

**CP&L**

**Carolina Power & Light Company**

P.O. Box 1551 • Raleigh, N.C. 27602

**MAY 30 1990**

**A. B. CUTTER**  
Vice President  
Nuclear Services Department

SERIAL: NLS-90-116  
TSC 87TSB17

United States Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62  
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
OPERATING LICENSE EXTENSION  
(NRC TAC NOS. 66082 AND 66083)

Gentlemen:

By letter dated August 17, 1987, Carolina Power & Light Company submitted a request to change the expiration dates of the facility operating licenses for the Brunswick Steam Electric Plant, Units 1 and 2. Under the proposed change, the current expiration dates (February 6, 2010) would be extended to 40 years from the issuance dates of the operating licenses (i.e., extended to September 8, 2016 for Unit 1 and to December 27, 2014 for Unit 2).

Subsequently, on February 6, 1990, the NRC Staff requested additional information needed for completion of their review. By letter dated April 11, 1990, the Company responded that it expected to submit responses to the Staff's questions on or before May 30, 1990.

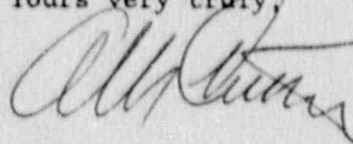
Enclosed are responses to ten of the Staff's thirteen questions. The Company continues to gather information necessary to respond to the remaining three question(s) and currently plans to provide the remaining response(s) by June 29, 1990.

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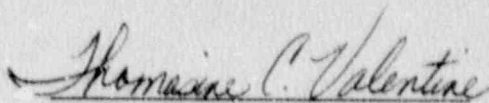
Please refer any questions regarding this submittal to Mr. W. R. Murray  
at (919) 546-4661.

Yours very truly,



A. B. Cutter

A. B. Cutter, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.



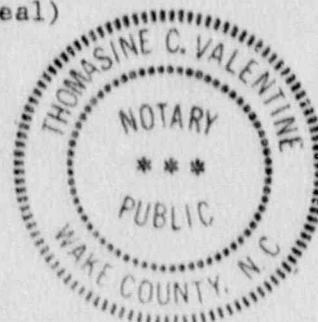
Notary (Seal)

My commission expires: 1-31-95

WRM/wrm (\cor\olextend)

Enclosure

cc: Mr. S. D. Ebnetter  
Mr. N. B. Le  
Mr. W. H. Ruland



ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2  
NRC DOCKETS 50-325 & 50-324  
OPERATING LICENSES DPR-71 & DPR-62  
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
OPERATING LICENSE EXTENSION  
(NRC TAC NOS. 66082 AND 66083)

NRC REQUEST NO. 1:

Provide an assessment of the impact (10 CFR Part 100) on the Exclusion Area Boundary, Low Population Zone and the nearest population centers based on population projections through the requested extension periods.

CP&L RESPONSE:

The Exclusion Area is owned and controlled by Carolina Power & Light Company and the North Carolina Eastern Municipal Power Agency (NCEMPA). There is no one living within this area. As discussed in the Updated FSAR, all activities occurring within the exclusion area are either directly or indirectly related to plant operations. The Company owns and operates a rail line within the exclusion area. An agreement with Pfizer Corporation permits them to operate on an extension of the rail line to the Pfizer Plant. This extension runs outside but parallel to a portion of the exclusion area with a 100 foot wide easement extending into the exclusion area. The easement allows Pfizer the right to operate the railroad, as well as maintain an access road and underground pipeline for water and effluents. Normal operation and maintenance of this portion of the track does not extend into the exclusion area. No change to these practices and conditions are anticipated through the requested extension periods for the operating licenses.

The low population area (0 - 5 miles) surrounding the site continues to remain sparsely populated. The projected population residing within 1 mile of the site for 1996 based on 1970 census data was projected as 314. Similar projections made for the same year (1996) based on the 1980 census reduced this projection to 99. The projected population living within 5 miles of the site for 1996 based on the 1980 census is 69 percent of the number projected from the 1970 census. Thus, the low population area surrounding the site is experiencing a slower growth rate than originally projected.

The only population center (as described by 10 CFR 100) within 50 miles of the Brunswick Steam Electric Plant is Wilmington, North Carolina, which is located approximately 16 miles north-northeast of the site. The 1980 preliminary census indicated the population of Wilmington to be 44,000, with an additional 40,350 in unincorporated areas adjacent to the city. The projected population for 1996 is estimated at 61,000 within the city and an additional 55,600 adjacent to the city. Projections in the original FSAR based on 1970 census

data predicted a 1996 population for Wilmington of 90,000. As with the population trend for the low population area, this demonstrates that by 1980, a slower growth rate was experienced than was originally projected.

Based on the observations and projections above, the period of the proposed operating license extensions for the Brunswick Plant will not jeopardize the ability of authorities to take reasonable protective actions on the public's behalf in the event of a serious accident. Calculations for all potential forms of radioactive releases associated with the design basis accident (DBA) show that the maximum exposures expected would be approximately 20 percent of the 10 CFR 100 whole body limit and 2.5 percent of the thyroid dose limit (see Chapter 15 of the Brunswick Plant Updated FSAR).

**REFERENCES:**

1. Updated Final Safety Analysis Report, Brunswick Steam Electric Plant Units 1 and 2.
2. Code of Federal Regulations, Title 10, Part 100, Section 100.3.

NRC REQUEST NO. 2:

Provide a discussion of population distribution trends within 50 miles of the plant based on 1970 and 1980 census data. Include projections through the period of the proposed extensions.

CP&L RESPONSE:

A review of the population distribution within 10 miles of the Brunswick Plant site demonstrates that approximately half of the area is covered by water and thereby void of residents. The remainder of the land area includes parts of two counties, Brunswick and New Hanover. The total 1980 resident population for this area (i.e., within a 10 mile radius) is estimated to be approximately 12,700. The majority of these residents live in the communities of Southport, Boiling Springs, Long Beach, Yaupon Beach, Caswell Beach, and Pleasure Island/Carolina Beach. The remainder of the population resides in rural areas. The following table presents the 1980 community populations and their projected growth rates:

1980 Demographic Data on  
Communities Within 10 Miles

Community	Dist./Dir (Miles/Sector)	Population (1980)	Estimated (1996)
Boiling Springs	5/NNW	998	1800
Caswell Beach	5/SSW	110	*
Kure Beach	6/ENE	611	800
Long Beach	7/WSW	1834	3400
Pleasure Island (incl. Carolina Beach)	7/NE	2000	2800
Southport	2/SSW	2824	5200
Yaupon Beach	5/SW	569	1000

\* No estimate was provided for Caswell Beach for 1996.

The remainder of the 10 to 50 mile radial area, with the exception of the city of Wilmington, is predominantly rural with several low population communities. The population center of Wilmington, NC is currently exhibiting a growth rate of about 2.1 percent per year. Beach and recreational communities are exhibiting annual growth rates from 1.7 to 4.0 percent per year. Rural areas are exhibiting growth of less than 2 percent per year. The overall average population growth rate for the 0 to 50 mile radius is 2 percent. The

following table represents a summary of the 1980 census data in the form of population density (population per square mile), including a projection to the year 2010. The data is also extrapolated to the year 2017 for comparisons with the period of license extension.

Population Density Table

<u>Area</u>	<u>1980</u>	<u>2010</u>	<u>2017</u>
0 to 1 mile	17	49	63
0 to 2 miles	37	100	126
0 to 3 miles	94	254	320
0 to 4 miles	64	174	220
0 to 5 miles	51	135	169
0 to 10 miles	40	94	115
0 to 20 miles	67	133	156
0 to 30 miles	49	97	114
0 to 40 miles	33	64	75
0 to 50 miles	29	53	61

REFERENCES:

1. Updated Final Safety Analysis Report, Brunswick Steam Electric Plant Units 1 and 2.
2. Final Safety Analysis Report, Brunswick Steam Electric Plant Units 1 and 2.

NRC REQUEST NO. 3:

Provide a quantification of the radiological impacts upon the general population based on calculated off-site doses. Include a discussion on the impact of the estimated dose commitments for 40 years of operation. How do offsite dose calculations for actual effluent releases compare with 10 CFR 50, Appendix I, objectives?

CP&L RESPONSE:

The Brunswick Plant has to date maintained effluent releases well within the guidelines of 10 CFR 50, Appendix I. Table I demonstrates the results of effluents in terms of the maximum exposed member of the public for the last four years along with a presentation of the 10 CFR 50 guidelines. These dose values represent the effect of the combined releases from both Unit 1 and Unit 2.

The integrated population doses in person-rem are presented in Table II. The estimate for the year 2017 is calculated based on the average of the integrated doses for the years 1986 through 1989 and multiplied by the estimated population increases as presented in the Brunswick Plant Updated FSAR. This estimates the overall annual population growth rate for the time period to be 2.01 percent. The scaling factor used for the 2017 data from the 1980 census figures is 2.088.

Based on the above analyses of radiological impacts upon the general population using calculated offsite doses, the Company has concluded that an operating license extension to the years 2016 (Unit 2) and 2017 (Unit 1) will not jeopardize compliance of the facility with 10 CFR 50, Appendix I objectives. Population increases in the Brunswick Plant environs (50 mile radial area) will increase the integrated population dose; however, since the observed population growth is below the original 1970 projections, the overall radiological dose is well within acceptable limits. This analysis does not consider any future technologies which may be used to further reduce effluents from the site.

REFERENCES:

1. Updated Final Safety Analysis Report, Brunswick Steam Electric Plant Units 1 and 2.

Table I  
 Recent Effluent Doses  
 to a Maximum  
 Exposed Member of the Public

	10 CFR 50 Appendix I (mrem/yr)	Doses Calculated by LADTAP & GASPAR Codes (mrem/yr)			
		1986	1987	1988	1989
<u>Gaseous</u>					
Total Body	5	0.12	0.10	0.05	0.03
Thyroid	15	0.17	0.35	0.08	0.08
<u>Liquid</u>					
Total Body	3	0.002	0.006	0.007	0.007
Thyroid	10	0.001	0.005	0.006	0.006



Table II  
 Integrated Population Dose  
 50 Mile Radius  
 (Person-Rem)

Year	Organ	Gaseous	Liquid	Total
1986	Thyroid	0.679	0.00095	0.68
	Total Body	0.653	0.00099	0.65
1987	Thyroid	0.578	0.0042	0.58
	Total Body	0.429	0.0043	0.43
1988	Thyroid	0.0726	0.0054	0.08
	Total Body	0.0493	0.0057	0.06
1989	Thyroid	0.0624	0.0056	0.07
	Total Body	0.0339	0.0058	0.04
2017 (est)	Thyroid	0.7266	0.0084	0.74
	Total Body	0.6068	0.0088	0.62

NRC REQUEST NO. 4:

For the uranium fuel cycle, provide a statement regarding the environmental impact of the longer production run for the fuel cycle and any net annual effects per Table S-3 in 10 CFR 51.51. How will the 18-month fuel cycle impact the environment?

CP&L RESPONSE:

The requested increase in the duration of the Operating License for Brunswick Unit 1 is approximately 6 years, 7 months and for Brunswick Unit 2 is approximately 4 years, 10 months. This additional period of operation would involve roughly four (4) core reloads for Unit 1 and three (3) core reloads for Unit 2 based on a refueling frequency of 18 months. The percentage increase in the uranium fuel requirements for the lifetime of the two units is small, particularly when the decreased fuel requirements associated with implementation of higher enrichment, higher burnup fuel management are considered.

The Brunswick Plant has not experienced a significant increase in offsite radiation exposure or a significant increase in the amount of effluents released offsite due to transition from 12 month to 18 month fuel cycles. Offsite releases are monitored and reported in the Semi-Annual Radioactive Effluent Release Report as required by Technical Specification 6.9.1.8.

The Brunswick Plant units were originally fueled with core loadings containing a maximum enrichment of 2.35 weight percent U-235. Reload cores were initially limited to a maximum enrichment of 2.35 weight percent U-235. Subsequent license amendments approved the use of reload fuel with enrichments up to 2.99 weight percent U-235. On September 20, 1988, the NRC issued Amendment No. 153 for Unit 2, which further increased the maximum allowable fuel enrichment for core reloads to 5.0 weight percent U-235 and increased allowable peak rod burnups up to 60,000 megawatt days per metric ton (MWD/MT). On February 6, 1989, a similar license amendment was approved for Brunswick Unit 1. The increase in the allowable fuel enrichment and allowable fuel burnups facilitated the implementation of high burn-up 18 month fuel cycles rather than the 12 month fuel cycles previously employed. In issuing Amendments 124 (Unit 1) and 153 (Unit 2), which cleared the way for the use of high burn-up 18 month fuel cycles, the NRC determined that:

No changes are being made in the types or amounts of any radiological effluents that may be released offsite. There is no significant increase in the allowable individual or cumulative occupational radiation exposure.

The impact on 10 CFR 51.51, Table S-3 and 10 CFR 51.52, Table S-4 associated with higher fuel burnup and correspondingly longer operating cycles have been extensively addressed by the Atomic Industrial Forum (AIF). In a study prepared for the National Environmental Studies Project (NESP) of the AIF, it was concluded that "the current values in Tables S-3 and S-4, and the generic analyses of environmental dose commitments performed by the NRC Staff, are

applicable to fuel burnups up to 60,000 (MWD/MT)<sup>1</sup>." This conservatively envelopes the anticipated operational range of future average core burnups for the Brunswick Plant, Units 1 and 2.

Additional margin to the values contained in Tables S-3 and S-4 lies in the fact that these tables were developed based on the anticipated fuel requirements of a 1,000 MWe reactor. Since each of the reactors at the Brunswick Plant are rated at approximately 820 MWe net, the corresponding fuel requirements are lower and, thus, the environmental impact of the uranium fuel cycle is more modest.

Based on previous environmental analyses associated with the increased fuel enrichment license amendments and the preceding discussion, it can be concluded the use of higher fuel burnup, longer operating cycles, and the proposed increased duration of the Operating Licenses do not alter the conclusions of 10 CFR 51.51, Table S-3; 10 CFR 51.52, Table S-4, the Final Environmental Statement; or the Final Safety Analysis Report.

#### REFERENCES:

1. Atomic Industrial Forum, Inc., "The Environmental Consequences of Higher Fuel Burnup," AIF/NESP-032, June 1985.
2. Letter from Mr. B. C. Buckley (NRC) to Mr. E. E. Utley (CP&L), August 29, 1988, "Extended Fuel Irradiation - Brunswick Steam Electric Plant, Units 1 and 2 (TAC No. 66155)."
3. Letter from Mr. E. G. Tourigny (NRC) to Mr. E. E. Utley (CP&L) dated February 6, 1989, "Issuance of Amendment No. 124 to Facility Operating License No. DPR-71 - Brunswick Steam Electric Plant, Unit 1, Regarding Cycle 7 Reload (TAC No. 69200)."
4. Letter from Mr. B. C. Buckley (NRC) to Mr. E. E. Utley (CP&L) dated September 20, 1988, "Issuance of Amendment No. 153 to Facility Operating License No. DPR-62, Brunswick Steam Electric Plant, Unit 2, Regarding Fuel Cycle No. 8 - Reload Extended Burnup Fuel (TAC No. 66155)."

NRC REQUEST NO. 5:

Provide a discussion of how BSEP intends to meet the requirements of 10 CFR 51.52, paragraph (a) or (b), and Table S-4.

CP&L RESPONSE:

See response to NRC Request No. 4 above.

NRC REQUEST NO. 6:

Describe any dose goals you may have for BSEP annual doses through the requested extension period, the bases for these dose goals (e.g., input from each plant department, historical doses), and CP&L's time frame for meeting these goals. Provide dose goals for both outage and non-outage years. Describe BSEP's "track record" for meeting dose goals in the past, the accuracy of these past dose goals, and how BSEP intends to establish and enforce realistic dose goals in the future.

CP&L RESPONSE:

During the last five years (1985 through 1989), the Brunswick Plant did not meet its challenging person-rem goals. These goals were based on an expected scope of work, allowing for little or no contingency, and in every case the outage work expanded resulting in the plant exceeding its goals. The expanding reactor recirculation system pipe intergranular stress corrosion cracking mitigative actions were the primary cause for exceeding these dose goals.

The Company's plan for improving the collective dose at the Brunswick, H. B. Robinson, and Shearon Harris Plants is described in the Company Dose Reduction Program. The charter for this program is attached. As indicated in this charter, one of the key elements of this program is to set challenging goals that will result in our nuclear plants being perceived as "premiere" (one of the best) performers compared to other nuclear plants.

Carolina Power & Light Company is presently in the process of setting future challenging person-rem goals that will achieve our overall goal of becoming one of the best nuclear utilities. These dose goals will be at or better than the goals that INPO is presently setting as industry goals for 1995. We would expect to continue to set dose goals that are challenging and are at or better than the respective industry averages for the future, out to and including the license extension period.

CAROLINA POWER & LIGHT COMPANY  
DOSE REDUCTION PROGRAM CHARTER

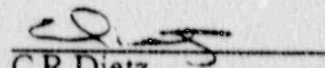
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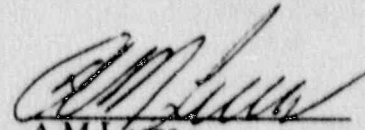
H.R. Banks  
Manager  
Quality Assurance



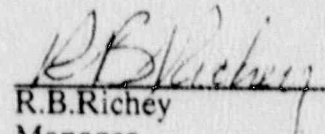
A.B. Cutter  
Vice President  
Nuclear Services



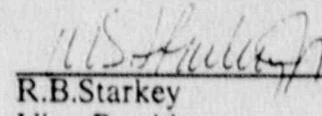
C.R. Dietz  
Manager  
Robinson Nuclear Project



A.M. Lucas  
Manager  
Nuclear Engineering

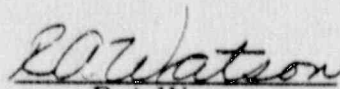


R.B. Richey  
Manager  
Harris Nuclear Project



R.B. Starkey  
Vice President  
Brunswick Nuclear Project

Approved By:



R.A. Watson  
Senior Vice President  
Nuclear Generation

## CAROLINA POWER & LIGHT COMPANY DOSE REDUCTION PROGRAM CHARTER

### Purpose

The purpose of the Company Dose Reduction Program is to identify and implement dose reduction actions and programs that will ensure that the Company is recognized as a premier nuclear utility. The Dose Reduction Program will consist of proactive initiatives that the nuclear plants and their support departments will implement to lower the Company's collective dose.

### Organization

The Company Dose Reduction Program will be managed and directed by two formally recognized groups and implemented by the line management of the nuclear plants and nuclear support departments. The groups are the Dose Reduction Steering Committee and the Dose Reduction Committee. The Dose Reduction Committee reports to the Dose Reduction Steering Committee. Specific actions to reduce dose will be assigned to and are the responsibility of the nuclear plant and nuclear support line management organizations in the Company.

### Membership

The Dose Reduction Steering Committee shall be Chaired by the Senior Vice President of Nuclear Generation and include Vice Presidents and/or Managers of the following Departments:

Brunswick Project

Harris Project

Robinson Project

Nuclear Services

Nuclear Engineering

Quality Assurance

The Manager - Health Physics & Chemistry Section shall be a non-voting member and shall furnish staff support to the Steering Committee.

The Dose Reduction Committee shall be Chaired by the Manager of the Health Physics and Chemistry Section and include representatives from the following Departments:

Brunswick Plant - E&RC Manager

Harris Plant - E&RC Manager

Robinson Plant - E&RC Manager

Nuclear Services - Nuclear Fuels representative  
- Health Physics & Chemistry representative

Nuclear Engineering - Representative

Additional participation shall be provided, when requested, by named representatives from Nuclear Plant Support Section and Technical Services Department (Materials).

The E&RC Managers represent their respective plant management and the views of their plant management.

### Responsibilities

The Dose Reduction Steering Committee is responsible for:

Assisting Senior Management in setting Company ALARA expectations.

Setting long range ( 5 year ) collective person-rem dose goals for the Company and the nuclear plants.

Setting management standards for dose reduction.

Reviewing the nuclear plant's annual collective person-rem goals for consistency with long range goals.

Approving the Company Dose Reduction Action Plan.

Reviewing Company ALARA Program audits and assessments and taking the appropriate corrective actions.

The Dose Reduction Committee is responsible for:

Assisting the Dose Reduction Steering Committee in setting long range ( 5 year ) collective person-rem dose goals for the Company and the nuclear plants.

Identifying candidate methods to achieve dose reduction.

Recommending a dose reduction action plan including cost-effective methodology for attaining the dose reduction goals.

Providing assistance to line management in implementing elements of the dose reduction action plan.

Reviewing Company ALARA Program audits and assessments and recommending the corrective actions that are supported by the nuclear plant management.



The nuclear plant and nuclear support departments line management are responsible for:

Setting annual plant collective person-rem goals that achieve the long range dose reduction goals.

Assisting the Dose Reduction Committee identify candidate methods to achieve dose reduction.

Recommending proactive, cost-effective dose reduction actions for attaining the dose reduction goals.

Implementing the Dose Reduction Action Plan

### **Meetings**

The Dose Reduction Steering Committee will meet at least quarterly and an agenda and minutes from each meeting will be recorded.

The Dose Reduction Committee will meet, at least quarterly, prior to the quarterly Steering Committee meeting and as often as necessary to carrying out its responsibilities. An agenda and minutes from each meeting will be recorded.

NRC REQUEST NO. 7:

- a. Brunswick's annual collective exposures have been well above the industry average for BWRs for most of the life of the plant. Describe how CP&L plans to reduce Brunswick's annual collective dose over the next few years to levels which will be more comparable to the industry average during the period of the extension. Describe any changes/improvements that may have already been made to reduce the annual doses at BSEP and their effectiveness in reducing doses.
- b. Describe the units' radioactive "source term" relative to other plants of the same vintage. What plans (short-range and long-range) does CP&L have to reduce this source term (e.g. system chemical decon, Cobalt material replacement, zinc injection) during the time of the extension.

CP&L RESPONSE:

Item 7a:

On March 8, 1990, the NRC requested the Company to identify actions to further improve the effectiveness of the ALARA Program at the Brunswick Plant. The Company's April 6, 1990 response outlined proposed actions. The actions set forth in this outline will result in less collective dose in the future at the Brunswick Plant.

The replacement of the reactor recirculation system piping risers during 1989 and 1990 on both units will result in much less dose in the future. The recirculation piping risers were designed and fabricated with specific dose reduction features. The new recirculation piping risers have significantly fewer welds. Consequentially, intergranular stress corrosion cracking will not occur and less inspections will be required. The inside walls of the riser piping were mechanically and electrically polished and pre-oxidized. These actions will result in lower exposure rates for the piping risers in the future.

Item 7b:

Based on comparisons with other General Electric plants, the Brunswick Plant's exposure rates are average or lower than average. The Dose Reduction Program will result in specific "source term" exposure rate reduction actions (e.g., chemical decontamination, cobalt elimination, etc.) that will reduce future doses, including the proposed operating license extension period. These specific actions and other actions resulting from the Dose Reduction Program will be provided to the NRC as soon as they are finalized.

REFERENCES:

1. NRC Inspection Report No. 50-325/90-06 dated March 8, 1990.
2. CP&L letter to NRC Document Control Desk dated April 6, 1990.

NRC REQUEST NO. 8:

Detailed and accurate ALARA job preplanning plays an important role in minimizing job time and the resultant occupational doses. Describe how BSEP intends to improve the coordination and cooperation among plant management, the HP/ALARA group and other plant departments during the outage planning stages to ensure that pertinent jobs receive ALARA reviews well in advance of the actual outage. Describe how these ALARA reviews, coupled with accurate man-hour job estimates, can contribute to lowering annual doses at BSEP during the period of the extension.

CP&L RESPONSE:

The Company recognizes that between 75 and 90 percent of the occupational dose comes from jobs during outages. We also recognize that the Company must further improve our outage and job planning in order to decrease these doses. As previously mentioned (see response to NRC Request No. 7), the Company is embarking on a Dose Reduction Program. This effort is above and beyond the present Brunswick Plant ALARA Program and any changes being specifically made to improve the plant's ALARA Program. As a part of this Dose Reduction Program, outage and job dose reduction planning will be evaluated and specific actions will be undertaken to reduce occupational dose. As previously mentioned, these specifics and other actions resulting from the Dose Reduction Program will be provided to the NRC as soon as they are finalized.

NRC REQUEST NO. 9:

Provide a comparison between actual radwaste shipments in recent years and the information provided in FES section V.D.3., and estimate the impact for the extension periods.

CP&L RESPONSE:

The Final Environmental Statement (FES), Section V.E.3, "Transportation of Solid Radioactive Wastes" (referenced in FES Section V.D.3) indicated that CP&L estimated that 1000 drums of solid waste (55,000 cubic feet) would be transported for disposal each year of plant operation. Recent actual solid radwaste shipments and future projections are provided below:

Year	Actual Volumes (ft3)
1985	46,000
1986	33,900
1987	29,800
1988	24,400
1989	21,900

Year	Projected Volumes (ft3)
1990	22,000
1991	14,000
1992	17,000
1993	13,000
1994	13,000

Furthermore, FES Section V.E.3 states that the Staff assumed the Brunswick Plant would dispose of its radioactive wastes at the Morehead, Kentucky disposal site which is approximately 500 miles from the plant site. The Brunswick Plant has actually used the Barnwell, South Carolina disposal site, which is approximately 230 miles from the plant site. In the future, the Brunswick Plant will use the North Carolina disposal site, which is anticipated to be even closer to the plant site.

The impact for the extension periods will be well within the impact of direct radiation from transportation discussed in FES Section V.D.3 since less than half the volume of radwaste will be shipped each year than that assumed and that the transportation distances will be less than half that assumed in the Final Environmental Statement.

REFERENCES:

1. Final Environmental Statement Related to the Continued Construction and Proposed Issuance of an Operating license for the Brunswick Steam Electric Plant, Units 1 and 2, United States Atomic Energy Commission, January 1974.

NRC REQUEST NO. 10:

Provide the current National Pollutant Discharge Elimination System (NPDES) permit number and dates of issuance and expiration.

CP&L RESPONSE:

The Brunswick Steam Electric Plant NPDES permit number is NC0007064. This permit is issued by the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management. The permit expires at midnight on March 31, 1992. The State of North Carolina issues NPDES permits for five (5) year intervals.

NRC REQUEST NO. 11:

Identify any potential impact that prolonged plant operation may have on properties with historical, architectural, or archaeological significance.

CP&L RESPONSE:

To be provided later.

NRC REQUEST NO. 12:

Assess the impact of the proposed extension on the reactor vessel, mechanical equipment, electrical equipment, and plant structures.

CP&L RESPONSE:

To be provided later.

NRC REQUEST NO. 13:

Provide a listing of all FES or FSAR sections in which less than 40 years of operation was assumed; provide an assessment of the impact of the extensions on conclusions found in the sections identified.

CP&L RESPONSE:

To be provided later.