violation is sent to Carolina Power and Light Company pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. You are hereby required to submit to this office, within twenty-five days of the date of this letter, a written

statement or explanation in reply, including for each item of noncompliance: (1) admission or denial of the alleged item of noncompliance; (2) the reasons for the item of noncompliance, if admitted; (3) the corrective steps which have been taken by you and the results achieved; (4) the corrective steps which will be taken to avoid further noncompliance; and (5) the date when compliance will be achieved.

## APPENDIX B

## NOTICE OF PROPOSED IMPOSITIONS OF CIVIL PENALTIES

Carolina Power and Light Company

Docket Nos. 50-324 and 50-325
License Nos. DPR-71 and DPR-62
EA-80-41

This office proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (42 USC 2282) and to 10 CFR 2.205, in the cumulative amount of Eighty-Nine Thousand Dollars for the specific items of noncompliance set forth in Appendix A to the cover letter. In proposing to impose civil penalties pursuant to this section of the Act and in fixing the proposed amount of the penalties, the factors identified in the Statements of Consideration published in the Federal Register with the rulemaking action which adopted 10 CFR 2.205 (36 FR 16894) August 26, 1971, and the "Criteria for Determining Enforcement Action," which was sent to NRC licensees on December 31, 1974, have been taken into account.

Carolina Power and Light Company may, within twenty-five days of the date of this notice, pay the civil penalties in the cumulative amount of Eighty-Nine Thousand Dollars or may protest the imposition of the civil penalties in whole or in part by a written answer. Should Carolina Power and Light Company fail to answer within the time specified, this office will issue an order imposing the civil penalties in the amount proposed above. Should the Carolina Power and Light Company elect to file an answer protesting the civil penalties, such answer may (a) deny the items of noncompliance listed in the Notice of Violation in whole or in part, (b) demonstrate extenuating circumstances, (c) show error in the Notice of Violation, or (d) show other reasons why penalties should not be imposed. In addition to protesting the civil penalties in whole or in part, such answer may request remission or mitigation of the penalties. Any written answer in accordance with 10 CFR 2.205 should be set forth separately from your statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., giving page and paragraph numbers) to avoid repetition.

Carolina Power and Light Company's attention is directed to the other provisions of 10 CFR 2.205 regarding, in particular, failure to answer and ensuing orders; answer, consideration by this office, and ensuing orders; requests for hearing, hearings and ensuing orders; compromise, and collection.

Upon failure to pay any civil penalty due which has been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, the matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Atomic Energy Act of 1954, as amended (42 USC 2282).

Washington File

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

AUG 4 1980

In Reply Refer To:
RII:JMP
50-325/80-18
50-324/80-15

Carolina Power and Light Company
ATTN: J. A. Jones
Senior Executive Vice President and
Chief Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

This refers to the inspection conducted by members of the USNRC Region II staff from April 26 to May 16, 1980, of activities authorized by NRC Operating License Nos. DPR-71 and DPR-62 for the Brunswick facility.

Areas examined during these inspections and our findings are discussed in the enclosed inspection report. Enforcement action resulting from this inspection was addressed to you in correspondence from our Headquarters dated August 1, 1980.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

James P. O'Reilly
Director

Enclosure: (See Page 2)

8102130080

Enclosure:
Inspection Report Nos. 50-325/80-18
and 50-324/80-15

cc w/encl:
A. C. Tollison, Jr., Plant Manager

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

Report Nos. 50-325/80-18 and 50-324/80-15

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

Facility Name: Brunswick Plant

Docket Nos. 50-325 and 50-324

License Nos. DPR-71 and DPR-62

Inspection at Brunswick near Southport, NC

Approved by: J. P. Stohr, Chief, FFMS Branch — 8/4/80 Date Signed

SUMMARY

Inspection dates April 26, 1980, to May 16, 1980

Areas Inspected

This special, unannounced inspection involved 520 inspector-hours onsite in the areas of contamination control inside the plant restricted area (Details I) and in unrestricted areas (Details II).

Results

In the special areas of inspection, twenty-seven apparent items of noncompliance were identified ( 16 infractions - disposal of licensed material contrary to the provisions of 10 CFR 20, (325/80-03; 324/80-15-03) paragraph 3.d., Details I; eight infractions - failure to follow procedures required by Technical Specifications to implement the radiation protection program, (325/80-18-04; 324/ 80-15-04 paragraph 4.a, Details I; infraction - failure to post a radiation area (325/80-18-05; 324/80-15-05) paragraph 4.c.(1), Details I; two infractions - failure to perform required airborne radioactive material surveys, (325/80-18-06; 324/80-15-06) paragraph 4.c.(4), Details I).

DETAILS I

Inspectors: A Y Gibson for J. M. Puckett — 6/24/80 Date Signed

A Y Gibson for J. H. Davis — 6/24/80 Date Signed

William J. Millsap W. J. Millsap — 24 June 80 Date Signed

Accompanying Personnel: A. F. Gibson
P. C. McPhail

Approved by: A Y Gibson A. F. Gibson, Section Chief, FFMS Branch — 6/24/80 Date Signed

1. Persons Contacted

Licensee Employees

B. Furr, Vice President, Nuclear Operations
A. C. Tollison, Jr., General Manager, BSEP
H. R. Banks, General Manager, Harris Plant
E. Clary, News Services
R. J. Groover, Project Construction Manager
C. E. Rose, Jr., OQA Specialist
W. J. Dorman, Project QA Specialist
J. M. Johnson, Manager OQA
R. L. Mayton, Jr., Director, Corporate Health Physics
J. A. Padgett, Director, Nuclear Safety and QA, BSEP
B. H. Webster, Manager, Environmental and Radiological Control
W. M. Tucker, Manager, Technical and Administrative, BSEP
L. F. Tripp, Supervisor, Environmental and Radiation Control, BSEP
J. L. Kiser, RC&T Engineer, BSEP
R. M. Poulk, NRC Coordinator, BSEP
E. M. Rollins, Corporate Health Physics
W. L. Triplett, Administrative Supervisor, BSEP

Other licensee employees contacted included 15 construction craftsmen, 9 technicians, 1 operator, and 3 security force members.

Other Organizations Contacted

S. Sanderfer, Maintenance Incorporated, Supervisor
G. D. Leonard, Institute for Resource Management
Yeargin Corporation
North Carolina Bureau of Radiological Health
Brunswick, North Carolina, County Manager

NRC Resident Inspectors

J. Outzs
M. Davis

2. Exit Interview

The inspection scope and findings were summarized by NRC inspectors on April 30, May 1, May 2, May 9, and May 16 with licensee representatives. The meetings on April 30 and May 1 with B. J. Furr, Vice President, Nuclear Operations and A. C. Tollison, Brunswick Plant General Manager, and members of their staffs were conducted to inform CP&L management of the concerns detailed in this report and to obtain commitments for prompt corrective action. The final result of these meetings was the Confirmation of Action letter to J. A. Jones, Senior Executive Vice President and Chief Operating Officer, dated May 2, 1980, from the Director, Region II, USNRC.

An exit interview was held with A. C. Tollison and members of his staff on May 2, 1980. The inspector reviewed the identified items of noncompliance and discussed areas inspected since April 26. The inspector cited delays in correcting previously identified problems in the radiation protection program and emphasized the importance of action to correct problems in a timely manner. The inspector stressed that the cooperation of all employees was needed to assure success in the implementation of effective contamination control.

On May 9, an inspector met with A. C. Tollison and members of his staff to evaluate the status of the licensee's response to the confirmation of action letter of May 2, 1980. His findings are detailed in this report.

On May 16, an inspector met with A. C. Tollison and members of his staff for a final exit interview and evaluation of the licensee's corrective actions to that date. His findings are also detailed in this report.

On May 19, 1980, B. J. Furr and A. C. Tollison, Jr., and members of their staffs met with James P. O'Reilly, Director, Region II, USNRC and members of his staff in Atlanta, Georgia, for an enforcement conference. The results of this meeting are also provided in this report.

3. Initial Inspection Activities

a. Arrival at BSEP Facility

An inspector arrived at the BSEP facility at 1:00 p.m., April 26, 1980, and contacted the control room, notifying the shift operating supervisor (SOS) of his presence. The inspector offered to conduct an entrance interview with the SOS or, as an alternative, suggested the Radiation Control and Test (RC&T) foreman be notified of his arrival in order that an escort be provided for a plant tour. The SOS elected to notify the RC&T foreman. Thirty minutes later, the inspector again called the SOS and expressed his feeling that perhaps he was being denied access to the plant in a timely manner. The RC&T foreman was then notified by the SOS and an escort was provided. A licensee

representative stated the delay was the result of lack of communication and that there was no intent to restrict the inspector's access to the facility. 10 CFR 50.70 requires that inspectors be afforded the same access to the site as regular plant employees. Though access was eventually granted to the inspector, timeliness was lacking. This area will be reviewed on future inspections (IFI 50-325/80-18-01, 50-324/80-15-01).

b. Initial Plant Tour

Escorted by licensee representatives, an inspector conducted tours of the reactor building, restricted area, RC&T facilities including the chemistry laboratory, and various frisking stations, control points, and the main portal monitor location. Specific problem areas identified during these tours are discussed below. During the tours, the inspector determined that opportunity existed for uncontrolled, unmonitored release of radioactively contaminated items to the unrestricted area.

c. Meeting With Plant General Manager, April 28, 1980

The inspector held a meeting with the Plant General Manager and informed him of potential pathways for release of radioactive material to unrestricted areas and of the inspector's intent to perform a radiation survey of the Brunswick County, North Carolina, sanitary landfill facility located seven miles north of Southport, North Carolina, off State Highway 211. NRC, Region II office, notified the State of North Carolina of this survey plan.

d. Initial Landfill Survey

On April 28, 1980, in the company of a licensee representative, the inspector identified an area in the landfill where background levels of radioactivity exceeded normal levels by a factor of 10 - 20. The inspector and licensee representative subsequently dug out of the ground a bucket identified by the licensee representative as having originated at BSEP as part of a shipment of clean trash released to the unrestricted area from the site. Dose rates subsequently measured by the licensee on the bucket were up to 100 mRem/hr on contact. The licensee representative returned to the plant, informed his management, and returned to the landfill with appropriate equipment and personnel to contain and recover the radioactive material. The inspector remained at the landfill during this time to ensure unauthorized persons would not receive exposure due to the uncovered bucket. The BSEP Plant General Manager, RC&T Supervisor, and two RC&T technicians returned to take charge of the radioactive material at the landfill, and the inspector returned to the power plant to notify Region II of the event.

The inspector reassured the landfill bulldozer operator that the likelihood of his having received any significant exposure due to the burial of radioactive material at his place of employment was very remote and that he could contact Region II at any time for information

in this regard. He was also told by the inspector that an evaluation of the potential for exposure would be performed and that he would be notified if significant results were indicated. He seemed satisfied by the inspector's explanation.

10 CFR 20.301, requires that no licensee shall dispose of licensed material except: (a) by transfer to an authorized recipient as provided in the regulations in Part 30, 40, or 70 of this Chapter, whichever is applicable; or (b) as authorized pursuant to Paragraph 20.302; or (c) as provided in Paragraph 20.303 or Paragraph 20.304, applicable respectively to the disposal of licensed material by release into sanitary sewerage systems or burial in soil, or in Paragraph 20.106 (Radioactivity in effluents to unrestricted areas).

BSEP Technical Specification (T.S.) 6.8.1.a, requires written procedures to be established, implemented, and maintained covering the activities and procedures recommended in Appendix A of Regulatory Guide 1.33, November 1972. This Regulatory Guide requires radiation protection procedures for control of radioactive materials to prevent release to the environment and minimize personnel exposure. Licensee Procedure BSEP Vol. VIII, RPM 6.2.2.1 requires items to be released to the unrestricted area have less than 200 dpm/100 $cm^2$ loose surface contamination and less than 0.25 mRem/hr fixed contamination measured at one-inch from the surface of the item.

Contrary to the above, on at least 16 separate occasions during the period from mid-1978 through April 1980, licensed material (in the form of contaminated equipment) was disposed of without authorization. In addition, surveys conducted for the purpose of detecting and identifying items radioactively contaminated with licensed material were inadequate, thereby contributing to the unauthorized disposal of licensed material. These 16 occasions consisted of the following disposals: at least 13 tiems during mid-1978 through April 1980, to the Brunswick County sanitary landfill; once during April 1980, to the North Carolina Salvage Company in Goldsboro; once during May 1979, to the Horton Iron and Metal Company; and, once prior to May 1980, to the Merrit Holland Company in Wilmington, North Carolina. (50-325/80-18-02, 50-324/80-15-02).

Inspectors examined excavated material and interviewed landfill personnel to establish the dates when radioactive material was transferred to the landfill and buried. The examination revealed that radioactive material was first buried in 1978 and that the frequency of such burials increased up until the time of this inspection. A newspaper dated November 1978 was excavated from an area which landfill operators stated was filled in latter part of 1978. Although radioactive material was excavated from locations filled earlier (possibly the first half of 1978) the dates of these earlier burials could not be accurately

determined. For enforcement purposes, it was concluded that radioactive material was transferred from Brunswick Nuclear Station to the landfill over at least the seventeen-month interval from December 1978 through April 1980.

4. The Breakdown of Contamination Control

The discovery by an inspector of radioactive material at the county landfill, the release of contaminated scrap to vendors referred to in Details II in this report, and the auxiliary boiler unmonitored release referred to in IE Report Number 50-325/80-12 and 50-325/80-11 are indicative of a larger problem with its roots in the operation of the Brunswick facility. The following items detail the nature of that larger problem:

a. The competence of workers in handling of contaminated material

(1) On April 29, 1980, Yeargin workers, contractors to the licensee, were observed by an inspector to be conducting contamination surveys for the unconditional release of materials to the unrestricted area. Upon questioning by an inspector, the workers revealed they had not been trained in the use of the survey instrument they were using and did not understand its response. They stated to the inspector that the instrument read "Five Rems" full scale and that they routinely released scaffolding if it was less than 300 cpm above background. The instrument being used (RM-14 equipped with a HP-210 Geiger-Müller detector) is typically 10 to 15% efficient and its readout is in counts per minute. The probe window area is about 20 $cm^2$. Thus, a reading of 300 cpm above background would be indicative of surface contamination in the range of 15,000 dpm/100 $cm^2$.

BSEP Technical Specification (T.S.) 6.8.1.a requires written procedures to be established, implemented, and maintained covering the activities and procedures recommended in Appendix A of Regulatory Guide 1.33, November, 1972. This Regulatory Guide requires radiation protection procedures for control of radioactive materials to prevent release to the environment and minimize personnel exposure. BSEP Vol. VIII, Radiation Protection Manual (RPM) Paragraph 6.2.2.1 specifies the loose contamination limits for unrestricted area use to be 200 d/m/100 $cm^2$.

Contrary to the above, on April 29, 1980, criteria used by Yeargin workers for release of radioactively contaminated material to the unrestricted area corresponded to at least 15,000 dpm/100 $cm^2$ and no smear survey was conducted to determine if contamination was loose.

(2) On April 27, 1980, an inspector observed two workers exiting the reactor building 50' elevation near the torus access who failed to survey themselves for contamination at the frisking station provided.

BSEP Vol. VIII, RPM, Paragraph 6.6.6 requires personnel to perform a whole body frisk with appropriate instrumentation when exiting the Reactor Building, potentially, or actually contaminated areas.

(3) On April 29, 1980, an inspector observed three non-RC&T individuals at the personnel decontamination station engaged in decontamination of their skin. Though a call button is provided for workers' use, the workers failed to notify RC&T to gain assistance.

BSEP Vol. VIII, RPM, Paragraph 10.1.1 requires that personnel be assisted by RC&T in cases of skin contamination.

(4) On April 29, 1980, an inspector observed an individual to bypass the portal monitor at the construction exit from the restricted area.

RC&T Procedure 0110.8.5 requires personnel to use the portal monitor upon exit from the restricted area.

(5) On April 27, 1980, an inspector observed the removal of protective clothing by workers leaving the Unit 2 Torus checkpoint. There was a total lack of procedure or technique employed by the workers and cross-contamination of others' skin and clothing was evident to the inspector. Approximately 50 workers undressed and crossed the step-off-pad in 15 minutes.

RC&T Procedure 0211.8 and the following paragraphs detail a careful procedure to be followed in the removal of protective clothing.

(6) On April 27, 1980, the frisker station on the 50' elevation exit from the reactor building was observed by the inspector and a licensee representative for 20 minutes. Workers surveying themselves at this station moved the instrument probe over their bodies so quickly that it appeared doubtful that low levels of contamination would be detected. In this 20-minute period, 50 - 70 workers were observed to frisk, allowing less than 30 seconds each.

RC&T Procedure 0110, Paragraph 8 and the following paragraphs of that procedure detail a careful procedure to be followed when performing a whole body frisk.

(7) Portal Monitor Alarm Setpoint

RC&T Procedure 0302.2.1.1 requires the portal monitor alarm setpoint to be approximately 0.1 mRem/hr on contact with the monitor detectors.

Contrary to the above, on April 26, 1980, an inspector, in the company of an RC&T foreman, determined that a portal monitor failed to alarm at 0.2 mRem/hr and only intermittently would detect a 5 mRem/hr (on contact) source placed in an individual's pocket.

(8) On two occasions, April 26 and May 1, 1980, the inspector, in the company of a licensee representative, measured the dose rates on protective clothing coveralls.

BSEP Vol. VIII (RPM) Paragraph 6.5.4 requires protective clothing radiation levels be less than 0.5 mRem/hr above background at one inch before issue to personnel for use.

Contrary to the above, an inspector measured dose rates of 1.0 and 2.4 mRem/hr at one inch (above background) on coveralls ready for issue.

The above examples of poor worker practice, knowledge, and technique in the handling of radioactive materials constitute noncompliance with T.S. 6.8.1 (50-325/80-18-04 and 50-324/ 80-15-04).

b. Salvageable Materials

An inspector discovered used fuel racks and a 12" valve, at an outside storage area near the licensee's Warehouse "F", to be in excess of the unconditional release limits for fixed and loose surface contamination. The fuel racks were measured to be 1.0 mRem/hr by an inspector. Warehouse "F" is used as a staging and storage area and some items are sold to scrap dealers as salvage. Because of this possible release pathway, names of companies or individuals who have bought scrap material from the licensee were obtained by the inspector. Results of surveys conducted at these salvage yards are outlined in Details II of this report.

BSEP Vol. VIII, RPM 6.2.2.1 specifies that items to be released to the unrestricted area be less than 200 d/m/100cm$^2$ loose surface contamination and less than 0.25 mRem/hr measured at one inch from the surface. Measurements are in excess of background levels.

c. Protection of Workers

(1) During a site tour on April 30, 1980, an inspector questioned a Maintenance Incorporated worker regarding her activities associated with the preparation of radioactively contaminated laundry for shipment to a laundry cleaning facility. She was observed to be wiping the inside and outside of the laundry drums and folding and re-packing the contents. She stated that she had been told

to "wipe those drums off". She was unaware of any RWP (Radiation Work Permit) in effect regarding her activities, did not know of protective clothing requirements, and was unaware of the dose rates in the area where she was working. The inspector measured whole body exposure rates in the area of 25.0 mRem/hr.

10 CFR 20.203(b) requires areas with whole body exposure rates in excess of 5.0 mRem/hr to be posted as a "Radiation Area".

Contrary to the above, the area in which the dose rate to the whole body of a worker was measured to be 25.0 mRem/hr was not posted as a "Radiation Area". (50-325/80-18-05 and 50-324/80-15-05).

(2) It should be noted that in a previous inspection (50-325/80-12 and 50-324/80-11) items of noncompliance dealing with workers being provided adequate information regarding radiation hazards incident to their employment (10 CFR 19.12) were identified. These problems were discussed by the inspector with plant management at that time. CP&L has not had an opportunity to reply to this noncompliance.

(3) An inspector noted that acetone, a known hazard in that it exacerbates airborne contamination hazards, was in use for decontamination both in the plant and in the decontamination room. The inspector requested the licensee to perform a whole body count of a decontamination worker to determine the extent of internal deposition of radioactive materials, if any. The results of the whole body count were within normal limits. Subsequently, during discussions of this matter with plant management the general manager stated that he had been unaware of the use of acetone and that this practice would be discontinued immediately. The inspector had no further questions on this topic.

(4) On April 30, 1980, an inspector observed laundry being taken from a drum for dry cleaning at the Health Physics Systems (HPS) portable dry cleaning trailer. Dose rates on this drum were measured by an inspector to be 12.0 mRem/hr. Upon questioning by the inspector, the worker involved stated that he would unpack and unload drums up to 70.0 mRem/hr. The worker also stated that he had not observed an air sample being taken while this work was in progress. High levels of airborne radioactive material can exist when protective clothing is moved and handled.

Additionally, on April 24, 1980, a worker cleaning floors in the Unit 2 reactor building ingested radioactive material. The floors were contaminated to levels in excess of $10^6$ d/m/100 $cm^2$. This occurrance was discovered by RC&T personnel when the bag of refuse the worker was carrying was discovered to be reading 4.0 Rem/hr on contact. Facial contamination was discovered on the

worker, though nasal smears did not indicate inhalation had taken place. A precautionary whole body count indicated the presence of 1.3 μCi manganese -54, and 0.2 μCi cesium-137 in the individual's gastrointestinal track. Investigation by the licensee into the causes of this occurrance and the resulting dose to the individual is continuing. The licensee has committed to furnish Region II with a full report upon completion of the investigation.

Work in highly contaminated areas where the potential for airborne entrainment of loose surface contamination exists requires airborne radioactivity sampling to be conducted for the protection of the worker.

10 CFR 20.103(a)(3) requires airborne radioactive material surveys be taken to evaluate workers' exposure to concentrations of radioactive materials in air in excess of those levels contained in 10 CFR 20, Appendix B, Table I, Column 1.

Contrary to the above, on April 24, 1980, airborne surveys were not conducted at the cleanup area on the Unit 2 Reactor Building roof when work was underway which would disturb high levels of airborne contamination. Also, on April 30, 1980, airborne surveys were not conducted in the HPS trailer facility when the potential for levels in excess of MPC levels existed due to the work in progress. (50-325/80-18-06 and 50-324/80-15-06).

Meetings were held with plant management on April 30 and May 1, 1980, to discuss the above items in detail to ensure the licensee was fully cognizant of the importance of maintaining proper controls in this area. The inspector asked for two HPS dry cleaning workers to be whole body counted due to their potential exposure to airborne radioactive materials. Results were within normal limits. The inspector noted that the licensee has decided to provide continuous air samples in the dry cleaning facility and had no further questons.

d. Other Areas Inspected

(1) In a published newspaper report, a worker at BSEP was reported to have defeated a portal monitor and failed to have taken proper action regarding personal contamination. An inspector interviewed the worker and determined that proper action had been taken and there was no noncompliance with regulatory requirements. The inspector had no further questions.

(2) An inspector questioned licensee representatives about the propriety of shipping contaminated laundry to a washing facility in drums without lids. Although this technique complies with NRC and DOT requirements, the licensee stated that future shipments would be made in DOT Specification 17-H drums with lids. The inspector had no further questions.

(3) An inspector examined the HP records of three randomly selected plant employees and contractors. He noted the presence of an unusual number of abnormal occurrance reports in these records (each of these cases was properly handled). The inspector discussed these items with the RC&T supervisor and asked if an index of such reports was kept to identify problem areas in need of attention. The licensee representative stated that this was not presently done, but that it would be considered as a useful tool and probably adopted as a practice.

(4) An inspector reviewed resumés of contract HP technicians who had arrived for work at BSEP since the last similar review had been conducted. No problems were noted in this area and the inspector had no further questions.

(5) An inspector requested an air sample be taken of the service building sump vent because this is a potential airborne release pathway to the environment. The vent is located outside the service building. The sample indicated levels near background (less than $1 \times 10^{-10}$ μCi/cc) for air in the plant vicinity. The inspector had no further questions.

(6) An inspector surveyed areas adjacent to the plant hot machine shop for abnormal dose rates. All areas surveyed were properly posted as required by 10 CFR 20.203. The inspector had no further questions.

(7) An inspector noted a Radiological Safety Violation Report had been written by RC&T on April 30, 1980, regarding an individual, qualified as a senior reactor operator, who had failed to properly utilize the reactor building breezeway hand and foot monitor. A copy of this report was given to the plant general manager by the inspector and the inspector was assured appropriate action would be taken. The inspector noted that the plant general manager should have routine access to reports of this type and had no further questions.

(8) An inspector observed instances of poor housekeeping such as dirty and torn step-off pads, used protective clothing thrown on the floor, radioactive material stored in the outside areas open to the weather without appropriate protective covering, and clean trash containers with identifiable radioactive articles intermixed with the clean trash. The inspector stressed to licensee representatives that good housekeeping, general cleanliness, and separation of clean and contaminated refuse is important in the general control of radioactive materials.

(9) An inspector observed that the plant general background radiation levels made surveys for low levels of contamination impossible in many areas, both inside the plant buildings and outside. Radiation dose rates at the clean waste dumpster/compactor were so

high (1.0 to 2.5 mRem/hr as measured by the inspector) that segregation of potentially contaminated items was accomplished visually rather than by the use of a survey instrument. This condition undoubtedly contributed to the deposition of radioactive material at the sanitary landfill. Frisking in the plant is difficult in most places due to background radiation caused by an accumulation of radioactive materials being stored or awaiting shipment for proper final disposal. The inspector stressed the need for low background areas for surveys and licensee representatives acknowledged this requirement.

(10) An inspector noted, on April 26, 1980, that the HP-210 GM detector at the Unit 2 dry well had been covered with masking tape to prevent puncture of its mylar window. When questioned, a licensee representative stated that the replacement detectors cost $80.00 and the tape was to prevent damage. The inspector demonstrated to the licensee that the tape reduced the instrument sensitivity by about 10% due to Beta radiation shielding. The licensee removed masking tape from all HP-210 instruments. The inspector had no further questions.

5. Followup of Confirmation of Action Letter

On May 2, 1980, a Confirmation of Action Letter was issued to the licensee by the Director, NRC, RII, specifying actions to be taken to correct identified problems. Two inspectors were on site, one during the period May 3-9, 1980, and the other during the period May 9-16, 1980, to verify the status of the actions to be taken by the licensee. The status of each item during these periods is discussed below.

a. Procedural Control and Survey Practices for "Clean" Trash

Changes to prevent recurrence of items being released to unrestricted areas above the licensee's procedural limits were to be made by the licensee. Prior to resumption of "clean" trash disposal, NRC concurrence in the changes was required. On May 6, 1980, the licensee submitted to NRC representatives a draft of a procedure addressing collection and surveying of "clean" trash and scrap prior to release to unrestricted areas. Discussions, held over a period of several days, culminated in the agreement that what was needed was an operational definition of what is to be considered radioactively contaminated when a contamination survey is performed using an Eberline Model 210 GM probe coupled to an Eberline Model RM-14 ratemeter. It was agreed that if an article was surveyed under such conditions that the background count rate did not exceed 100 cpm and the probe was moved slowly over the article at a distance of approximately one-half-inch and the count rate meter needle did not deflect more than 40 cpm over the observed maximum extent of background variation, the article would be considered uncontaminated. This method should detect total beta gamma contamination in excess of 2,000 dpm/100cm$^2$. On May 16, 1530, a licensee representative showed the inspector an approved procedure (RC&T Procedure 0216,

Revision 2, "Control and Monitoring of Non-Radioactive Plant Waste and Scrap") which reflects the conditions mentioned above. At the time of the May 16, 1980, exit interview a licensee representative stated that initial trash surveying would be done under this procedure and that tests were being conducted to see if a more expeditious means of surveying clean trash using a gamma scintillator could be developed. The inspector stated that the licensee could commence to move the "clean" trash to a low background area for surveying; the inspector emphasized that this permission entailed only the surveying and clearance for disposal of trash. No trash was to be transferred to a disposal site without additional concurrence of NRC. Licensee management acknowledged this understanding and agreed to hold the surveyed trash pending final concurrence by the NRC.

b. Items Released From Contamination Control Areas for Unrestricted Use

The licensee committed to have all items removed from contamination control areas for unrestricted use surveyed by the Radiation Control and Test (RC&T) Group. The licensee further agreed to increase health physics surveillance at the torus and drywell control points.

Licensee representatives stated that a new procedure was being written to address surveying of tools and materials prior to release to unrestricted areas; the existing procedure was being modified to strengthen the program for personnel frisking. An inspector observed health physics surveillance at the torus and drywell control points and had no questions. An inspector also observed, while attending radiation protection retraining sessions, that personnel were being instructed that such surveys must be performed by RC&T personnel.

At the time of the May 16, 1980, exit interview, a licensee representative stated that a procedure covering the unrestricted release of material (RC&T 0215, Revision 0, "Unrestricted Release of Materials) had been developed and was undergoing the final stages of approval. This procedure requires the released material be surveyed by an RC&T technician, the spreadable beta-gamma contamination not exceeding 200 dpm/100cm$^2$. Furthermore, RC&T Procedure 0110, Revision 1, "Monitoring Personnel for Contamination" was also in the final stages of approval; this procedure set an upper limit of 400 cpm on the background count rate of friskers used in the reactor, turbine, or radwaste buildings.

c. Notification of RC&T in Case of Skin Contamination

The licensee was directed to instruct all plant workers that RC&T was to be notified in all cases of skin contamination so they (RC&T) would be able to supervise decontamination efforts. An inspector reviewed a memorandum, dated May 2, 1980, addressed to all plant employees from the plant manager instructing plant employees regarding this requirement. An inspector also observed that this point was emphasized in plant employee retraining classes. Licensee representatives stated that an existing procedure was being modified to include dose evaluation in

cases of skin contamination. At the time of the May 16, 1980, exit interview, a licensee representative stated that RC&T Procedure 0210, Revision 1, "Personnel Decontamination", then in the final stages of approval, specified a limit at which skin dose assessments are to be performed. The inspector emphasized that such limits should be directly related to the beta dose to skin which is the principal concern in this matter. A licensee representative stated that the general problem of skin dose was being considered and that such limits would be forthcoming.

d. Radiation Background Levels at Frisking Locations

Licensee representatives stated that additional shielding was being added to selected frisker stations on May 9, 1980. Personnel assignments had been made to evaluate both shielding and/or relocation of frisker stations. Frisker stations had been established at restricted area exit points, and monitoring was being performed at these stations by health physics technicians. Licensee representatives stated that an existing procedure (RC&T 0110, "Monitoring Personnel for Contamination") was being modified to establish frisker background objectives of less than 400 counts per minute for restricted area exit locations with alarm setting at 100 counts per minute above background.

Prior to the May 16, 1980 exit interview, a licensee representative, at the request of the inspector, surveyed the frisking stations and recorded the background count rates; in no case did the background count rate exceed 400 cpm. At the time of this exit interview, a licensee representative stated that the design of permanent shielded frisking stations was under consideration.

e. Condition of Protective Clothing

The licensee was directed to implement a program to assure that protective clothing is in good physical condition and meets required radiation and contamination limits. Licensee representatives stated and an inspector observed that laundry personnel and control point personnel were removing from service protective clothing with defects. A licensee representative stated that due to the quantity of protective clothing available and the rate of use, turn around time for return of cleaned protective clothing was approximately three days. Therefore most protective clothing would have been examined by May 9, 1980. Licensee management stated that Quality Assurance personnel would be utilized to assure the quality of protective clothing ready for use. Licensee management further stated that orders had been placed for new protective clothing. An existing procedure was being modified to address concerns regarding radiation levels on protective clothing.

At the time of the May 16, 1980 exit interview, a licensee representative stated that RC&T Procedure 0211, Revision 1, "Use and Wearing of Protective Clothing" was in the final stages of approval and it contained a direct radiation limit of 0.5 mrem/hr at one-inch for protective clothing.

f. Training Program in Health Physics Practices

Training classes for contract employees started at 10:00 a.m. on May 5, 1980. The licensee had been directed to conduct training in health physics practices and procedures with emphasis on contamination control. An inspector attended the first training session and examined a lesson plan for the sessions. The training sessions consisted of one hour of lecture and one hour of practical exercise addressing donning and removal of protective clothing and personnel surveying (frisking). Individuals in attendance were required to submit signed training forms documenting their attendance. Licensee plant management stated that plans were to require attendance of all plant employees who work in controlled areas. The licensee was required to complete the training by May 21, 1980. At the time of the May 16, 1980 exit interview, a licensee representative stated that greater than 90% of all contract workers (except contract HP technicians) had received the required training and that on May 21, 1980, all who had not received the training would have their name removed from plant access; furthermore, the licensee representative stated that regular plant employees were also receiving this training and that this would continue until all had been trained.

g. Health Physics Controls at the Health Physics Systems Drycleaning Facility

The licensee was directed to upgrade health physics controls at the drycleaning facility and increase air sampling. Licensee representatives stated and an inspector verified that a continuous air sampler had been installed. Licensee representatives stated that air sampling results up to May 9, 1980, indicated airborne concentrations of 1 to 2% maximum permissible concentrations for occupational exposure. Laundry workers had been instructed by RC&T to process only those containers surveyed and found to yield readings below 25mr/hr. On May 16, 1980 RC&T Procedure 0202, "Radiological Controls for Portable Dry-Cleaning Units" was undergoing review and approval and this procedure addresses the health physics controls exercised at the dry-cleaning unit.

h. Use of Polyethylene as Outer Container for Outside Storage of Radioactive Material

The licensee was directed to stop the use of polyethylene as the outer container for radioactive materials stored outdoors. An inspector reviewed a memorandum from the plant manager to all plant employees, dated May 2, 1980, which directed employees to stop using polyethylene as the outer container for radioactive materials stored outdoors. An inspector observed, on May 8, 1980, only two remaining bundles covered with polyethylene stored outdoors and these bundles had been covered with another material as the outer covering. Several other bundles wrapped in polyethylene had been moved to indoor storage. On May 16, 1980 an inspector toured the outside areas around the plant and noted no case where polyethylene was used as the outer covering.

i. Plans and Schedules for Relocation of Radioactive Materials Onsite and Decontamination of the Condensate Storage Tanks and the Auxiliary Surge Tank

The licensee was directed to develop plans and schedules by May 14, 1980, to relocate radioactive materials onsite for the purpose of reducing radiation background levels and personnel exposure; and decontamination of the condensate storage tanks and the auxiliary surge tank. Licensee management stated that personnel assignments had been made to consider the feasibility and possible location of a storage building and to evaluate methods to reduce concentrations in the condensate storage tanks and the auxiliary surge tank.

6. Use of Hand and Foot Monitors

On May 11, 1980, an inspector accompanied by a licensee representative, performed source response checks on two hand and foot monitors in use at the Unit 2 breezeway exit. Response checks using a Cs-137 gamma source labeled as 1.19 μCi and dated 1973 were completed with the following results: both foot channels on both monitors failed to alarm during the preset counting time (measured to be approximately 8 seconds); both hand channels on one monitor failed to alarm during the preset counting time; both hand channels in the other monitor alarmed simultaneously with the clear light.

At the request of the inspector, a licensee representative checked the hand channels on both monitors with a 53,000 dpm Sr-90 source; the licensee representative later informed the inspector that these channels had shown almost no response to this source. The inspector discussed these findings with a licensee representative and it was decided that these monitors could not be relied upon for personnel contamination surveys; the licensee representative removed these monitors from service and replaced them with hand held probes. At the time of the May 16, 1980 exit interview, a licensee representative stated that hand and foot monitors will not be used for frisking purposes unless it can be demonstrated that they can see the required limits for radioactive contamination. The inspector had no further questions concerning this matter.

7. Enforcement Conference

On May 19, 1980, in Atlanta, Georgia, an enforcement conference was held by James P. O'Reilly, Director, Region II, USNRC, and members of his staff. Carolina Power and Light was represented by B. J. Furr, Vice President, Nuclear Operations and A. C. Tollison, Jr., Brunswick Plant General Manager and members of their staffs.

The concerns of the NRC staff, as outlined in this report, were expressed to CP&L management by James P. O'Reilly. CP&L management replied that the full range of management attention has been directed at the problems discovered at the Brunswick facility, that similar problem potential would be evaluated at all CP&L facilities. The licensee also stated that there would be changes in management responsibilities to provide better communication, planning, and control of operation of the facility.

The NRC staff reviewed the contents of the Notice of Violation and stated that escalated enforcement action was contemplated by the NRC. The licensee acknowledged this statement.

The NRC staff requested a review of the status of actions taken in response to the Confirmation of Action Letter of May 2, 1980, from the Director, Region II to CP&L. The licensee responded satisfactorily and committed to submit an updated report to the Director upon completion of these efforts.

In closing, the NRC staff emphasized the need for continuing vigilance in the conduct of all operations at the Brunswick facility and the need for constant application of management attention to the protection of the public health and safety. The licensee management representatives stated that this goal was the policy of CP&L.

DETAILS II

Inspectors: _____ 6/6/80
J. R. Allen — Date Signed

D. L. Andrews 6/6/80
D. L. Andrews — Date Signed

for D. L. Andrews 6/6/80
G. T. Gibson — Date Signed

for _____ 6/6/80
D. M. Montgomery — Date Signed

D. J. Perrotti 6/6/80
D. J. Perrotti — Date Signed

Accompanying Personnel: G. R. Jenkins
P. C. McPhail

Approved by: _____ 6/6/80
for G. R. Jenkins, Section Chief, FFMS Branch — Date Signed

1. Persons Contacted

Licensee Employees

*J. A. Jones, Senior Executive Vice President and Chief Operating Officer
*B. Furr, Vice President, Operations
*A. Tollison, Jr., General Manager, Brunswick Plant
H. Banks, General Manager, Harris Plant
*W. Tucker, Manager, Technical and Administrative
*L. Tripp, E&RC Supervisor
*B. Webster, Manager, Environmental and Radiation Control
E. Cleary, Pu lic Affairs Officer
A. Padgett, Director, Nuclear Safety and Quality Assurance
R. Shearin, Senior Specialist, Environmental
S. Croslin, Specialist, Health Physics
B. Failor, Radwaste Specialist
J. McKnight, Foreman, RC&T
H. Lipa, CP&L Corporate Office
W. Triplett, Administrative Supervisor

Other licensee employees contacted included 11 technician and seven contract construction personnel.

Other Organizations

D. Brown, Chief, Radiation Protection Section, NC Department of Human Resources

R. Edmonton, Public Affairs Officer, State of North Carolina
F. Fong, Environmental Specialist, NC Department of Human Resources
C. Brown, Head, Radioactive Materials Branch, NC Department of Human Resources
W. Icenogle, Environmental Specialist, NC Department of Human Resources
T. K. Austin, Legal Division, Public Staff of NC Utilities Commission
G. C. Crampton, Legal Division, Public Staff of NC Utilities Commission

Other North Carolina State employees contacted included six Health Physics representatives

W. Carter, Brunswick County Manager
M. White, Brunswick County Southport Landfill Operator
W. Daniels, Manager, N.C. Salvage Company, Goldsboro, N.C.
F. Marchisello, General Manager, K&L Scrap Yard, Raleigh, N.C.
W. Johnson, Yard Supervisor, K&L Scrap Yard, Raleigh, N.C.
J. Nethercutt, Manager, Merritt-Holland Company, Wilmington, N.C.

NRC Resident Inspectors

J. Ouzts
M. Davis

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 9, 1980, with those persons indicated in Paragraph 1 above.

3. Scrap Yards, Merritt-Holland, and Personal Vehicle Surveys

Environmental radiological surveys were performed at N. C. Salvage Company, Goldsboro, North Carolina, K&L Scrap Yard, Raleigh, North Carolina, Merritt-Holland Company, Wilmington, North Carolina, Rocky Point Salvage, Rocky Point, North Carolina, Horton Iron and Metal Company, Wilmington, North Carolina and the Harris Plant site near Raleigh, North Carolina during the period May 2-9, 1980. In addition a radiological survey of personal vehicles was performed on May 8, 1980, at the Brunswick site. The following paragraphs are discussions of those surveys.

a. N. C. Salvage Co. Survey - On May 3-4, 1980, a radiation survey was done on approximately 32,000 pounds of scrap metal in two piles located at the N. C. Salvage storage yard in Goldsboro, North Carolina. The two piles of scrap were identified by the manager of N. C. Salvage Co. as the only material that was received from the Brunswick site since the contract began on April 1, 1980. A detailed list of contaminated items (approximately 400 pounds), including radiation levels, can be found in Table 1. All contaminated items were collected, placed in a metal container, and returned to the site as a LSA shipment on May 4, 1980 by the licensee. Those items reading greater than 0.25 mr/hr are examples of material improperly released from the plant.

Surveying of scrap metal was performed by CP&L and North Carolina Radiation Protection Section personnel using low range beta and gamma portable survey instruments. (E520, RM-14 "frisker" with HP-210 probe, Thyac with 1" gamma scintillation crystal). Readings were verified by the inspector through observations and independent measurements using low range gamma and beta - gamma portable survey instruments (PRS-1 with 2" gamma scintillation crystal, Xetec G-M survey meter). Additionally two pans (large metal containers) used for hauling the two loads of scrap from the Brunswick site on April 25 and April 28 were identified by bills of lading as those numbered #28 and #29, respectively. Pan # 28 was located on the premises, surveyed by the licensee and no levels above background were found. Pan # 29 was found to have been reused for other scrap deliveries and was subsequently found on May 8, 1980. The pan was returned to N. C. Salvage, surveyed by CP&L and State personnel, and was found to be free of contamination. Following the survey and removal of scrap, split soil samples at three locations under the scrap piles were taken by CP&L, State personnel and the inspector.

On May 7, 1980, approximately 1-2 inches of top soil was removed from the area where the two scrap piles had been placed, loaded into three 55-gallon steel drums, and returned to the Brunswick plant for disposal. As the soil was being removed, small pieces of scrap metal found buried in the soil were surveyed for contamination with a "frisker". No contaminated items were discovered during this process. Split soil samples again were taken by CP&L, State and NRC. NRC soil samples were analyzed by the Region II Mobile Laboratory (Table 2). Although these results indicate slight residual soil contamination, the low concentrations in the small area involved do not pose a radiological hazard.

b. K&L Scrap Yard Survey - On May 6, 1980, a survey was performed by the licensee and State personnel at the K&L Scrap Yard, located on Old Route 70, near Raleigh, North Carolina. The inspector was informed by the General Manager of K&L, that the last shipments from any CP&L site occurred in March 1979. The yard supervisor directed the survey team to the only material from CP&L that remained - 20 spools of wire cable. These items were surveyed and found to be free of contamination. In addition the grading/loading area, guillotine shears area, CP&L scrap storage area and electro-magnet were surveyed and all results were negative. All radiation surveys were performed by licensee and State personnel using low range gamma and beta-gamma portable survey instruments. The inspector verified the radiation levels thru observation and independent measurements using low range gamma and beta-gamma portable survey instruments. The inspector had no further comments regarding this matter.

c. CP&L and Yeargin Employees Vehicle Survey - On May 6, 1980 a radiation survey was performed on 20 vehicles at the Brunswick site. Ten of the vehicles belonged to CP&L employees and ten to Yeargin employees, the general contractor for the Brunswick site. One of the vehicles was a 48 passenger bus. The survey was performed by RC&T personnel, using low range portable survey instruments and 2" filter paper for swipe tests. The inspector verified the radiation levels by observation and

independent measurements using low range gamma and beta-gamma portable survey instruments. None of the vehicles surveyed showed radiation levels above background levels. The inspector contacted the licensee by telephone on May 14, 1980, to inquire about the results of the swipes taken on the twenty vehicles. The inspector was informed that the highest count was 63 dpm/100 $cm^2$, with a system Minimum Detectable Activity (MDA) of 50 dpm/100 $cm^2$ (Plant release limit is 200 dpm/100 $cm^2$ or less). During the vehicle survey a jacket in one of the vehicles was discovered to have a higher than normal reading (approximately twice "frisker" background). The jacket was taken to the RC&T counting lab and surveyed for spreadable contamination. The inspector was informed that the highest count, found on the left sleeve, was 63 dpm/100 $cm^2$, well below the plant release limit. The inspector had no further questions on this matter.

d. Merritt-Holland Company Survey - On May 9, 1980, a radiation survey was performed at the Merritt-Holland Comapny in Wilmington, North Carolina. Merritt-Holland supplies the Brunswick site with compressed gases - Argon, P-10 Counting gas, Oxygen and Acetylene. Approximately 150 bottles were surveyed by licensee and State personnel using low range gamma and beta-gamma portable survey instruments and 2" filter papers for swipe tests. One argon bottle (S.N. 0-13790) was found to have detectable contamination and was wrapped in Kraft paper and returned to the site the same day by the licensee. Swipes on the argon bottle taken by the inspector at the time of the survey, were counted in the RII laboratory on May 14, 1980. The results of these swipes are summarized in Table 3. An inspector reviewed the licensee's RC&T laboratory counts of the argon bottle swipes. These results are also included in Table 2.

This matter is considered an example of uncontrolled release of materials with greater than 200 dpm/100 $cm^2$ spreadable contamination to unrestricted areas.

e. Rocky Point Salvage Facilities

On May 7, 1980, representatives of CP&L, the State, and NRC/RII conducted a survey around each of two salvage facilities at Rocky Point, North Carolina to determine if any of the items picked up at the Brunswick County Landfill were contaminated with radioactive material. Inspection of the items at the facilities did not appear to indicate that any of the items came from the Brunswick Plant. The surveys did not indicate the presence of any contaminated material at either facility.

f. Horton Iron and Metal Company

On May 2, 1980, representatives of CP&L, State of North Carolina, and NRC/RII performed a survey at the Horton Iron and Metal Company, Wilmington, N.C. to determine if any scrap material received from the Brunswick Plant was contaminated. Two wooden spools containing steel cable were determined to be contaminated with a maximum reading of

about 1 mr/hr; these were returned to the Brunswick plant for proper disposal. The equipment used to crush and ship the scrap metal was surveyed, along with the materials in the yard. No other contaminated equipment or material was found. This is considered another example of the release of material in excess of the plant limit of 0.25 mr/hr.

g. Shearon Harris Plant

On May 10, 1980, a CP&L health physicist performed a survey at CP&L's Shearon Harris plant, under construction, to determine if any material transferred from the Brunswick Plant was contaminated. The survey included the warehouse, tool room, and outside storage yards. A licensee representative stated that no contaminated material was found.

4. Brunswick County Southport Landfill Operations

a. Initial Survey - An initial survey of the entire landfill was conducted jointly by the licensee and the State on April 29 and 30 using an RS-111 Pressurized Ion Chamber suspended approximately 4-6 inches off the ground surface from the rear of a vehicle. Survey traverses were made such that each survey pass covered approximately one vehicle width (about two meters). Areas were selected for investigation where the ground surface radiation levels were twice the determined background radiation levels for a similar area. Background radiation levels were determined to be 5-7 uR/hour using the same instrument as that used for the survey. Twelve areas were identified over the entire landfill area where surface radiation levels ranged from 9-34 uR/hour (Table 4). Subsequently, an NRC inspector identified two additional suspect areas using a sensitive portable survey instrument. A sketch of the landfill area was made showing the approximate locations of the identified areas (Figure 1). Included in the sketch are the approximate dates when the various sections of the landfill were covered. These dates were provided during discussions with the landfill operator. Newspapers found in areas A, B, C and F, appeared to confirm the burial dates (see footnote, Table 4).

b. Excavation - A procedure for the excavation of the identified areas was prepared and approved by licensee management (RC&T 3280). The procedure was subsequently reviewed by State and NRC representatives. Excavation of the identified areas began on May 2, 1980, with an NRC inspector and State representatives observing and assisting. Each area was assigned a letter designator except for one area which was determined to be a continuation of another identified area. During the excavation of an area each item removed was surveyed to determine radiation levels and the hole was resurveyed to determine if radiation levels at that site had decreased to less than twice background.

After all items had been removed from a particular site, the hole was filled and a final radiation survey was accomplished. Each completed site was marked by a 4 x 4 timber, implanted in the hole, on which the

letter designation of the site was marked. The exact location of each site was fixed by transit and mapping by a CP&L crew in case the marker was inadvertently removed. Radioactive items removed from the sites included yellow coveralls, mop heads, bolts, pipe fittings, yellow plastic bags filled with miscellaneous trash, laundered work gloves, pieces of plywood, and disposable paper coveralls. Radiation levels on these items ranged from 0.25 mR/hour to 80 mR/hour (Table 5). Many other items and materials with detectable radioactivity, but less than the plant release limit of 0.25 mr/hr, were removed during the excavation process. Excavations included five additional areas not initially identified.

c. Sampling - Several environmental samples were taken by CP&L, the State and NRC inspectors, some of which were split among the three organizations. An NRC inspector collected independent water samples of a county water supply well approximately 0.3 miles from the landfill, seepage and run-off from the edge of the landfill into Beaverdam Creek, and a downstream sample of Beaverdam Creek. Soil samples from each site were taken after all radioactive items were removed and the samples were split among CP&L, the State and NRC. All NRC samples were analysed in the Region II mobile laboratory. Air samples were taken by CP&L and the State downwind of each site during excavation operations. Preliminary analyses of these samples by the State Mobile Laboratory identified $^{60}Co$ and $^{54}Mn$ at less than 001 MPC values of 10 CFR 20, Appendix B, Table 2, Column 1. Detailed analyses were subsequently performed by the licensee which confirmed that no airborne radioactivity hazard was created by the excavation operations.

d. Final Survey - On May 15 a final survey of the entire landfill area was completed by the licensee, NRC and North Carolina personnel. This survey was accomplished using the RS-111 and the technique described in Paragraph 4.a. above except that the ion chamber survey was supplemented by the use of sensitive portable survey instruments with sodium iodide detectors. Experience had shown that the portable instruments were more sensitive to point sources than the RS-111 as evidenced by the identification of a number of additional "hot spots" using the portable instruments subsequent to the initial survey. Two areas adjacent to the active landfill section were not included in either the initial or final surveys as they are covered with large dirt mounds from the active area trench. CP&L and the State plan to survey these areas when the existing trench is closed by the landfill operator, about July 1980.

e. Proposed Environmental Program - The licensee plans to establish and conduct an environmental program around the landfill area to insure that no radioactivity migrates to the environment from buried materials and to insure that no new radioactive materials will be buried in the landfill. Although the program has not been finalized a licensee representative stated that plans include approximately 17 sampling wells in the landfill, drilled to the depth of the clay impermeable layer which separates ground water from an aquifer, routine samples of

water and sediment from Beaverdam Creek, samples from the nearest county water supply wells, placement of a TLD network around the landfill and monthly radiation surveys in the active landfill area. Water and sediment samples will be collected and analyzed periodically.

5. Sample Analysis

Soil and water samples collected from the Brunswick County Southport Landfill during the period of May 3-11, 1980, were analyzed by gamma ray spectroscopy in the Region II Mobile Laboratory. Water samples were also collected from a county well near the landfill site, Beaver Dam Creek downstream from the landfill, and subsurface runoff from the landfill.

The results are given in Table 6 and show that Mn-54, Co-60, and Cs-137 were the predominant radionuclides with maximum soil concentrations of 2200, 2920, and 1160 pCi/kg, respectively. No detectable Mn-54 and Co-60 activity would be expected in soil samples that were not contaminated from disposal operations. Cs-137 levels from atmospheric fallout could range as high as 200 pCi/kg for surface soil samples. The water samples showed no detectable activity from the landfill site.

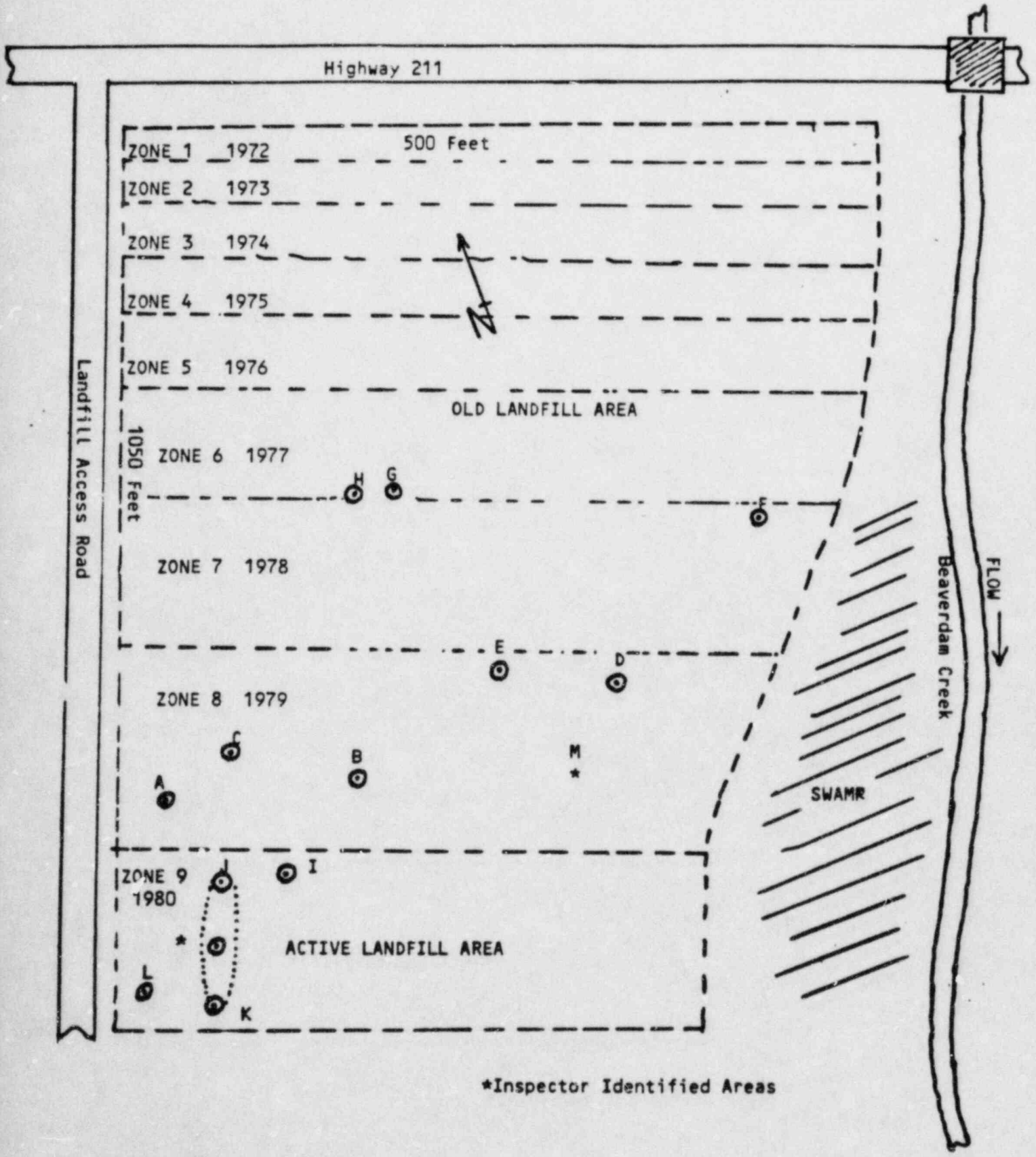
The results of soil samples that were analyzed by NRC, CP&L, and North Carolina Department of Human Resources showed reasonable agreement. There are no applicable soil contamination limits for the radionuclides detected in the soil samples, but the concentrations were relatively low compared to maximum permissible concentrations in water for unrestricted use. For comparison the MPC values in water have been converted to pCi/kg. The values for the radionuclides of interest are:

| Nuclide | MPC in Water (pCi/kg) |
|---|---|
| Mn-54(I) | 100,000 |
| Co-60(I) | 30,000 |
| Cs-137(S) | 20,000 |

Figure 1

Sketch of Brunswick County Southport Landfill

With Initial Survey Points Identified




*Inspector Identified Areas

TABLE 1

North Carolina Salvage Company Survey Results

| | Item | Radiation Levels G-M Rate meter (mr/hr) | G-M Frisker W/HP-210 probe (cpm) |
|---|---|---|---|
| 1. | Valve connector with quick disconnect adaptor | 1.5 | 8000 (fixed) |
| 2. | 1/4" lead sheeting 36"x 12" piece | 0.3 to 1.0 | 10,000 (fixed) 8,000 dpm spreadable |
| 3. | 1/4" lead sheeting 24"x 24" piece folded over | 0.4 | 20,000 (fixed) |
| 4. | Sight glass, 2 1/2" pipe line | 1.5 to 2.5 | 20,000 (fixed) |
| 5. | Steel pipe, 14" long | 0.5 - 1.0 | not checked |
| 6. | Cotton glove | 2.0 | not checked |
| 7. | Angle iron, large piece | Bg | 1000 (fixed) |
| 8. | Roots lobe pump | Bg | 100 (fixed) |

Table 2

SOIL ANALYSES OF SOIL SAMPLES FROM
NORTH CAROLINA (NC) SALVAGE
MAY 4-7, 1980

| Sample Location | Date | Nuclide | Concentration, pCi/Kg (Wet Weight) |
|---|---|---|---|
| Soil #1 NC Salvage | 05-04-80 | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-137 | 150 ± 80 |
| | | Cr-51 | 1120 ± 570 |
| Soil #2 NC Salvage | 05-04-80 | Mn-54 | 420 ± 120 |
| | | Co-60 | 1210 ± 150 |
| | | Cs-137 | ND |
| | | Cr-51 | 1210 ± 150 |
| | | Co-58 | ND |
| Soil #3 NC Salvage | 05-04-80 | Mn-54 | 510 ± 100 |
| | | Co-60 | 1400 ± 170 |
| | | Cs-137 | 240 ± 80 |
| | | Cr-51 | ND |
| | | Co-58 | ND |
| Soil #1 NC Salvage | 05-07-80 | Mn-54 | 126 ± 91 |
| | | Co-60 | ND |
| | | Cs-134 | ND |
| | | Cs-137 | ND |
| Soil #2 NC Salvage | 05-07-80 | Mn-54 | ND |
| | | Co-60 | 499 ± 90 |
| | | Cs-134 | ND |
| | | Cs-137 | ND |
| Soil #3 NC Salvage | 05-07-80 | Mn-54 | 370 ± 110 |
| | | Co-60 | 1670 ± 180 |
| | | Cs-137 | 145 ± 105 |
| | | Co-58 | ND |

Note: ND - Not Detected

Table 3

Merritt-Holland Company Argon Bottle

| Swipe No. | | Spreadable Contamination, dpm/100 $cm^2$ |
|---|---|---|
| | **NRC Results** | |
| 1. | Argon Bottle (Top) | 29 |
| 2. | Argon Bottle (Side) | 590 |
| 3. | Argon Bottle (Side) | 590 |
| 4. | Argon Bottle (Side) | 570 |
| 5. | Argon Bottle (Side) | 600 |
| 6. | Argon Bottle (Bottom) | 20 |
| 7. | Argon Bottle (Side) | 204 |
| | **Licensee Results** | |
| 1. | Argon Bottle | 228 |
| 2. | Argon Bottle | 68 |
| 3. | Argon Bottle | 133 |
| 4. | Argon Bottle | 86 |

(Plant limit for release is 200 dpm/100 $cm^2$)

Table 4

Initial Landfill Survey Point Results

| Identified Area | Exposure Rate (uR/hr) |
|---|---|
| A | 25 |
| B | 19 |
| C | 10 |
| D | 9 |
| E | 11 |
| F | 11 |
| G | 21 |
| H | 10 |
| I | 40 |
| J | 15 |
| K | 15 |
| L | 43 |
| M | 18 |

All Readings taken at the undisturbed ground surface.

Table 5

Items Recovered from Landfill with Radiation Levels
In Excess of 0.25 mR/hour

Area

A - Work Gloves - 0.7 mR/hour

B - Approximately 30 bolts and pipe fittings - 1.0-4.0 mR/hour

E - Crushed 55-gallon drums - 1 mR/hour - 5.0 mR/hour

Yellow rags - 2.5 mR/hour

Rubber Gloves - 1.8 mR/hour

*F - Mop Heads - 0.7 mR/hour

G - Pipe Nipple - 2 mR/hour

Springs - 14 mR/hour and 25 mR/hour

H - Blotter Paper - 0.5 mR/hour

Lab Wipe - 1 mR/hour

I - Pipe Fitting - 1.0 mR/hour

Yellow Plastic Bag Marked "Radioactive" - 0.25 mR/hour

J - Work Gloves - 1.4 mR/hour

Plywood Wire Spool - 2 mR/hour

M - Yellow Coveralls - 0.5-1.5 mR/hour

N - Coveralls - 1mR/hour

**O - Wires - 60 mR/hour, 80 mR/hour

**R - Teletector Extension - 5 mR/hour

*Newspaper found dated 11/78, also in Area C a newspaper was found dated 5/79, in Area B one was found dated 9/79 and in Area A a newspaper was recovered dated 6/79.

**Areas N, O, P, Q, R Not included in sketch, these areas identified subsequent to initial survey and excavations.

All Radiation Levels determined by G. M. Portable Instrument by licensee, readings on contact with object, as observed by NRC inspectors.

The above Table does not include items identified and removed from the landfill by an NRC inspector and CP&L on April 28, 1980.

Table 6

RESULTS OF SOIL AND WATER SAMPLES FROM
BRUNSWICK COUNTY SOUTHPORT LANDFILL
MAY 3-11, 1980
Concentration, pCi/Kg (Wet Weight)

| Sample Location | Date | Nuclide | Concentration, pCi/Kg (Wet Weight) |
|---|---|---|---|
| Soil BL-SS-6 Hole F | 05-03-80 | Mn-54 | 260 ± 60 |
| | | Co-60 | 430 ± 120 |
| | | Cs-137 | 110 ± 60 |
| Soil BL-SS-8 Hole D | 05-03-80 | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-134 | ND |
| | | Cs-137 | 270 ± 70 |
| Soil BL-SS-9 Hole E | 05-03-80 | Mn-54 | 180 ± 60 |
| | | Co-60 | 290 ± 80 |
| | | Cs-134 | ND |
| | | Cs-137 | 160 ± 60 |
| Soil BL-SS-10 Hole I | 05-04-80 | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-134 | ND |
| | | Cs-137 | 130 ± 80 |
| Soil BL-SS-11 Hole I | | Mn-54 | 1280 ± 130 |
| | | Co-60 | 760 ± 120 |
| | | Cs-134 | ND |
| | | Cs-137 | ND |
| Soil BL-SS-12 Hole J | 05-04-80 | Mn-54 | 1790 ± 210 |
| | | Co-60 | 1770 ± 160 |
| | | Cs-134 | ND |
| | | Cs-137 | ND |
| Soil BL-SS-13 Hole L | 05-04-80 | Mn-54 | 810 ± 120 |
| | | Co-60 | 990 ± 130 |
| | | Cs-134 | ND |
| | | Cs-137 | 680 ± 220 |
| Soil BL-SS-14 Hole J | 05-04-80 | Mn-54 | 1220 ± 150 |
| | | Co-60 | 2200 |
| | | Cs-134 | ND |
| | | Cs-137 | 320 ± 130 |
| | | Cr-51 | 9000 ± 1100 |
| | | Co-58 | 480 ± 90 |
| | | Fe-59 | ND |

| Sample Location (Continued) | Date | Nuclide | Concentration, pCi/Kg (Wet Weight) |
|---|---|---|---|
| Soil BL-SS-15 Hole E | 05-05-80 | Mn-54 | 240 ± 90 |
| | | Co-60 | 750 ± 120 |
| | | Cs-134 | ND |
| | | Cs-137 | 370 ± 90 |
| Soil BL-SS-16 Hole M | | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-134 | ND |
| | | Cs-137 | ND |
| Soil BL-SS-17 Hole B | | Mn-54 | 700 ± 90 |
| | | Co-60 | 870 ± 120 |
| | | Cs-134 | ND |
| | | Cs-137 | 340 ± 70 |
| Soil BL-SS-18 Hole J | 05-05-80 | Mn-54 | <180 |
| | | Co-60 | <190 |
| Soil BL-SS-19 Hole C | 05-06-80 | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-134 | ND |
| | | Cs-137 | 110 ± 15 |
| Soil BL-SS-20 Hole N | 05-06-80 | Mn-54 | ND |
| | | Co-60 | ND |
| | | Cs-137 | ND |
| BNP-6 Hot Particle Landfill | 05-04-80 | Mn-54 | 0.014 µCi |
| | | Co-60 | 0.10 µCi |
| | | Co-58 | 0.053 µCi |
| | | Cr-51 | 0.77 µCi |
| BNP-7 Soil 1d Landfill | | Mn-54 | ND |
| | | Co-60 | ND |
| BNP-8 Sediment Point D | | Mn-54 | ND |
| | | Co-60 | ND |
| BNP-9 Soil Hole #1 | | Mn-54 | 810 ± 110 |
| | | Co-60 | 1030 ± 140 |
| | | Cs-137 | 150 ± 70 |
| Soil BL-SS-21 Hole J-2 | 05-07-80 | Mn-54 | 220 ± 120 |
| | | Co-60 | 640 ± 100 |
| | | Cs-134 | 610 ± 100 |
| | | Cs-137 | 960 ± 120 |

| Sample Location (Continued) | Date | Nuclide | Concentration, pCi/Kg (Wet Weight) |
|---|---|---|---|
| Soil BL-SS-25 | 05-10-80 | Mn-54 | 220 ± 80 |
| | | Co-60 | ND |
| | | Cs-137 | 120 ± 40 |
| Soil BL-SS-26 | 05-10-80 | Mn-54 | 1200 ± 150 |
| | | Co-60 | 1330 ± 220 |
| Soil BL-SS-27 | 05-10-80 | Mn-54 | <300 |
| | | Co-60 | <340 |
| Soil BL-SS-28 | 05-10-80 | Mn-54 | <220 |
| | | Co-60 | <160 |
| | | Cs-137 | 240 ± 40 |
| Soil BL-SS-29 | 05-11-80 | Mn-54 | <160 |
| | | Co-60 | <150 |
| BNP-22 Sediment Point F | 05-03-80 | Mn-54 | ND |
| | | Co-60 | ND |
| BNP-23 Water Point F | 05-03-80 | Mn-54 | <15 |
| | | Co-60 | <40 |
| | | Cs-137 | <35 |
| Soil BL-SS-30 | 05-11-80 | Mn-54 | 230 ± 80 |
| | | Co-60 | 760 ± 120 |
| | | Cs-134 | 240 ± 80 |
| | | Cs-137 | 670 ± 110 |
| Soil BL-SS-31 | 05-11-80 | Mn-54 | <200 |
| | | Co-60 | <230 |
| Soil BL-SS-32 | 05-11-80 | Mn-54 | <140 |
| | | Co-60 | <290 |
| Water BNP-38 County Well | 05-08-80 | Mn-54 | <100 |
| Water BNP-39 Beaver Dam Creek | 05-08-80 | Mn-54 | <100 |
| Water BNP-40 Seepage from Landfill | 05-09-80 | Mn-54 | <100 |
| Water LNP-41 Seepage | 05-09-80 | Mn-54 | <100 |
| Water BNP-42 Seepage | 05-09-80 | Mn-54 | <100 |

CP&L

Carolina Power & Light Company

Central Files (2)

EA-80-41

August 27, 1980

FILE: B09-13514 SERIAL: NO-80-1233

Mr. V. Stello, Jr., Director
Office of Inspection & Enforcement
United States Nuclear Regulatory Commission
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
LICENSE NOS. DPR-71 AND DPR-62
DOCKET NOS. 50-325 AND 50-324
RESPONSE TO NOTICE OF VIOLATION - IMPROPER DISPOSAL OF RADIOACTIVE MATERIAL

Dear Mr. Stello:

Pursuant to 10CFR2.205, Carolina Power & Light Company hereby encloses its check in the amount of $89,000, payable to the Treasurer of the United States, in full satisfaction of the Notice of Proposed Imposition of Civil Penalty issued by you dated August 1, 1980. As required by 10CFR2.201, CP&L's response to the Notice of Violation issued concurrently with the Notice of Proposed Imposition of Civil Penalty follows.

## I. GENERAL RESPONSE TO NOTICE OF VIOLATION

We agree that there was a problem with the implementation of the contamination monitoring program at BSEP and that there were inadequate controls to detect that the problem was occurring. Based on an on-site in-depth investigation and analysis by senior management, we believe that these implementation difficulties stemmed from:

1. Over-reliance on individual responsibility for trash separation (i.e., individual responsibility to put clean trash only in clean containers and contaminated trash only in contaminated containers) and individual responsibility for contamination monitoring of personal tools, equipment, clothing, and skin.

2. Failure of individuals to understand the seriousness and importance of good contamination control or the consequences of improper control.

3. Slippage in enforcement of proper health physics requirements at the beginning of the extensive outages due to:

   a. High volume of plant modifications and associated outage work requiring an excessive number of contract workers on-site.

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These modifications included those associated with the TMI lessons learned as well as required plant improvements.

b. An underestimation of the volume of work requiring health physics support during the outage resulting in a shortage of professional and supervisory health physics support at the beginning of the outage.

c. Unavailability of a sufficient number of contract health physics technician support in both the quantity and quality of available personnel.

Carolina Power & Light Company is confident of its ability to implement sound health physics programs at its nuclear plants in concert with other plant functions and believes that actions recently taken at the Brunswick Plant will avoid recurrence of the items discussed in the Notice of Violation. Recent efforts to enhance the health physics program at the Brunswick Plant have concentrated on the following areas: enhancement of the plant organization, improvements in the health physics training program, actions to lower background levels of radiation, and purchase of new, more sophisticated health physics equipment. Each of these items is discussed below:

Enhancement of the Plant Operating Organization

Changes have been implemented in the plant organization to allow increased management attention in the area of health physics. A new position of Manager of Environmental and Radiation Control (E&RC) has been approved and filled. Reporting to the Manager of E&RC are two new positions, the Environmental and Chemistry Supervisor and the Radiation Control Supervisor. These three new management positions replace the former position of Environmental and Radiation Control Supervisor. In addition, there have been significant improvements in the supporting professional staffs in the E&RC group by the addition of two chemist positions and two health physics positions. All Radiation Control Foremen report to the Radiation Control Supervisor. As part of CP&L's effort to maintain radiation/contamination as low as practical, a new decontamination unit has been established. This unit reports to a foreman who reports to the Radiation Control Supervisor. This unit has responsibility for the operation of the tool decontamination facility and for general plant decontamination.

The above changes serve to allow increased management attention in the area of health physics and to separate these areas from other functions such as the monitoring of water chemistry. The creation of the position of Manager of E&RC provides a strong management position to monitor health

physics activities. In the prior organization, the manager responsible for E&RC also had responsibility for plant engineering and administrative activities. The new Manager of E&RC has no responsibilities other than health physics, chemistry, and environmental related activities. The new Radiation Control Supervisor has no responsibilities other than health physics related activities. These changes have produced enhanced performance in the health physics area and provide a framework for future improvements.

Improvements to the Radiation Protection Training Program

In order to further enhance the health physics program at the Brunswick Plant, the following improvements have been made:

1. Significant resources of CP&L have been directed to expanding and enhancing the radiation control training program at BSEP. Senior Management fully recognizes the importance of effective training to facilitate a quality radiation control program and have become directly involved in this activity. Outside consultants have been employed to critique our training programs and to offer constructive suggestions.

   The General Employee Training Program, which is applicable to all contract and Company personnel, has been expanded to re-emphasize and improve training in practical considerations such as individually dressing out in anti-C clothing, removing anti-C clothing, handling of dosimetry and radiation survey instruments, properly crossing step-off pads, and demonstrating a knowledge of information contained on radiation and contamination area posting signs. Successful completion of this program is a prerequisite to gaining unescorted access to the plant.

2. Training sessions for all first line supervisors and above have been initiated which emphasize the role and responsibilities of supervisors to ensure their subordinates carry out good health physics practices, provide in-depth knowledge of appropriate plant health physics procedures and instructions, and allow for the demonstration of practical considerations which have occurred or are anticipated to occur in the field.

3. Prescreening tests are provided to all contract health physics personnel to ensure that they can demonstrate basic health physics knowledge. Following the prescreening tests is an in-depth training program which is site specific with testing afterwards. Poor performance on either of these tests results in the contract employee not being employed at the plant.

4. Company health physics personnel have been evaluated and their retraining needs identified. A training program has been initiated

for those individuals who have demonstrated weakness in particular areas.

5. Intermediate and Advanced Radiation Control and Protection courses are under development. These courses will be given to the Company's health physics personnel on a progressive basis to further enhance their technical and practical knowledge of health physics techniques.

Actions to Lower Background Levels of Radiation

Significant steps have been taken at Brunswick to lower background radiation levels. These steps have been accomplished by conducting thorough cleanup operations in the Turbine and Reactor buildings. Additional cleanup operations are in progress for the Radwaste Building, with shipments of waste in excess of our allocations at the Barnwell facility to the Hanford facility. Essentially all excess stored radwaste material will have been removed from the site by October 1, 1980, assuming adequate off-site disposal allocations at the Barnwell and Hanford waste facilities. These actions serve to significantly lower background levels at Brunswick and, more importantly, to provide an environment where potential health physics problems are more easily detected.

Purchase of New Health Physics Equipment and
Upgrading of Existing Equipment and Other Measures

Significant numbers of additional survey instruments have been acquired or are on order. Additionally, upgraded hand and foot monitors and portal monitors which reflect the current state of the art are being purchased. These additional instruments will augment the present instruments at Brunswick and provide increased flexibility and survey capabilities. Monitors have also been shielded and/or background radiation levels reduced to enhance detection capability. Personnel have also been added to more closely monitor frisking procedures.

In the area of personnel, steps have been taken by CP&L to enhance the quality of contract health physics personnel. In addition to improvements in training, which were described earlier, screening techniques for contract personnel have been strengthened to aid in assuring the quality of these personnel. Additionally, CP&L has implemented changes in the plant health physics staff.

The largest impact in the area of personnel, however, was the reduction of contract and construction personnel on site by around 25 percent. The ability of our health physics organization to provide acceptable coverage of ongoing work will determine the number of contract and construction personnel on site. This action has allowed the health physics organization to provide better coverage of ongoing work and to better plan for future work.

The above actions to provide additional survey instruments, to provide higher quality contract health physics personnel, to reorganize the health physics organization, to increase the size of the health physics staff, and to reduce on site construction forces have served to strengthen the capability of the health physics organization to perform its daily tasks and to improve planning for future work.

As evidenced by the above discussions, CP&L has undertaken a course of action at the Brunswick Plant which is dedicated to continued improvement in the health physics area and has already produced positive results. Carolina Power & Light company is confident that the actions it has taken will avoid any recurrence of the items discussed in the Notice of Violation.

## II. DETAILED RESPONSE TO NOTICE OF VIOLATION

Infraction:

"A. 10CRF20.301 prohibits a licensee from disposing of licensed material except as authorized by 10CFR Parts 20, 30, 40, and 70. In addition, 10CFR20.201 requires that surveys be made as may be necessary to comply with 10CFR Part 20.

Contrary to the above, on at least 16 separate occasions during the period from mid-1978 through April 1980, licensed material (in the form of contaminated equipment) was disposed of without authorization. In addition, surveys conducted for the purpose of detecting and identifying items radioactively contaminated with licensed material were inadequate, thereby contributing to the unauthorized disposal of licensed material. These 16 occasions consisted of the following disposals: at least 13 times during mid-1978 through April 1980, to the Brunswick County sanitary landfill; once during April 1980, to the North Carolina Salvage Company in Goldsboro; once during May 1979, to the Horton Iron and Metal Company; and, once prior to May 1980, to the Merrit Holland Company in Wilmington, North Carolina."

Response & Cause:

Carolina Power & Light Company admits that these items of noncompliance did occur. The disposal of material off-site with measurable levels of radioactivity resulted from inadequate surveys and reliance on individuals to properly dispose of low level radioactive trash in the proper container. Another contributing factor was that background radiation levels at some monitoring locations made the low level of radioactivity on material found in the landfill difficult to detect.

Corrective Actions:

a. All off-site shipments of trash to the Brunswick County Landfill were stopped on April 28, 1980. A complete survey of the landfill

was made on April 29, 1980, with additional surveys being made through the first two weeks in May. Background radiation levels at the landfill ranged from five to seven μR/hr. All areas in the landfill which had radiation intensities of nine μR/hr on the surface were identified and excavated. All materials found during the excavation of these areas having a radiation intensity of 10 μR/hr or greater were recovered and returned to the plant for disposal as radioactive material. A preliminary report of the Brunswick County Landfill recovery operations and other activities associated with the recovery of contaminated materials was submitted to Mr. James P. O'Reilly, Director, United States Nuclear Regulatory Commission, Region II, on May 14, 1980. A final report of these activities will be submitted by September 1, 1980.

A new procedure has been written for the "Control and Monitoring of Nonradioactive Plant Waste and Scrap" (RC&T Procedure 0216). This procedure has been reviewed and approved by the USNRC and by the State of North Carolina. Subsequently, the NRC granted permission to resume shipments of nonradioactive waste from the plant; however, at the present time, CP&L has no plans to resume shipment of waste from the Brunswick Plant to the Brunswick County Landfill. A permit has been obtained from the State of North Carolina to operate a landfill on CP&L property. All nonradioactive waste material from operations at the Brunswick Plant will be disposed of at this landfill in accordance with approved procedures.

b. All off-site shipments of scrap materials and other potentially contaminated equipment and materials were terminated on May 2, 1980. A thorough evaluation was made of all vendors who might have received material which could potentially have been contaminated. Thorough surveys were made of all vendor's facilities which had been identified and all radioactively contaminated materials found were returned to the Brunswick facility. The results of these surveys have been reported in the two reports referenced in Item a. RC&T Procedure 1216 for the "Control and Monitoring of Nonradioactive Plant Waste and Scrap" was prepared and approved by the NRC prior to the resumption of shipments of scrap materials and other removal of equipment and materials from the plant.

c. The construction vehicle gate was closed so that there was only one point of exit from the plant for materials and equipment. A procedure was established which required that all vehicles, tools, and equipment leaving the plant site would be surveyed and released by health physics personnel.

d. Extensive efforts have or are being made to reduce background radiation levels. This included the relocation of radioactive waste on site to a more remote location while awaiting disposal. It is

anticipated essentially all excess radioactive waste will be shipped to approved disposal sites by October 1, 1980. Extensive efforts have been made to decontaminate the condensate storage tanks (CST) and the auxiliary surge tank (AST). These efforts have been partially successfully, however, radiation levels in the tanks remain at an undesirable level. Samples have been obtained of the material inside these tanks in order to establish a procedure for further cleaning. Present plans are to clean these tanks by using an underwater mobile vacuum cleaner. All equipment necessary to clean these tanks by this method is on site and has been tested. Procedures have been written, reviewed by the Plant Nuclear Safety Committee (PNSC), and approved by plant management. It is expected that these tanks will be cleaned to the point that radiation levels are acceptable by the end of September.

All corrective actions have been completed except for the cleaning of the CSTs and AST. This will be completed by the end of September

Infraction:

"B. BSEP Technical Specification (TS) 6.8.1.a requires that written procedures be established, implemented, and maintained covering the activities and procedures recommended in Appendix A of Regulatory Guide 1.33, November 1972. This Regulatory Guide requires radiation protection procedures for control of radioactive materials to prevent release to the environment and minimize personnel exposure."

"1. Licensee procedure BSEP Vol. VIII, RPM, Paragraph 6.2.2, requires that equipment to be unconditionally released from the "Radiation Control Area" to the "clean area" have less than 200 dpm/100cm$^2$ loose surface contamination and less than 0.25 mR/hr fixed contamination measured at one inch from the surface of the item. The "clean area" is defined as any area within the "Controlled Access Area" in which contamination levels are less than those specified above. The "Radiation Control Area" is defined as any area to which access is controlled for the purpose of limiting radiation exposure or preventing the spread of contamination."

"Contrary to the above, on April 29, 1980, this procedure was not implemented in that criteria used by contract workers would have permitted the release of items to the clean area with levels of loose surface contamination in excess of the above limits."

Response & Cause:

Carolina Power & Light Company admits that this item of noncompliance did occur. The procedure for surveying and releasing equipment and materials to the clean area and the limiting criteria for release had been changed allowing materials to be monitored

using a RM-14 with a HP-210 detector and not requiring a smear survey. The Radiation Protection Manual (RPM) was not changed; consequently, there was a conflict between the RPM and the procedure.

Corrective Actions:

a. A new procedure (RCST Procedure 0015) was implemented during the first week of May 1980 whereby all materials being removed from the contamination control areas for unrestricted use would be surveyed or evaluated by a health physics technician. The survey includes a direct radiation evaluation and a smear survey to ensure that radioactive contamination levels are below the limits as set forth in the Radiation Protection Manual for unrestricted release. We feel confident that this technique, combined with increased emphases on this control will significantly reduce the possibility for a recurrence.

b. All personnel went through a retraining program as described in the response to Item A which emphasized the practical aspects of contamination control. During this retraining, it was emphasized that all items being removed from the contamination control area for unrestricted release must be surveyed by health physics personnel.

All corrective actions associated with this item have been completed or are of a continuing nature.

Infraction:

"2. BSEP Vol. VIII, RPM, Paragraph 6.6.6, requires personnel leaving the Radiation Control Area to monitor themselves for contamination.

Contrary to the above, on April 27, 1980, two workers exiting the reactor building 50' elevation near the torus access (a Radiation Control Area) failed to monitor themselves for contamination at the monitor station provided."

Response & Cause:

Carolina Power & Light Company admits the incident based on the NRC Inspector's report. For unknown reasons, two contract workers clearly violated instructions and procedure.

Corrective Actions:

a. Radiation Control personnel were added at all high traffic frisker stations to ensure that all individuals exiting radiation control areas adequately monitored themselves.

b. A training program was established which provided for retraining in all pertinent health physics practices and procedures, with specific emphases on contamination control. This retraining program included demonstrations and lectures on how to put on and remove protective clothing and how to monitor for contamination. Each individual was required to demonstrate his knowledge and skill in this area by "suiting up," removing the protective clothing and monitoring for contamination while being observed by an instructor. This program stressed the requirement for monitoring upon exiting from the radiation control areas. This retraining was provided to all contract workers, permanent plant personnel and anyone else badged to enter the plant except that health physics personnel were not required to take the retraining program. The badges of all personnel not receiving this retraining were pulled so that they could not enter the plant prior to receiving this training. This retraining program has been incorporated into the initial health physics orientation program so that all new personnel to the plant will receive that training prior to being granted unescorted access to the plant site.

All corrective actions associated with this item are complete.

Infraction:

"3. BSEP Vol. VIII, RPM, Paragraph 10.1.1, requires personnel to be assisted by the Radiation Control and Test Group (RC&T) in cases of skin contamination.

Contrary to the above, on April 29, 1980, three non-RC&T individuals at the personnel decontamination station were engaged in decontamination of their skin. The workers failed to notify RC&T to gain assistance although a call button was provided for workers' use."

Response & Cause:

Carolina Power & Light Company admits the incident based on the NRC Inspector's report. The cause of the infraction is a different interpretation of the reference in the RPM by the Inspector than that heretofore made by CP&L. The manual states that the RC&T group would assist in personnel skin decontamination meaning that they would provide assistance when necessary and was not intended to say that RC&T assistance was required for each case of skin decontamination.

Corrective Actions:

a. RC&T Procedure 0210 (Personnel Decontamination) was revised to require that RC&T be notified of all cases of skin contamination. In addition, the procedure was revised to provide for documentation of the causes and corrective actions associated with all cases of skin contamination. The procedure also provides for dose evaluation when skin contamination levels exceed a specified level.

b. The Plant General Manager has emphasized to all employees and contractors on site the importance of good health physics practices and the need for following all health physics procedures and practices, including the requirement for notifying RC&T personnel of all instances of skin decontamination.

c. One of the areas stressed in the retraining program, as previously described, was the requirement to notify RC&T personnel of all cases where skin contamination occurs.

All corrective actions are complete.

Infraction:

"4. RC&T Procedure 0110, Paragraph 8.5, requires personnel to use portal monitors.

Contrary to the above, on April 29, 1980, an individual bypassed the portal monitor at the construction exit from the restricted area."

Response and Cause:

Carolina Power & Light Company admits the incident based on the NRC Inspector's report. For unknown reasons, the worker violated health physics procedures and would have received disciplinary action if he had been identified.

Corrective Actions:

a. On May 2, 1980, personnel monitoring (frisking) was initiated at both plant security exits. All frisking is performed by health physics personnel who have been adequately trained in survey techniques. Acceptable limits for contamination and background radiation were specified in RC&T Procedure 0110.

b. As described previously, the Plant General Manager stressed to all employees and contractors the requirement to follow all health

physics procedures and the consequences of not following these procedures.

All corrective actions have been completed.

Infraction:

"5. RC&T Procedure 0011, Paragraph 3, requires protective clothing to be removed in such a way as to minimize the spread of contamination. Paragraph 8 of the same procedure requires that gloves and coveralls be removed in such a way that only the inside surfaces are touched with the hands.

Contrary to the above, on April 27, 1980, workers were observed touching potentially contaminated outside surfaces of coveralls and gloves with their hands as they undressed at the Unit 2 torus checkpoint.

Response and Cause:

Carolina Power & Light Company admits the incident based on the NRC Inspector's report. The most probable cause would be disregard for the importance of sound health physics practices on the part of the workers in question.

Corrective Actions:

a. As previously described, all contractor and CP&L employees were retrained in acceptable health physics practices during May 1980. As part of this training, the proper donning and removal of protective clothing was stressed. An exercise was conducted whereby individuals completed a total dress-out exercise under the supervision of qualified health physics personnel. This same training is also being given to all new employees with the general orientation program.

b. Health physics personnel at plant checkpoints were instructed to assist workers in properly dressing out and removing protective clothing.

Corrective actions associated with this item are complete.

Infraction:

"6. RC&T Procedure 0110, Paragraph 8.3.3, requires the instrument probe to be moved slowly when performing a whole body frisk.

Contrary to the above, on April 27, 1980, at the frisker station on the 50' elevation exit from the reactor building, workers surveying

themselves at this station moved the instrument probe over their bodies so quickly that low levels of contamination would not be detected."

Response & Cause:

Carolina Power & Light Company admits that this incident did occur as stated by the NRC inspector. The most probable cause was poor judgment in the use of portable monitoring equipment and reliance on hand and foot monitors and portal monitors to detect low levels of contamination.

Corrective Actions:

a. As previously described, the employee retraining program stressed the proper technique for frisking and the need for moving the probe slowly in order to detect low levels of radioactive contamination.

b. Beginning on May 2, 1980, health physics personnel specifically trained in proper surveying techniques were stationed at frisker locations to observe and assist in proper frisking.

c. Beginning on May 2, 1980, health physics personnel specifically trained in proper monitoring techniques were stationed at both exits from the plant to monitor all individuals prior to exiting the plant.

d. Low background levels were obtained at all frisker locations, by relocation of the frisker and/or improved shielding. This enabled personnel to more accurately frisk.

Corrective actions associated with this item are complete.

Infraction:

"7. RC&T Procedure 0302, Paragraph 2.1.1 requires the portal monitor alarm setpoint to be approximately 0.1 mR/hr.

Contrary to the above, on April 26, 1980, a portal monitor located at the main control point failed to alarm at 0.2 mR/hr."

Response & Cause:

Carolina Power & Light Company admits that this incident did occur as described by the NRC inspector. A cause for this was not determined. All portal monitors are on a weekly check program, and these monitors had been last checked on April 20, 1980 and found to be acceptable. All portal monitors were subsequently checked by instrument technicians and no equipment problems were detected.

Corrective Actions:

a. Although the portal monitors are still in place and all personnel exiting the plant are required to pass through them, friskers (RM-14 with HP-210 detector) are now being used at all plant exits for contamination control. Their sensitivity allows the detection of contamination well below the levels of 0.1 mR/hr.

b. More sensitive hand and foot counters have been ordered for evaluation. Also, more sensitive portal monitors are being evaluated. If they prove acceptable, they will be purchased to replace the existing equipment.

Corrective actions are complete or of a continuing nature.

Infraction:

"8. BSEP Vol. VIII, Paragraph 6.5.4 requires protective clothing radiation levels be less than 0.5 mR/hr above background at one inch before issue to personnel for use.

Contrary to the above, on May 1, 1980, dose rates of 1.0 and 2.4 mR/hr (above background) at one inch were measured on coveralls ready for issue."

Response & Cause:

Carolina Power & Light Company admits that this incident did occur as described by the NRC inspector. During this period of time, protective clothing, particularly coveralls, was in very short supply due to the large number of workers in the facility. Due to the short supply, turnaround had to be very rapid; consequently, the monitoring of clean protective clothing was sometimes reduced to spot checking of individual garments with a complete survey of the container. The heavy workload and fast turnaround also resulted in less available time for maintenance, which meant less frequent changing of the filters on the dry cleaning unit and less frequent distillation of the cleaning fluid.

Corrective Actions:

a. Dry cleaning and laundry vendors have been reinstructed in the fact that protective clothing with radiation levels in excess of 0.5 mR/hr after cleaning is unacceptable for use. Adequate checks of clean clothing are being made to ensure that this limit is being maintained.

b. The number of workers on site was reduced so that turnaround did not have to be as rapid. Also, orders were placed for additional protective clothing.

c. Background levels in the vicinity of the dry cleaning unit were reduced by the relocation of waste materials.

d. A procedure was written, RC&T Procedure 0205, Radiological Controls for Portable Dry Cleaning Units, which specifies maximum limits on the dry cleaning filters and maximum activity of the dry cleaning fluid. A sampling program was established so that RC&T can monitor these parameters.

e. RC&T Procedure 0205 was established whereby a container of used clothing would not be processed if readings were in excess of 25 mR/hr without first being opened and high activity garments removed and disposed of as radioactive waste.

All corrective actions associated with this item to prevent its recurrence have been completed.

Infraction:

"C. 10CFR20.203(b) requires areas with whole body exposure rates in excess of 5.0 mR/hr to be posted as a 'Radiation Area.'

Contrary to the above, on April 30, 1980, the laundry shipping preparation area in which the dose rate to a worker was measured to be 25.0 mR/hr, was not posted as a 'Radiation Area'."

Response & Cause:

Carolina Power & Light Company admits the incident based on the NRC Inspector's report. Subsequent surveys by health physics personnel failed to detect any whole body exposure rates greater than 5 mR/hr. The most probable cause was insufficient health physics personnel to cover all work in progress and insufficient training of some plant workers in good health physics practices. It is normal practice for a health physics technician to be present and supervise the activities associated with the preparation of radioactive contaminated laundry for shipment. This case was no exception, as the technician monitored the laundry drums for radiation levels and supervised drum smearing. At the specific time that the NRC inspector was there, the technician had been called away to assist in covering another job.

Corrective Actions:

a. All health physics technicians were reinstructed in the requirement for maintaining adequate posting and labeling.

b. Additional contract health physics personnel were obtained to improve coverage of work in progress by health physics personnel.

c. The training for all contract workers has been strengthened.

All corrective actions have been completed.

Infraction:

"D. 10CFR20.103(a)(3) requires that airborne radioactive material surveys be taken in restricted areas to evaluate workers' exposure to radioactive materials in air.

(1) Contrary to the above, on April 24, 1980, airborne surveys were not conducted at the cleanup area on the reactor water cleanup system building roof (a restricted area) when work was underway which could cause high levels of airborne contamination."

Response & Cause:

Carolina Power & Light Company admits that this incident did occur as described by the NRC inspector. This incident occurred when a contract worker went into an area and performed a job that had not been assigned to him. Consequently, there was no opportunity for health physics personnel to evaluate the need for air sampling.

Corrective Actions:

a. The importance of current surveys in all work areas, good communication with maintenance workers, and the necessity of coverage for ongoing work in controlled areas was stressed to all health physics technicians. The incident was discussed with the health physics technicians working at the drywell checkpoint and the incident report was reviewed by all health physics personnel.

b. Radiation safety training as previously described was conducted for all personnel on site.

c. Additional contract health physics technicians were brought on site to provide for an increased level of work coverage.

d. The number of contract workers on site was reduced in order to provide a lower worker/HP ratio.

e. The Reactor Water Clean Up (RWCU) roof was decontaminated to reduce the contamination/ airborne radioactivity potential.

Corrective actions associated with this item are completed.

Infraction:

"(2) Contrary to the above, on April 30, 1980, airborne surveys were not conducted in the Health Physics Systems Laundry trailer facility (a restricted area) when the potential for high levels of airborne contamination existed due to work in progress."

Response & Cause:

Carolina Power & Light Company admits that airborne surveys were not conducted. The incident occurred due to a different interpretation of the regulations. Airborne surveys had previously been taken periodically in the HPS trailer with the results indicating no airborne radioactivity problems. In addition, it is the practice of CP&L to require whole body counts for contract personnel entering the plant, upon completion of their work assignment at the plant and at other times upon the recommendation of Health Physics personnel. The purpose of these whole body counts is to evaluate the effectiveness of the respiratory protection program including airborne radioactive surveys as well as for the assessment of individual uptakes. This program had not detected any specific airborne exposure problems. For these reasons, it was felt that air sampling during the opening of each drum was unnecessary. Air samples subsequent to this have proved this to be a correct assessment of the situation.

Corrective Action:

Continuous air sampling was provided in the dry cleaning facility when it was in operation. Corrective actions are complete.

In summary, Carolina Power & Light Company is confident of its ability to implement sound health physics programs at its nuclear plants and believes that actions recently taken at the Brunswick Plant will avoid both recurrence of the items discussed in the Notice of Violation and future items of a similar nature. In the future, regardless of regulatory requirements for committing to completion dates for plant modifications, the total quantity of plant work performed at any one time will be dictated by the availability of qualified Health Physics personnel and the NRC's concurrence sought in adjusting deadlines where necessary. Plant background radiation levels will be strictly maintained to assure accurate monitoring and individual responsibility for strictly adhering to established Health Physics procedures will be regularly reemphasized. A pattern of negligent or willful

disregard will result in appropriate disciplinary action. Plant management will also reemphasize to all employees and contract workers the authority of Health Physics personnel to control plant activities which have the potential for impacting the plant's radiation control programs. Should you have further questions regarding our management's health physics policies, please contact me.

Yours very truly,

J. A. Jones
Senior Executive Vice President
Chief Operating Officer

JAJ/mf

cc: Mr. R. A. Hartfield
Mr. J. P. O'Reilly