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(10CFR50.36a)
(10CFR72.44)

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NOs. 50-261 and 72-3
LICENSE NOs. DPR-23 AND SM-2502
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

Dear Sir:

Carolina Power and Light Company (CP&L) herein provides the radioactive effluent and waste disposal semiannual report for the period of January 1 through June 30, 1990. The report is submitted pursuant to 10 CFR 50.36a(a)(2) for the Unit No. 2 facility and 10 CFR 72.44(d)(3) for the Independent Spent Fuel Storage Installation. The quantity of each of the principal radionuclides released to unrestricted areas in liquid and in gaseous effluents is specified.

Should you have any questions regarding this submittal, please contact Mr. J. D. Kloosterman, telephone (803) 383-1491.

Very truly yours,

R. E. Morgan

R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

JMH:sgk

Enclosures

cc: Mr. S. D. Ebneter
Mr. L. W. Garner (w/o Enclosures)

IE48
'11

EFFLUENT AND WASTE DISPOSAL

SEMIANNUAL REPORT

1/1/90 - 6/30/90

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON SEG PLANT - UNIT 2

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

TABLE OF CONTENTS
Enclosure 1

I. EXECUTIVE SUMMARY

A. Significant Variances

The following are explanations of significant variances in this Semiannual Report:

1. A minimum time of 5-minutes was reported for a liquid batch release. The release was from "A" Waste Condensate Tank on February 27, 1990. This effluent originates from the plant's Laundry and Hot Shower collection tanks. The release was a normal planned evolution and was sampled and analyzed in accordance with the Liquid Effluent Sampling and Analysis requirements of the plant's Technical Specification Table 4.10-1.

2. A minimum time of 21-minutes was reported for a gaseous batch release. The release was from "A" Waste Gas Decay Tank on May 30, 1990. The release was a normal planned evolution and was sampled and analyzed in accordance with the plant's Technical Specification Table 4.10-2. Since the Plant Vent Stack radiation monitor (R-14) is currently out-of-service, independent sampling and release rate calculations were performed as required by Technical Specification Table 3.5-7.

3. During the second quarter of this reporting period, liquid effluents increased significantly when compared to the first quarter of this report period. This was due to increased liquid processing following outages which occurred during the second quarter. Refer to Table IV-A of Enclosure 1 for a listing of the curie totals released. This increase is also evident in the Fission and Activation Gas section of gaseous effluents in Table III-A of Enclosure I of this report.

B. REGULATORY COMPLIANCE

1. When projected on a day-by-day basis utilizing conservative meteorological conditions the dose commitment from gaseous and liquid effluents is a small fraction of the 10CFR50, Appendix I limits. The direct radiation assessment to the likely most exposed member of the public is reported in the Annual Radiological Environmental Operating Report. During the reporting period the results of the direct radiation assessment demonstrates no measurable affect above background for the plant operations. The Independent Spent Fuel Storage Installation on-site is now operational and is evaluated in Addendum I and is attached to this report.

2. There were no changes to the waste solidification process control program (PCP) during this reporting period.

3. There was a change to the Radioactive Waste Systems (liquid, gaseous, or solid) during this reporting period. See Enclosure 2 for details.

4. There was a reportable instrumentation inoperability event during this reporting period. See Enclosure 2 for details.

5. There were no outside liquid holdup tanks that exceeded the ten curie limit during this reporting period.

6. There were no Waste Gas Decay Tanks that exceeded the 1.9E+04 curie limit during this reporting period.

7. There were no revisions to the ODCM during this reporting period.

8. Sludge and sediment containing trace amounts of radioactive material was disposed of in the facility's ash pond during this reporting period. See Enclosure 2 for details.

II. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. Fission and Activation Gases:
   10CFR20 Limits (Instantaneous Release Rate)
      Total Body Dose ≤500 mrem/yr
         Skin Dose ≤3000 mrem/yr
   10CFR50, Appendix I
      For Calendar Quarter
         Gamma Dose ≤5 mrad
         Beta Dose ≤10 mrad
      For Calendar Year
         Gamma Dose ≤10 mrad
         Beta Dose ≤20 mrad

2. Iodine - 131 and 133, Tritium, and Particulates >8 day half-lives:
   10CFR20 Limits (Instantaneous Release Rate)
      Dose from Inhalation (only) to a child to any organ ≤1500 mrem/yr
   10CFR50, Appendix I (Organ Doses)
      For Calendar Quarter ≤7.5 mrem
      For Calendar Year ≤15 mrem

3. Liquids:
   Concentrations are specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.00E-04 μCi/ml total activity.
   10CFR50, Appendix I
      For Calendar Quarter
         Total Body Dose ≤1.5 mrem
         Any Organ Dose ≤5 mrem
      For Calendar Year
         Total Body Dose ≤3 mrem
         Any Organ Dose ≤10 mrem

B. Measurements and Approximations of Total Radioactivity

1. Continuous Gaseous Releases

   a. Fission and Activation Gases - The total activity released is determined from the net count rate of the gaseous monitor, its calibration factor, and the total exhaust flow. The activity of radiogas is determined by the fraction of that radiogas in the isotopic analysis for that period.

b. Iodines - The activity released as Iodine-131, 133, and 135 is based on isotopic analysis of the charcoal cartridge and particulate filter and the total vent flow.

c. Particulates - The activity released via particulates with half-lives greater than eight days is determined by isotopic analysis of particulate filters and the total vent flow.

d. Tritium - The activity released as tritium is based on weekly grab sample analysis and total vent flow.

2. Batch Gaseous Releases

a. Fission and Activation Gases - The activity released is based on the volume released and the activity of the individual nuclides obtained from an isotopic analysis of the grab sample taken prior to the release.

b. Iodines - The iodines from mixed mode batch releases are included in the iodine determination from the mixed mode continuous Auxiliary Building releases.

c. Particulates - The particulates from mixed mode batch releases are included in the particulate determination from the mixed mode continuous Auxiliary Building releases. Ground level batch particulates are reported in the batch mode accountability.

d. Tritium - The activity released as tritium is based on the grab sample analysis of each batch and the batch volume.

3. Liquid Releases

a. Fission and Activation Products - The total release values (not including tritium, strontium, iron-55, and alpha) are comprised of the sum of the individual radionuclide activities in each release to the discharge canal for the respective quarter. These values represent the activity known to be present in the liquid radwaste effluent.

b. Tritium & Alpha - The measured tritium and alpha concentrations in a monthly composite sample are used to calculate the total release and average diluted concentration during each period.

c. Strontium-89, 90, and Iron-55 - The total release values are measured quarterly from composite samples.

C. Estimated Total Errors

1. Estimated total errors for gaseous effluents are based on uncertainties in counting equipment calibration, counting statistics, vent flow rates, vent sample flow rates, non-steady release rates, chemical yield factors, and sample losses for such items as charcoal cartridges and particulate filters.

2. Estimated total errors for liquid effluents are based on uncertainties in counting equipment calibration, counting statistics, non-steady release flow rate, sampling and mixing losses, and volume determinations.

3. Estimated total errors for solid waste are based on uncertainties in equipment calibration, dose rate measurements, geometry, and volume determinations.

III. GASEOUS EFFLUENTS

A. Batch Releases

1.	Number of Batch Releases	7.10E+01
2.	Total Time Period for Batch Releases	3.70E+04 Min
3.	Maximum Time Period for a Batch Release	1.02E+03 Min
4.	Average Time Period for Batch Releases	5.21E+02 Min
5.	Minimum Time Period for a Batch Release	2.10E+01 Min

B. Abnormal Releases

1.	Number of Releases	0.00E+00
2.	Total Activity Released	0.00E+00 Ci

C. Data Tables

The following tables provide the details of gaseous releases:

Table III-A Gaseous Effluents - Summation of all Releases
Table III-B Gaseous Effluents Ground Level and Mixed Mode Releases
Table III-C Typical Lower Limits of Detection for Gaseous Effluents

TABLE III-A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1990
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

		UNITS	1ST QUARTER	2ND QUARTER
A.	Fission and Activation Gases:			
1.	Total Release	Ci	4.45E-01	1.38E+00
2.	Estimated Total Error	%	6.00E+01	6.00E+01
3.	Average Release Rate for Period	μCi/sec	5.72E-02	1.75E-01
4.	Percent of 10CFR50, Appendix I			
	Quarterly Limit			
	Gamma Air	%	3.18E-02	2.23E-02
	Beta Air	%	1.97E-02	6.71E-02
	Yearly Limit			
	Gamma Air	%	1.59E-02*	2.71E-02*
	Beta Air	%	9.85E-03*	4.34E-02*
B.	Iodines, Particulates, and Tritium:			
	Iodines			
1.	Total Iodine - 131	Ci	5.37E-08	5.55E-08
2.	Estimated Total Error	%	4.00E+01	4.00E+01
3.	Average Release Rate	μCi/sec	6.90E-09	7.05E-09
	Particulates			
1.	Particulates with Half-Lives >8 days	Ci	1.30E-06	1.61E-07
2.	Estimated Total Error	%	4.00E+01	4.00E+01
3.	Average Release Rate for Period	μCi/sec	1.67E-07	2.05E-08
4.	Gross Alpha Radioactivity	Ci	0.00E+00	0.00E+00
	Tritium			
1.	Total Release	Ci	2.62E-01	1.95E-01
2.	Estimated Total Error	%	3.00E+01	3.00E+01
3.	Average Release Rate for Period	μCi/sec	3.37E-02	2.48E-02
	Percent of 10CFR50,Appendix I			
	Quarterly Limit			
	Organ Lung	%	5.08E-02	3.56E-02
	Organ Thyroid	%	5.07E-02	3.56E-02
	Yearly Limit			
	Organ Lung	%	2.54E-02*	4.32E-02*
	Organ Thyroid	%	2.53E-02*	4.31E-02*

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE III-B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1990
GASEOUS EFFLUENTS GROUND LEVEL AND MIXED MODE RELEASES

	UNITS	CONTINUOUS MODE 1ST QUARTER	CONTINUOUS MODE 2ND QUARTER	BATCH MODE 1ST QUARTER	BATCH MODE 2ND QUARTER
1. FISSION GASES					
Ar-41	Ci	<LLD	<LLD	4.14E-02	3.46E-02
Kr-85m	Ci	<LLD	<LLD	2.18E-03	4.80E-04
Kr-85	Ci	1.12E-01	1.17E+00	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	2.43E-05
Kr-88	Ci	<LLD	<LLD	1.01E-03	2.58E-04
Xe-131m	Ci	<LLD	<LLD	<LLD	2.45E-04
Xe-133m	Ci	<LLD	<LLD	4.88E-03	2.00E-03
Xe-133	Ci	8.93E-04	8.06E-03	2.10E-01	1.44E-01
Xe-135	Ci	<LLD	<LLD	7.24E-02	1.79E-02
Total for Period	Ci	1.13E-01	1.18E+00	3.32E-01	2.00E-01
2. IODINES[1]					
I-131	Ci	5.37E-08	5.55E-08	<LLD	<LLD
Total for Period	Ci	5.37E-08	5.55E-08	<LLD	<LLD
3. PARTICULATES[1,2]					
H-3	Ci	2.44E-01	1.65E-01	1.78E-02	2.93E-02
Co-58	Ci	<LLD	1.61E-07	<LLD	<LLD
Co-60	Ci	<LLD	<LLD	1.30E-06	<LLD
Total for Period	Ci	2.44E-01	1.65E-01	1.78E-02	2.93E-02

[1]Mixed Mode Continuous Accountability includes Mixed Mode Batch Accountability (excludes H-3).
[2]First quarter batch particulates are the result of Miscellaneous Ground Level Batch Accountability effluents which are not a part of the continuous accountability pathway.

TABLE III-C
TYPICAL LOWER LIMITS OF DETECTION FOR GASEOUS EFFLUENTS

GRAB SAMPLE ANALYSIS

NUCLIDE	LLD (μCi/cc)
Ar-41	5.44E-08
Mn-54	1.00E-11
Co-58	1.00E-11
Fe-59	1.00E-11
Co-60	1.00E-11
Zn-65	1.00E-11
Kr-85m	7.24E-09
Kr-85	3.29E-06
Kr-87	1.00E-04
Kr-88	1.00E-04
Mo-99	1.00E-11
I-131	1.00E-12
Xe-131m	2.87E-07
I-133	1.00E-10
Xe-133m	1.00E-04
Cs-134	1.00E-11
I-135	3.74E-10
Xe-135m	2.61E-07
Xe-135	1.00E-04
Cs-137	1.00E-11
Xe-138	1.00E-04
Ba-140	3.17E-14
La-140	9.45E-14
Ce-141	1.00E-11
Ce-144	1.00E-11
Gross Alpha	1.00E-11

IV. LIQUID EFFLUENTS

A. Batch Releases

1.	Number of Batch Releases	6.50E+01
2.	Total Time Period for Batch Releases	1.21E+04 Min
3.	Maximum Time Period for a Batch Release	4.33E+02 Min
4.	Average Time Period for Batch Releases	1.85E+02 Min
5.	Minimum Time Period for a Batch Release	5.00E+00 Min
6.	Average Stream Flow During Release Periods	5.03E+05 GPM

B. Abnormal Releases

1.	Number of Releases	0.00E+00
2.	Total Activity Released	0.00E+00 Ci

C. Data Tables

The following tables provide the details of liquid releases:

Table IV-A Liquid Effluents - Summation of all Releases
Table IV-B Liquid Effluents
Table IV-C Typical Lower Limits of Detection for Liquid Effluents

TABLE IV-A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1990
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

		UNITS	1ST QUARTER	2ND QUARTER
A.	FISSION AND ACTIVATION PRODUCTS			
	1. Total Release	Ci	4.15E-02	1.38E-01
	2. Estimated Total Error	%	2.00E+01	2.00E+01
	3. Average Diluted Concentration	μCi/ml	1.69E-10	5.50E-10
B.	TRITIUM			
	1. Total Release	Ci	2.28E+01	2.49E+02
	2. Estimated Total Error	%	1.00E+01	1.00E+01
	3. Average Diluted Concentration	μCi/ml	9.27E-08	9.92E-07
C.	DISSOLVED AND ENTRAINED GASES			
	1. Total Release	Ci	1.59E-02	5.03E-02
	2. Estimated Total Error	%	2.00E+01	2.00E+01
	3. Average Diluted Concentration	μCi/ml	6.46E-11	2.00E-10
	4. Percent of Applicable Limit	%	3.23E-05	1.00E-04
D.	GROSS ALPHA RADIOACTIVITY			
	1. Total Release	Ci	0.00E+00	0.00E+00
	2. Estimated Total Error	%	6.00E+01	6.00E+01
E.	VOLUME OF WASTE RELEASED	Liters	4.31E+05	1.43E+06
F.	VOLUME OF DILUTION WATER	Liters	2.46E+11	2.51E+11
G.	PERCENT OF 10CFR50, APPENDIX I			
	Quarterly Limit			
	Organ GI-LLI	%	2.58E-02	4.51E-02
	Total Body	%	5.21E-02	9.09E-02
	Yearly Limit			
	Organ GI-LLI	%	1.29E-02*	3.54E-02*
	Total Body	%	2.60E-02*	7.15E-02*

*Cumulative total for the year-to-date using the methodology in the ODCM.

TABLE IV-B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1990
LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
1. PARTICULATES	UNITS	1ST QUARTER	2ND QUARTER	1ST QUARTER	2ND QUARTER
H-3	Ci	<LLD	<LLD	2.28E+01	2.49E+02
Cr-51	Ci	<LLD	<LLD	5.57E-05	<LLD
Mn-54	Ci	<LLD	<LLD	4.59E-04	4.15E-04
Fe-55	Ci	<LLD	<LLD	1.62E-02	1.12E-01
Co-57	Ci	<LLD	<LLD	<LLD	8.05E-06
Co-58	Ci	<LLD	<LLD	2.16E-04	6.31E-05
Co-60	Ci	<LLD	<LLD	1.41E-02	1.81E-02
Sr-90	Ci	<LLD	<LLD	3.99E-07	2.80E-06
Sr-92	Ci	<LLD	<LLD	<LLD	8.43E-06
Nb-95	Ci	<LLD	<LLD	<LLD	2.97E-06
Nb-97	Ci	<LLD	<LLD	7.16E-05	<LLD
Ag-110m	Ci	<LLD	<LLD	4.10E-04	7.61E-04
Sn-113	Ci	<LLD	<LLD	<LLD	6.02E-06
Sb-124	Ci	<LLD	<LLD	1.46E-03	1.01E-04
Sb-125	Ci	<LLD	<LLD	8.36E-03	6.61E-03
Cs-134	Ci	<LLD	<LLD	9.49E-06	7.45E-06
Cs-137	Ci	<LLD	<LLD	1.11E-04	9.02E-05
Total for Period	Ci	<LLD	<LLD	2.28E+01	2.49E+02
2. GASES					
Xe-133m	Ci	<LLD	<LLD	1.46E-04	6.54E-04
Xe-133	Ci	<LLD	<LLD	1.57E-02	4.95E-02
Xe-135	Ci	<LLD	<LLD	1.53E-05	1.96E-04
Total for Period	Ci	<LLD	<LLD	1.59E-02	5.03E-02

TABLE IV-C
TYPICAL LOWER LIMITS OF DETECTION FOR LIQUID EFFLUENTS

NUCLIDE	LLD (μCi/ml)
H-3	1.00E-05
Cr-51	1.14E-07
Mn-54	5.00E-07
Fe-55	1.00E-06
Co-57	4.26E-10
Co-58	5.00E-07
Fe-59	5.00E-07
Co-60	5.00E-07
Zn-65	5.00E-07
Sr-89	5.00E-08
Sr-90	5.00E-08
Sr-92	3.94E-07
Nb-95	2.60E-08
Zr-95	4.67E-08
Nb-97	2.28E-06
Mo-99	5.00E-07
Tc-99m	1.73E-08
Ag-110m	2.36E-08
Sn-113	2.08E-08
Sb-124	1.16E-07
Sb-125	5.01E-08
I-131	1.00E-06
Xe-133m	1.00E-05
Xe-133	1.00E-05
Cs-134	5.00E-07
Xe-135	1.00E-05
Cs-137	5.00E-07
Ba-140	7.83E-08
La-140	6.33E-08
Ce-141	5.00E-07
Ce-144	5.00E-07
GROSS ALPHA	1.00E-07

V. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
REPORT TIME PERIOD JANUARY 1 THROUGH JUNE 30, 1990

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (not irradiated fuel)

WASTE CLASS A

1. Type of waste	Unit	6-month Period	Est. Total Error %	Solid. Agent	Cont. Type	Form	No. Ship.
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	4.84E+00 4.70E+00	2.00E+01	NA	HIC	Dewatered Bead Resin	1
b. Dry compressible waste, contaminated equip., etc.	m^3 Ci	7.89E+00 2.71E-01	2.00E+01	NA	STP	Compacted	11
c. Irradiated components, control rods, etc.	m^3 Ci	NA	NA	NA	NA	NA	NA
d. Other (describe)	m^3 Ci	NA	NA	NA	NA	NA	NA

HIC = High Integrity Container

STP = Strong Tight Package

2. Estimate of major nuclide composition (by type of waste)

	NUCLIDE	%	Ci
a.	Fe-55	3.75E+01	1.76E+00
	Co-60	3.17E+01	1.49E+00
	Cs-137	1.57E+01	7.37E-01
	Cs-134	7.00E+00	3.29E-01
	Ni-63	5.50E+00	2.60E-01
	Sb-125	1.30E+00	5.95E-02
	Mn-54	1.20E+00	6.10E-02
	C-14	1.00E-01	2.61E-03
b.	Fe-55	6.02E+01	1.63E-01
	Co-60	1.16E+01	3.14E-02
	Cr-51	9.16E+00	2.48E-02
	Ni-63	7.43E+00	2.01E-02
	Co-58	6.86E+00	1.86E-02
	Nb-95	2.72E+00	7.37E-03
	Zr-95	2.06E+00	5.59E-03
	C-14	1.00E-02	2.01E-05

Total Curie Quantity and Principle Radionuclides were determined by Estimate

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	0
Mode of Transportation	NA
Destination	NA

3. Solid Waste Disposition

Number of Shipments	12
Mode of Transportation	Sole Use Vehicle
Destination	Barnwell, SC

CHANGES TO ODCM, PCP, AND RADIOACTIVE WASTE SYSTEMS

TABLE OF CONTENTS
Enclosure 2

I. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

There were no changes to the Offsite Dose Calculation Manual (ODCM) during this reporting period.

II. CHANGES TO THE RADIOACTIVE WASTE SYSTEMS

During this reporting period, the Spent Resin Transfer Line was extended from the Drumming Room inside the Auxiliary Building to the Radwaste Facility by MOD-1002. The following is the evaluation performed for this modification as required by the H. B. Robinson Plant Technical Specifications Section 6.17.

MAJOR CHANGES TO RADIOACTIVE LIQUID GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS

TECH SPEC 6.17-1

A. A SUMMARY OF THE EVALUATION THAT LED TO THE DETERMINATION THAT THE CHANGE COULD BE MADE IN ACCORDANCE WITH 10CFR50.59.

- A DIRECT ROUTING OF THE SPENT RESIN TRANSFER LINE FROM THE DRUMMING ROOM TO THE SHIPPING BAY IN THE RADWASTE FACILITY WAS INVESTIGATED. SINCE NED HAD 10CFR50.59 CONCERNS DUE TO OFFSITE RELEASES, AN EVALUATION WAS MADE BY THE E&E CENTER. THE EVALUATION SHOWED THAT A RELEASE OF THE SPENT RESIN TANK TO THE STORM DRAINS WOULD EXCEED 10CFR PART 20: 10CFR PART 50, APP.I; AND 40CFR190. DUE TO THIS ANALYSIS IT WAS DECIDED TO ROUTE THE TRANSFER LINE THROUGH THE ENCLOSED PIPE CHASE TO ELIMINATE 10CFR50.59 CONCERNS.

1. THE FOLLOWING IS A SUMMARY OF THE SAFETY EVALUATION FROM MOD 1002 (RESIN TRANSFER PIPING).

THIS MODIFICATION EXTENDS THE SPENT RESIN TRANSFER LINE FROM THE WASTE DRUMMING ROOM IN THE AUXILIARY BUILDING ACROSS THE RCA TO THE RADWASTE FACILITY. THE MODIFICATION ALSO PROVIDES THE PENETRATIONS AND SUPPORTS REQUIRED TO ROUTE THE PIPING. THE NEW PIPING, VALVES AND FITTINGS ARE BEING ADDED TO A NON-Q, NON-SEISMIC PORTION OF THE LIQUID WASTE DISPOSAL SYSTEM (LWDS). THEY ARE BEING PROCURED, DESIGNED AND INSTALLED TO THE SAME PROCEDURES, CODES AND STANDARDS AS THE INTERFACING SYSTEM.

THE ACCIDENT ANALYZED IN SECTION 15.7.2 OF THE FSAR ASSUMES THAT RELEASES DUE TO THE FAILURES OF THE LWDS WILL BE CONTAINED BY THE AUXILIARY BUILDING. THIS MODIFICATION ROUTES THE TRANSFER LINE OUTSIDE THE AUXILIARY BUILDING, BUT WITHIN THE RADWASTE FACILITY. THE RADWASTE FACILITY HAS A SEISMIC BATHTUB AND IS DESIGNED TO REMAIN STANDING AFTER A SEISMIC EVENT; THEREFORE, THIS MODIFICATION DOES NOT EXCEED THE BOUNDS OF THE ANALYZED ACCIDENT.

THE ACCIDENT ANALYZED IN SECTION 15.7.3 OF THE FSAR ASSUMES THAT THERE IS NO CREDIBLE MECHANISM TO RELEASE UNTREATED WASTE AND IF THERE WAS IT WOULD NOT EXCEED 10CFR20. EXCEPT FOR AN APPROXIMATELY 12" LONG INTERFACE SECTION BETWEEN THE RAB AND RWF PIPE CHASE SEAL WALL ALL LIQUIDS FROM FAILURE IN THE PIPE WILL BE CONTAINED IN THE RAB OR RWF. THE INTERFACE PIECE IS Q, SEISMIC AND ALSO HAS A JACKET SLEEVE. THE SUMP PUMPS ARE UNDER E&RC CONTROLS TO ASSURE NO ACCIDENTAL OR UNCONTROLLED RELEASE. THE POTENTIAL SPILLAGE OF RESIN ROUTED TO AND STORED IN THE TRUCK BAY IS CONTAINED BY THE NEW RAD Q, SEISMIC CONCRETE, THEREBY PROVIDING THE "BATH TUB' DESIGN BASIS IN THE ORIGINAL RWF DESIGN AND THIS MOD.

BASED ON THE ABOVE ANALYSIS, REROUTING THE SPENT RESIN TRANSFER LINE TO THE RADWASTE FACILITY THROUGH THE ENCLOSED CHASE WILL NOT INCREASE THE PROBABILITY OR CONSEQUENCES OF AN ACCIDENT OR MALFUNCTION OF EQUIPMENT IMPORTANT TO SAFETY PREVIOUSLY ANALYZED; CREATE THE POSSIBILITY OF AN ACCIDENT OR MALFUNCTION OR EQUIPMENT IMPORTANT TO SAFETY NOT PREVIOUSLY ANALYZED OR IMPACT THE MARGIN OF SAFETY AS DEFINED IN ANY TECHNICAL SPECIFICATION BASES.

B. SUFFICIENT DETAILED INFORMATION TO TOTALLY SUPPORT THE REASON FOR THE CHANGE, WITHOUT BENEFIT OF ADDITIONAL OR SUPPLEMENTAL INFORMATION.

THIS MOD 1002 INSTALLS PERMANENT RESIN PIPING WHICH ALLOWS FOR MORE CONTROLLED RESIN TRANSFER IN A BUILDING WHICH WOULD CONTAIN ANY ACCIDENT/SPILLAGE THAT MIGHT OCCUR. GASEOUS EFFLUENT FROM A RELEASE WOULD BE MONITORED BY RMS 23.

1. THE FOLLOWING IS AN EXCERPT FROM THE PROJECT SUMMARY IN MOD 1002 "RESIN TRANSFER PIPING."

HISTORY/ROOT CAUSE:
DEWATERING AND SHIPPING OF RESIN CURRENTLY IS PERFORMED IN THE YARD OUTSIDE THE AUXILIARY BUILDING AND THE RCA. AS PART OF THE RADWASTE FACILITY UTILIZATION PROJECT, THESE FUNCTIONS ARE BEING MOVED INTO THE RADWASTE FACILITY TO SATISFY INPO COMMITMENTS.

GENERAL DESCRIPTION: (SEE ATTACHED SKETCH)
THIS MODIFICATION EXTENDS THE RESIN TRANSFER LINE FROM THE AUXILIARY BUILDING DRUMMING ROOM TO THE SHIPPING AREA IN THE RADWASTE FACILITY. THE LINE ALSO PROVIDES A CONNECTION POINT FOR THE RADWASTE DEMINERALIZER SYSTEM IN THE C-WASTE ROOM. THE TRANSFER LINE IS ROUTED FROM THE DRUMMING ROOM UP TO THE C-WASTE ROOM AND OVER TO THE RADWASTE FACILITY THROUGH AN ENCLOSED PIPE CHASE. IN THE RADWASTE FACILITY , THE LINE COMES OUT OF THE PIPE CHASE ABOVE THE MEZZANINE AND RUNS OVER TO THE SHIPPING AREA ALONG THE MEZZANINE FLOOR.

THIS MODIFICATION ALSO PROVIDES FOR A PARTIAL FILL-IN OF THE OUTSIDE ENTRANCE RAMP AND SHIPPING AREA WITH A DECREASED SLOPE AND AN INCREASED OUTSIDE STORM DRAIN SUMP. THE MODIFICATION INSTALLS A "BATH TUB" CURB AT THE STORAGE AREA DOORS, THESE CHANGES PROVIDE ACCESS FOR TRUCK/TRAILERS WITH LOW ROAD CLEARANCES AND EXTENDS THE SPILLAGE RETENTION CAPABILITY OF THE RWF TO THE SHIPPING AREA TO WHICH THE RESIN PIPING IS ROUTED.

C. A DETAILED DESCRIPTION OF THE EQUIPMENT, COMPONENTS, AND PROCESSES INVOLVED AND THE INTERFACES WITH OTHER PLANT SYSTEMS.

-THE NEW PIPING, VALVES AND FITTINGS ARE BEING ADDED TO A NON-Q, NON SEISMIC PORTION OF THE LIQUID WASTE DISPOSAL SYSTEM. THEY ARE BEING PROCURED, DESIGNED AND INSTALLED TO THE SAME PROCEDURES, CODES AND STANDARDS AS THE INTERFACING SYSTEM.

RESIN TRANSFER TO THE RWF HIGH INTEGRITY CONTAINERS (HIC) IS PERFORMED AS REQUIRED BY E&RC GROUP. RESIN TRANSFER IS DONE THROUGH THE COOPERATION OF OPERATIONS AND RADIATION CONTROL UNITS.

VALVE WD3346 IN THE RWF TRUCK BAY IS OPENED AND THE TRANSFER IS CONTROLLED BY THE DRUMMING ROOM CONTROL BOARD, IN THE AUX BUILDING HALLWAY. A 2" HOSE CONNECTION IS HOOKED TO THE MALE CONNECTOR IN THE RWF AND THEN THE HOSE IS CONNECTED TO THE HIC. ALSO CONNECTED TO THE HIC IS A DEWATERING HOSE. THE DEWATERING HOSE IS RUN BACK TO THE AUX BUILDING TO A SUMP DRAIN. WATER IS FIRST FLUSHED THROUGH THE RESIN LINE TO INSURE THERE ARE NO LEAKS. AFTER CHECKING ALL CONNECTIONS TO INSURE THEY ARE LEAK TIGHT, THE RESIN TRANSFER BEGINS. WHEN THE HIC IS APPROXIMATELY 1\4 FULL A SAMPLE IS TAKEN FROM THE SAMPLE LINE IN THE RWF TRUCK BAY, VALVE WD3347. AFTER SAMPLING IS COMPLETE THE RESIN TRANSFER CONTINUES. WHEN RESIN TRANSFER IS COMPLETE THE LINE IS FLUSHED OUT WITH WATER TO INSURE THERE ARE NO HOT SPOTS. THIS IS ALSO CONTROLLED FROM THE DRUMMING ROOM CONTROL BOARD. WHEN RESIN IS TRANSFERRED FROM THE "C" WASTE EVAP. ROOM THE SAME PROCESS IS USED. (SEE ATTACHED SKETCH)

D. AN EVALUATION OF THE CHANGE, WHICH SHOWS THE PREDICTED RELEASES OF RADIOACTIVE MATERIALS IN LIQUID AND GASEOUS EFFLUENT AND/OR QUANTITY OF SOLID WASTE THAT DIFFER FROM THOSE PREVIOUSLY PREDICTED IN THE LICENSE APPLICATION AND AMENDMENTS THERETO:

-THERE IS NO CHANGE IN PREDICTED RELEASES THAT DIFFER FROM THOSE PREVIOUSLY PREDICTED IN THE LICENSE. THIS CHANGE DOES NOT EFFECT THE MATERIAL OR THE WAY IT IS HANDLED, IT JUST CHANGES LOCATION OF THE RESIN TRANSFER.

E. AN EVALUATION OF THE CHANGE, WHICH SHOWS THE EXPECTED MAXIMUM EXPOSURES TO AN INDIVIDUAL IN THE UNRESTRICTED AREA AND TO THE GENERAL POPULATION THAT DIFFER FROM THOSE PREVIOUSLY ESTIMATED IN THE LICENSE APPLICATION AND AMENDMENTS THERETO:

-SINCE THERE ARE NO CHANGES IN SECTION 'D' ABOVE, LIKEWISE THERE ARE NO CHANGES TO THE EXPECTED MAXIMUM EXPOSURES TO AN INDIVIDUAL IN THE UN-RESTRICTED AREA AND TO THE GENERAL POPULATION THAT DIFFER FROM THOSE PREVIOUSLY ESTIMATED.

F. A COMPARISON OF THE PREDICATED RELEASES OF RADIOACTIVE MATERIALS, IN LIQUID AND GASEOUS EFFLUENT AND IN SOLID WASTE, TO THE ACTUAL RELEASES FOR THE PERIOD PRIOR TO WHEN THE CHANGES ARE BEING MADE.

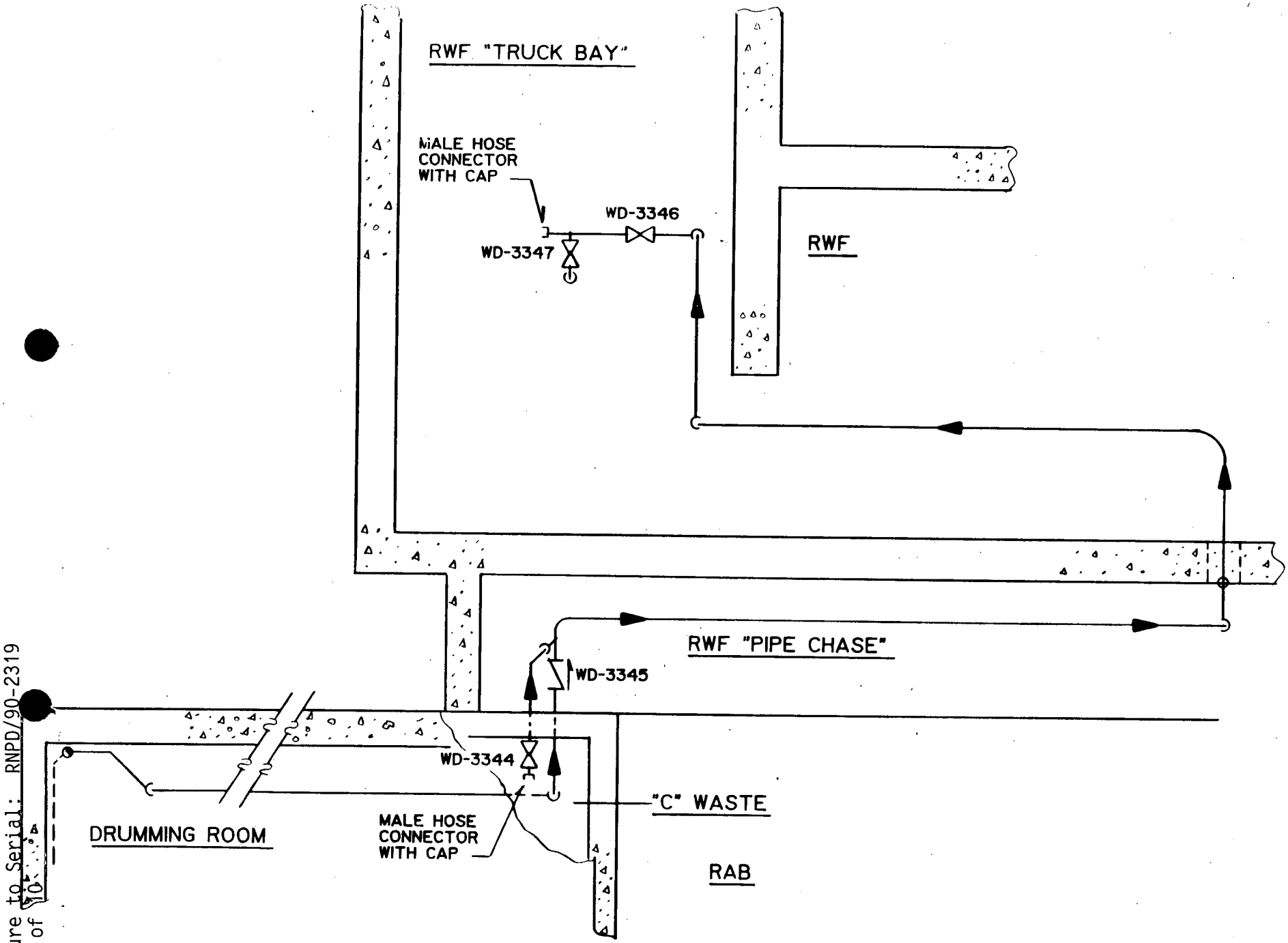
-THERE WILL BE NO CHANGES IN THE PREDICTED RELEASES OF RADIOACTIVE MATERIALS, IN LIQUID AND GASEOUS EFFLUENT OR SOLID WASTE DUE TO THE SAME HANDLING PROCEDURES AND MATERIALS BEING USED. ONLY THE LOCATION OF TRANSFER IS CHANGED.

G. AN ESTIMATE OF THE EXPOSURE TO PLANT OPERATING PERSONNEL AS A RESULT OF THE CHANGES.

-THE IMPLEMENTATION OF THIS MODIFICATION SHOULD RESULT IN REDUCED EXPOSURE DUE TO THE MAJORITY OF PIPE BEING RUN IN THE ENCLOSED PIPE CHASE AND OTHER CONTROLLED AREAS IN THE RAD WASTE FACILITY. ALSO THE BUNKER ARRANGEMENT WITH LEAD COVER SHIELDING SHOULD REDUCE EXPOSURE WHILE FILLING EACH HIGH INTEGRITY CONTAINER (HIC). THEREFORE A TOTAL REDUCTION IN EXPOSURE IS ANTICIPATED.

SHALL BECOME EFFECTIVE UPON REVIEW AND ACCEPTANCE BY THE PNSC.

RM13/gh



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III. PROCESS CONTROL PROGRAM CHANGES

There were no changes to the Process Control Program (PCP) during this reporting period.

IV. CHANGES TO LAND USE CENSUS

There were no changes to the environmental sampling program as a result of the Land Use Census performed in the first six months this year.

V. INSTRUMENT INOPERABILITY

On September 22, 1989, the Plant Stack Radiation Monitor (R-14) was damaged due to Hurricane Hugo. The monitors are an inline series arrangement of GM tubes which monitor gaseous effluent via the Plant Vent Stack. A high activity waste gas decay tank is required for calibration. Due to the high integrity of this operating cycle's fuel, adequate activity of radiogas cannot be obtained at this time. Other alternative measure to calibrate R-14 have been investigated (i.e., reducing stack flowrate and use of mock-up). However, these alternative will not be pursued due the significant resources and time required to calibrate R-14 which is scheduled for replacement during the 1990 Refueling Outage (Plant Modification - 1005). This decision not to pursue calibration of R-14 is documented in a Memorandum to file, Serial: RNPD/90-1842.

Monitoring of the Plant Stack Effluents are currently being performed via an off-line Radiation Monitor (R-34) which monitors particulates, iodines and noble gases as required by Technical Specifications Table 3.5-7. Independent sampling and release rate calculation are also being performed as required by Technical Specifications Table 3.5-7 for Waste Gas Decay Tank releases via this effluent pathway.

VI. LIQUID HOLDUP TANK CURIE LIMIT

There were no outside liquid holdup tanks that exceed the ten curie limit during this reporting period.

VII. WASTE GAS DECAY TANK CURIE LIMIT

There were no waste gas decay tanks with a curie content that exceeds the 1.90E+04 curie limit during this reporting period.

VIII. INDEPENDENT SPENT FUEL STORAGE INSTALLATION

The onsite independent spent fuel storage installation, license #SNM-2502/docket #72-3, became operational during the first six months of 1989. See Addendum I for reporting requirements concerning this facility.

IX. SERVICE WATER SLUDGE DISPOSAL

During this reporting period, the H. B. Robinson Unit 2 disposed of 2.67 cubic meters of slightly contaminated sludge and sediment collected from a plant outage in September 1988 from the Service Water Cooling System. This sludge and sediment was deposited in the facility's Ash Pond located approximately 0.5 miles NNW of the generating facility on land owned and controlled by Carolina Power and Light Company. The disposal process was approved by the South Carolina Department of Health and Environmental Control in accordance with 10CFR20.302(a).

During September 1988, H. B. Robinson Unit 2 was removed from power operation for an outage on the Service Water Cooling System. This outage was necessary to remove microbial growths and other sludgelike material which restricted flow and inhibited the proper cooling of various plant equipment. These materials were mechanically removed and flushed from the pipes and cooling coils. The residual material was collected in 55-gallon drums. Twenty-four drums were partially filled with the waste material. The liquid component of the waste could not be processed through the Liquid Radwaste Treatment System due to the high content of suspended solids and presence of excessive organic material which could clog high-efficiency filters and resin beds.

The radionuclide content of the material was determined by separating the drums of the material into three groups and performing composite analyses. An aliquot from each drum in a group was combined to form the composite sample for detailed analysis. The composite sample consisted of 1000 milliliters of material which was analyzed by gamma spectrical analysis in the 1000 ml Marinelli Beaker configuration. The average results of these analyses are as follows and are not included in Table III-A or Table IV-A of Enclosure 1 of this report.

SAMPLE	Radionuclide	Concentration uCi/gm	Activity uCi
Composite Group 1	Co-58	6.47E-07	7.29E-01
Drums 3, 5, 7-14	Co-60	3.44E-05	3.95E+01
Volume = 1.13E+06 cm^3	Mn-54	2.77E-06	3.12E+00
	Cs-134	5.90E-05	6.65E+01
	Cs-137	2.09E-04	2.35E+02
		Total Activity	3.45E+02 uCi
Composite Group 2	Co-58	3.48E-07	5.39E-01
Drums 15-26	Co-60	1.67E-05	2.34E+01
Volume = 1.41E+06 cm^3	Mn-54	2.45E-06	3.44E+00
	Cs-134	1.92E-05	2.69E+01
	Cs-137	6.61E-05	9.28E+01
		Total Activity	1.47E+02 uCi
Composite Group 3	Co-58	1.69E-06	2.24E-01
Drums 27, 28	Co-60	1.55E-05	2.06E+00
Volume = 1.33E+05 cm^3	Mn-54	1.46E-06	1.93E-01
	Cs-134	1.41E-05	1.87E+00
	Cs-137	5.12E-05	6.78E+00
		Total Activity	1.11E+01 uCi

Total Activity Groups 1, 2, 3 = 5.03E+02 uCi

The radiation dose to members of the public was calculated using the dose computer code LADTAP II. The calculation assumes that all of the activity leaves the ash pond by way of the cooling canal and enters into Lake Robinson system. The dose pathways for swimming, boating, consumption of fish, and irrigation of food crops were used for this calculation. Using this method, it is estimated that the maximum dose to a member of the public considering the multiple pathways would be to the Liver of a teenager who consumes fish from Lake Robinson. This dose was estimated as 2.19E-03 mrem. All other pathway's doses are even less consequential. The total 50-mile integrated population dose from this proposed release is estimated similarly inconsequential (1.40E-03 person-rem). Therefore, disposal of this waste to the ash ponds was of inconsequential risk to the public health and safety and was cost-beneficial to Carolina Power and Light so as to conserve licensed disposal site space for which waste might pose an actual risk to the public health and safety.

SUPPLEMENTS TO PREVIOUS
SEMIANNUAL REPORTS

TABLE OF CONTENTS
Enclosure 3

I. DISCUSSION

There were no changes to previous reports during this reporting period.

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT 2

SEMIANNUAL ENVIRONMENTAL REPORT

January 1, 1990 - June 30, 1990

FACILITY OPERATING LICENSE NO. SNM-2502
DOCUMENT NO. 72-3

I. HISTORY OF THE FACILITY

The Independent Spent Fuel Storage Installation (ISFSI) is located within the protected area of HBR2. Currently, the installation contains eight (8) Dry Storage Canisters. The initial canister was loaded on 3/16/89 and other canisters were loaded on 4/11/89, 4/18/89, 4/24/89, 5/2/89, 5/8/89, 6/28/89, and 7/3/89, respectively.

II. EFFLUENT LIMITS AND CONTROLS

This installation operates under effluent control limits as required by 10CFR72.44. However, there are, by design of the sealed storage canisters at the ISFSI, no effluent releases, and all H. B. Robinson site cask loading and unloading operations and waste treatment therefrom will occur at the H. B. Robinson Steam Electric Plant Unit 2 under the specifications of its operating license (DPR-23).

III. RADIOLOGICAL EFFLUENT RELEASES

A review of the quarterly surveillance tests performed during this reporting period indicates that NO RADIOACTIVE LIQUID OR GASEOUS RELEASES OCCURRED DURING THIS REPORT PERIOD.

IV. THE ISFSI ENVIRONMENTAL PROGRAM

The ISFSI Environmental Program consists of two air samplers and three TLDs about the installation plus and unaffected air sampler and TLD site 26 miles ESE of the facility. Two of the environmental TLDs are maintained at the air sampling sites adjacent to the plant boundary. These are located south at 0.2 miles and south southeast at 0.3 miles from the ISFSI. A third TLD site is located 0.1 miles north of the installation. The nearest residence is located south to southeast approximately 0.25 miles from the facility. Air samplers operate continuously and samples are changed weekly. TLDs are changed quarterly.

V. OTHER ENVIRONMENTAL PROGRAMS

In addition to the ISFSI Environmental Program, the HBR2 Environmental Program is described in Technical Specification 3.17 (see Carolina Power and Light Company, "Technical Specifications and Bases for H. B. Robinson Unit No. 2," Appendix A to Facility Operating License DPR-23, Docket No. 50-261, Darlington County, S.C.). For a comprehensive summary of this program and its results, see also "Environmental Surveillance Report," H. B. Robinson Steam Electric Plant, Unit 2 issued in compliance with the above referenced Technical Specification.

V. ISFSI ENVIRONMENTAL MEASUREMENTS

A. Environmental TLDs

TLD (Location)	1st Qtr. (mrem/wk.)	2nd Qtr. (mrem/wk.)
1 (26 miles ESE) (Control)	1.30E+00	1.00E+00
2 (0.2 miles S)	1.10E+00	1.00E+00
6 (0.3 miles SW)	1.20E+00	9.00E-01
56 (0.1 miles N)	1.10E+00	9.00E-01

B. Air Sampling

Gross Beta Measurements - 1st Qtr.
(picocuries per cubic meter)

Air Sampler (Location)	Average	Maximum
1 (26 miles ESE) (Control)	1.28E-02	1.60E-02
2 (0.2 miles S)	1.52E-02	1.77E-02
6 (0.3 miles SW)	1.56E-02	2.07E-02

Gross Beta Measurements - 2nd Qtr.
(picocuries per cubic meter)

Air Sampler (Location)	Average	Maximum
1 (26 miles ESE) (Control)	1.42E-02	1.99E-02
2 (0.2 miles S)	1.48E-02	1.80E-02
6 (0.3 miles SW)	1.56E-02	1.95E-02

A composite analysis of air samples detected no radionuclides from man-made sources for either quarter.

VII. CONCLUSIONS

Based on the above measurements performed during this reporting period, it is our conclusion that the dose issuing from the ISFSI to the most exposed MEMBER OF THE PUBLIC is negligible.

VIII. SUMMARY

This report is submitted in compliance with ISFSI Specification 1.4.1 as required pursuant to 10CFR72.44(d)(3). Paragraph III specifies liquid and gaseous releases to the environment. Paragraphs VI and VII are provided for estimation of potential radiation dose commitment to the public resulting from effluent release.