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Docket No. 50-261

Carolina Power and Light Company
 ATTN: Mr. J. A. Jones
 Senior Vice President
 336 Fayetteville Street
 Raleigh, North Carolina 27602

Gentlemen:

The Commission has issued the enclosed Amendment No. 19 to Facility Operating License No. DPR-23 for the H. B. Robinson Steam Electric Plant Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your application dated September 5, 1975, as supplemented by letters dated October 31, 1975, and November 13, 1975.

This amendment provides for the expansion of the spent fuel pool and revises the Technical Specifications to place a limit on the spent fuel pool water temperature.

Copies of the Negative Declaration, Environmental Impact Appraisal, Safety Evaluation, and the Federal Register Notice are also enclosed.

Sincerely,

Original signed by

Robert W. Reid, Chief
 Operating Reactors Branch #4
 Division of Operating Reactors

Enclosures:

1. Amendment No. 19
2. Negative Declaration
3. Environmental Impact Appraisal
4. Safety Evaluation
5. Federal Register Notice

cc:

See next page



(1) (2) (3) (5) (4) KRG

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

February 9, 1976

Docket No. 50-261

Carolina Power and Light Company
ATTN: Mr. J. A. Jones
Senior Vice President
336 Fayetteville Street
Raleigh, North Carolina 27602

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Sincerely,

A handwritten signature in cursive script, reading "Robert W. Reid".

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosures:

1. Amendment No. 19
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cc:

See next page

cc w/enclosures:

G. F. Trowbridge, Esquire
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Mr. McCuen Morrell, Chairman
Darlington County Board of Supervisors
County Courthouse
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John D. Whisenhunt, Esquire
Bridges and Whisenhunt
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P. O. Box 26
Florence, South Carolina 29501

cc w/enclosures & incoming
dated 10/31/75 and 11/13/75

Office of Intergovernmental Relations
116 West Jones Street
Raleigh, North Carolina 27603



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

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-261

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 19
License No. DPR-23

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Carolina Power and Light Company (the licensee) dated September 5, 1975, as supplemented October 31, 1975, and November 13, 1975, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations; and
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Karl R. Goller

Karl R. Goller, Assistant Director
for Operating Reactors
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

Date of Issuance:
February 9, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 19

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Replace page 3.8-3 of the Technical Specifications with the attached revised page. The changed area on this page is indicated by a marginal line.

- b. The results of laboratory carbon sample analysis from the Spent Fuel Building Water system carbon and the Containment Purge filter system carbon shall show ≥ 90 percent radioactive methyl iodide removal at a velocity within 20 percent of the filter system design, 0.05 to 0.15 mg/m³ inlet methyl iodide concentration, ≥ 70 percent R.H. and $\geq 125^{\circ}\text{F}$.
- c. All filter system fans shall be shown to operate within $\pm 10\%$ of design flow.
- d. During fuel handling operations, the relative humidity (R.H.) of the air processed by the refueling filter systems shall be ≤ 70 percent.
- e. From and after the date that the Spent Fuel Building filter system is made or found to be inoperable for any reason, fuel handling operations in the Spent Fuel Building shall be terminated immediately.

3.8.3 During the discharge of a full core into the spent fuel pit, the temperature of the spent fuel pool water shall be maintained at or below 150°F . The spent fuel pool water temperature shall be monitored once each shift when the temperature is at or below 125°F . If the temperature exceeds 125°F , it shall be monitored hourly. If the pool temperature reaches 150°F , fuel assemblies will be transferred back to the containment to reduce the pool temperature below 150°F .

Basis

The equipment and general procedures to be utilized during refueling are discussed in the Final Facility Description and Safety Analysis Report. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety⁽¹⁾. Whenever changes are not being made in core geometry one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The residual heat pump is used to maintain a uniform boron concentration.

NEGATIVE DECLARATION
SUPPORTING FACILITY MODIFICATION
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2
OPERATING LICENSE DPR-23
DOCKET NO. 50-261

The U. S. Nuclear Regulatory Commission, (the Commission) has reviewed the licensee's proposed modification to the H. B. Robinson facility licensed under Operating License DPR-23. The modification would authorize the Carolina Power and Light Company to expand the H. B. Robinson spent storage pool (SFP) by 15 percent. This expansion permits the storage of an additional 36 spent fuel assemblies, increasing the ultimate capacity of the SFP from 240 to 276 assemblies. It will require the installation of an additional two fuel storage racks. It will not involve any SFP external construction nor alter the external physical geometry of the of the pool or require fuel pool clean up system modifications.

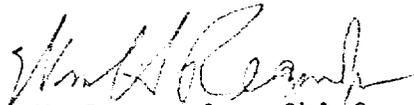
The Commission's Division of Reactor Licensing has prepared an environmental impact appraisal for the proposed modification to the SFP. Within the context of this appraisal, the Staff applied, weighed, and balanced the five factors specified by the Commission in its issuance of Federal Register Notice (F.R. 42801) on September 16, 1975 regarding handling and storage of spent fuel from light water power reactors. On the basis of this environmental impact appraisal, the Commission has concluded that an environmental impact statement for this particular action is not warranted because, pursuant to the Commission's regulations in 10 CFR Part 51 and the

Council of Environmental Quality's Guidelines, 40 CFR 1500.6, the Commission has determined that this proposed amendment will not significantly affect the quality of the human environment.

The environmental impact appraisal is available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., 20555, and at the Hartsville Memorial Library, Home and Fifth Avenues, Hartsville, South Carolina.

Dated at Rockville, Maryland, this *21st* day of *November* 1975.

FOR THE NUCLEAR REGULATORY COMMISSION


Wm. H. Regan, Jr., Chief
Environmental Projects Branch 4
Division of Reactor Licensing

ENVIRONMENTAL IMPACT APPRAISAL BY THE DIVISION OF REACTOR LICENSING

SUPPORTING AMENDMENT NO. 19 TO DPR-23

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

ENVIRONMENTAL IMPACT APPRAISAL

1. Description of the Proposed Action

By letter dated September 5, 1975, Carolina Power and Light Company (the licensee) proposed to change the spent fuel storage capacity for the H. B. Robinson Steam Electric Plant, Unit No. 2 from that which was described in the FSAR and approved in the operating license review. The purpose of this action is to enlarge the capacity of the storage pool from 1-1/2 cores to 1-3/4 cores so that additional spent fuel could be stored onsite. The pool is presently loaded to the extent that it could not accommodate the 53 assemblies that would be removed during the replacement of 1/3 of the core under a normal reloading schedule of 1976.

During the earlier reviews (construction permit and operating license stages), the environmental aspects of the operation of this spent-fuel storage pool was included in the staff's overall assessment of the plant's components. No specific environmental impact was attributed to the storage pool, although when filled with spent fuel, it would be a minor contributor (55,000 BTU/hr.) to the overall heat load (in excess of $4,970 \times 10^6$ BTU/hr.) discharged from the plant into Lake Robinson during normal operation and also to the total radioactive waste generated by the plant.

This change proposed by the licensee involves construction of 36 additional spent fuel storage locations (cells) to be provided in 4 rack modules, each holding 9 fuel assemblies. The new racks will be installed in a presently vacant space along the west wall of the spent fuel pit. The new racks will be constructed in accordance with the requirements of NRC Regulatory Guide 1.29. All of the work will be performed as needed, will consist of adding 36 additional spent fuel storage cells within the existing pool. After the mechanical changes have been accomplished, the pool will be used to store as many as 1-3/4 cores (276 fuel assemblies) until the spent fuel can be transferred to a reprocessing plant.

Currently, spent fuel is not being reprocessed on a commercial basis in the United States. The Nuclear Fuel Services (NFS) plant in New York was shut down in 1972 for alterations and expansion. The Allied General Nuclear Services (AGNS) proposed plant is under construction in South Carolina, and this facility is not licensed to operate. The General Electric Company's (GE) Midwest Fuel Recovery Plant in Illinois is in a decommissioned condition.

Although no plants are licensed for reprocessing fuel, the GE and NFS facilities are licensed for storing spent fuel and applications have been filed for permission to expand these facilities. Also, AGNS has applied for a license to receive and store irradiated fuel assemblies prior to a decision on the licensing action relating to the separations facility. Construction of the AGNS receiving and storage station itself is complete.

The Commission's staff projects that by the end of calendar year 1975 the GE storage facility will have no unfilled storage capacity and the NFS facility will have space available for 85 metric tons of uranium. If its pending license application is approved, the AGNS facility could have licensed storage space for 400 metric tons of uranium in early 1976. The following table presents the staff's estimate of available (unfilled) storage capacity at the end of calendar years 1975, 1976, and 1977, if pending license applications are approved.

Space Availability in Metric Tons of Uranium

	<u>1975</u>	<u>1976</u>	<u>1977</u>
GE	0	525	275
NFS	85	80	0
AGNS	0	260	40

The expansion of the licensee's storage pool by 36 assembly spaces would permit additional storage of as much as 13 tons of uranium. The staff considers the availability of this space to offer flexibility to the licensee to store one additional core of fuel if reprocessing cannot be achieved in the near future.

2. Environmental Impacts of Proposed Action

On September 16, 1975, the Commission announced (40 FR 42801) its intent to prepare a generic environmental impact statement on handling and storage of spent fuel from light water power reactors. In this notice, the Commission also announced its conclusion that it would not

be in the public interest to defer licensing actions intended to ameliorate a possible shortage of spent fuel storage capacity pending completion of the generic environmental impact statement. The Commission directed that in the consideration of any such proposed licensing action, the following five specific factors should be applied, balanced, and weighed in the context of the required environmental statement or appraisal.

- a. Is it likely that the licensing action here proposed would have a utility that is independent of the utility of other licensing actions designed to ameliorate a possible shortage of spent fuel capacity?

The proposed licensing action would have independent utility because it would enable the licensee to store one additional core. This capability would give the licensee greater operating flexibility which would be desirable even if adequate offsite storage facilities are now or hereafter become available to the licensee.

- b. Is it likely that the taking of the action here proposed prior to the preparation of the generic statement would constitute a commitment of resources that would tend to significantly foreclose the alternatives available with respect to any other licensing actions designed to ameliorate a possible shortage of spent fuel storage capacity?

It is not likely that the taking of the licensing action here proposed would constitute a commitment of resources that would tend to significantly foreclose the alternatives available with respect to any other individual licensing action designed to ameliorate a possible shortage of spent fuel storage capacity. The time frame under consideration is two years, the staff's estimate of the time necessary to complete the generic environmental statement. The action here proposed will not have any significant effect on whether similar actions are or should be taken at other nuclear reactors since it will not affect either the need for or availability of storage facilities at other nuclear reactors. Nor will the added capacity here significantly affect the need for the total additional storage space presently planned at reprocessing facilities for which licensing actions are pending. In order to carry out the proposed modifications, the licensee will require custom-made racks of Type 304 stainless steel. These materials are readily available in abundant supply. In the context of this criterion, the staff concludes that the amount of material (Type 304 stainless steel) required for the racks for the H. B. Robinson, Unit 2 is insignificant and does not represent an irreversible commitment of natural resources.

- c. Can the environmental impacts associated with the licensing action here proposed be adequately addressed within the context of the present application without overlooking any cumulative environmental impacts?

The licensee has presented the need for additional storage capacity solely on the basis of this plant. Because the additional capacity is for this site alone and for this licensee only, all the environmental impacts can be assessed within the context of this application.

Using the same guidelines as those employed during its earlier environmental reviews, the staff has assessed the potential impacts, both radiological and nonradiological, that might result from the construction and operations of an expanded spent-fuel facility.

The staff cannot identify any potential effect on the environs outside of the building that houses the spent-fuel storage pool that will result from the proposed construction work. Within this building, the impacts are expected to be limited to those normally associated with metal working activities.

Similarly, the staff cannot identify any adverse problems that will occur onsite and in the surrounding environs when the licensee increases the number of fuel assemblies in the pool above 240. Although the closed cycle cooling water system will not be modified, the licensee and staff believe that the incremental heat load (55,000 BTU/hr.) resulting from the increase in storage capacity can be dissipated without the bulk fluid temperature exceeding the 180°F design limit of the original design. This additional heat load is approximately 0.001% of the total heat discharged from the plant and is not considered significant.

During storage of spent fuel under water, radioactive wastes are released through both liquid and gaseous pathways. Small amounts of fission and activation products such as isotopes of cesium and cobalt are released from the surfaces of the assemblies and are dispersed in solution or as particulates in the cooling water. The licensee employs a continuous water purification system to remove these liquid wastes through filtration or demineralization, thereby maintaining the quality of the water at a high level and the radiation background at a minimum.

An increase in the number of spent fuel assemblies in the pool will increase the amount of long-lived radionuclides, primarily cesium-134 and cesium-137 transferred to the cooling water.

Therefore, the principal results will be more rapid depletion of filters and demineralizers resulting in more frequent replacement of these purification components, thereby leading to an approximately ten percent increase in the amount of solid radioactive waste generated by the fuel storage pool. This increase in the amount of solid radioactive waste will have an insignificant effect on the total waste generated by the plant.

The licensee has supplied current information related to the concentrations of radioactive cesium and cobalt in the pool water and radiation levels above the pool. On the basis of this information, the staff has estimated the additional man-rem doses likely to result from the proposed modifications, using reasonable assumptions as to occupancy times and water cleanup periods. These calculations indicate that the total man-rem occupational radiation exposure as reported for 1974 (672 man-rems) is not likely to be increased by more than approximately two tenths of a percent.

Radioactive gases may be released from the spent fuel directly into the atmosphere of the fuel building. Under normal conditions, this atmosphere is exhausted with the ventilation air without treatment unless radiation measurements exceed a predetermined value. Based on the information provided by the applicant the staff has determined that gaseous waste, principally krypton-85, will increase from 10.6 to 15 Ci/yr, if the licensee fills the proposed expanded facility on a schedule of one-third core per 12 to 14 months. The upper limit represents approximately less than five tenths of a percent increase in the total gaseous release of this plant (2360 Ci/yr). Based on the information provided by the applicant, the staff finds that the proposed modification will have an insignificant effect on radioactive materials released from the site and is, therefore, acceptable.

- d. Have all technical issues which have arisen during the review of this application been resolved within that context?

The accompanying safety evaluation report points out that all questions concerning health and safety have been answered.

- e. Would a deferral or severe restriction on this licensing action result in substantial harm to the public interest?

After this fuel loading in December 1975, the spent fuel pool will hold 209 fuel assemblies, thus leaving the licensee storage space for only 31 fuel assemblies. Consequently, unless the requested relief is granted, or the licensee can obtain storage space at other locations, normal refueling cannot take place.

Shipping spent reactor fuel from H. B. Robinson Unit 2 to storage facilities at reprocessing plants or to a storage pool at another nuclear reactor are alternatives to the proposed action.

The H. B. Robinson Unit 2 licensee could arrange for storage of spent fuel at a reprocessing plant before it is faced with the necessity of having a region of fuel to discharge and no onsite storage space remaining; however, there are drawbacks to this approach. The spent fuel from H. B. Robinson Unit 2 stored at a reprocessing plant could preempt the use of space by another utility which might have no other storage option available.

The alternative of storing spent fuel in the storage pool of another nuclear reactor also compares poorly with the proposed action. The cost probably would be comparable to the cost of storage space which the receiving reactor might need later. The handling and transporting necessary to move fuel to another reactor facility could be avoided if additional storage at reprocessing facilities were licensed during the additional storage period at H. B. Robinson Unit 2.

The alternatives described above do not offer the operating flexibility of the proposed action nor could they be completed as rapidly as the proposed action. Either of these alternatives would be more expensive than the proposed action and either might preempt storage space needed by another utility. Accordingly, deferral or severe restriction of the action here proposed would result in substantial harm to the public interest.

3. Conclusion and Basis for Negative Declaration

Having applied, weighed, and balanced the five specific factors required by the Nuclear Regulatory Commission (40 FR 42801) the staff finds that any environmental consequences that might reasonably be associated with the proposed action would result in no significant change in the environmental impact as analyzed and set forth in the Final Environmental Statement, issued April 1975, concerning operation of the H. B. Robinson Unit 2. The Commission has concluded that no environmental impact statement for the proposed action need be prepared and that, pursuant to 10 CFR 51.5(c), a negative declaration to this effect is appropriate.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 19 TO LICENSE NO. DPR-23

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

DOCKET NO. 50-261

INTRODUCTION

By letter dated September 5, 1975, Carolina Power and Light Company (CP&L) proposed to change the spent fuel storage pool design for the H. B. Robinson Steam Electric Plant Unit No. 2 (Robinson-2) from the design which had been reviewed and approved in the operating license review, and was described in the FSAR. Additional information in support of this request was provided in CP&L correspondence dated October 31 and November 13, 1975. The proposed modifications to the spent fuel storage racks would increase the storage capacity from 240 assemblies to 276 assemblies. The proposed change will provide 36 additional storage locations by the installation of 4 rack modules (each holding 9 fuel assemblies) constructed entirely of Type 304 stainless steel. The revision also involves a Technical Specification change that places a limit on the spent fuel pool water temperature.

We have completed our review of the proposed modification which addressed the following major areas of concern: criticality, spent fuel shipping cask drop considerations, structural considerations, material acceptability, heat removal capability, storage rack installation considerations, release of radioactive materials, and direct radiation.

EVALUATION

A. Criticality Consideration For New Rack Design

The additional storage locations will be provided by the installation of four racks in a presently-vacant space in the spent fuel pool. The cells for the individual assembly locations will be similar in concept to the existing racks (open lattice type construction) except that the center to center spacing (pitch) will be reduced to 15.5 inches from the existing 21 inch pitch.

We have reviewed the licensee's analysis of criticality in the racks. The licensee performed calculations with the PDQ-7 diffusion theory program and calculated a maximum $k_{\text{effective}}$ of 0.925. Included in the licensee's calculations are the following conservatisms: consideration of unburned fuel (3.2 w/o U-235 at 95% Theoretical Density), moderation by pure water at the temperature (125°F) which maximizes reactivity effects, consideration for an infinite array of fuel, and conservative consideration for uncertainties regarding nuclear properties and lattice spacing. Also included in the licensee's submittal are analyses which address the reactivity effect of a dropped fuel assembly on the stored fuel assemblies and the nuclear effect of coupling between fuel assemblies in the old storage locations (pitch = 21 in.) and the fuel assemblies in the new storage location (pitch = 15.5 in.). Both of these phenomena were determined to have negligible effects on the lattice reactivity. We have reviewed the licensee's analytical techniques, analyses, input data, and the results of his calculations and concur in the licensee's analyses. The k_{eff} of 0.925 for the proposed lattice is less than our acceptance criterion of 0.95 and is acceptable.

B. Cask Drop Considerations

Provisions have been made to eliminate the spent fuel cask drop as a credible accident. The overhead crane handling systems are being designed to provide single failure proof handling of critical loads so that a single failure will not result in loss of the reliability and capability of the handling system to perform its safety function. The Robinson-2 cask handling crane system is

described in CP&L correspondence dated October 17, 1974, April 15, 1975, and July 18, 1975. NRC review of this system is near completion. Matters related to cask drop will be resolved prior to approval of cask handling operations.

C. Structural Considerations

The load-carrying capability of the spent fuel pool floor with the additional 36 positions on 15.5 inch centers has been evaluated by the licensee. The results of the evaluation show that the existing Fuel Handling Building is structurally adequate to withstand the load imposed by the additional 36 cells and associated fuel.

The new spent fuel storage racks are designed to remain in position during all operating modes and to transmit any loads to the structure of the Fuel Handling Building.

The spent fuel pool and storage racks and supports are designated as Seismic Category I and are designed to withstand the effects of the safe shutdown earthquake while loaded with fuel.

The seismic design of the existing fuel racks was designed using static loads. Using the seismic ground acceleration in the FSAR, a dynamic analysis of the Fuel Handling Building was performed. From this was determined the maximum seismic acceleration for the elevation in the Fuel Handling Building at which the racks are located. This seismic acceleration was then used as an input to the spent fuel racks, which were considered rigid. The seismic design of the proposed additional new racks is consistent with this method, and provides the same safety margins.

The racks are designed for vertical and horizontal seismic loadings acting simultaneously. To preclude overturning, all modules are clamped together at the top.

The criteria used in the design and analysis of the racks to account for anticipated loadings and postulated conditions that may be imposed upon the structures during their service lifetime are in conformance with established codes, standards, and specifications acceptable to the NRC staff.

We concur in the use of these criteria as defined by applicable codes, standards, and specifications and further concur that there is reasonable assurance that the racks will withstand the safe shutdown earthquake without impairment of structural integrity or the performance of required safety functions.

D. Material Considerations

The new racks will be constructed entirely of Type 304 stainless steel compatible with the existing racks and pit liner which are made of the same material. Rack design and fabrication will be performed using CP&L's approved Quality Assurance (QA) program. The licensee has qualified their weld procedures and their welders for the welding of Type 304 stainless steel according to the rules and regulations of Section IX of the ASME Code for Manual Metal Arc, Tungsten Inert Gas and Metallic Inert Gas for the materials to be welded in the storage racks. We conclude that this aspect of the storage rack modification is acceptable.

E. Decay Heat Removal Capability and Addition of Technical Specification 3.8.3

The licensee made an evaluation of the cooling capacity of the system and determined that it has adequate capacity to cool the pool to 156°F for the maximum spent fuel pool heat load.

This condition is reached when the full reactor core (157 assemblies) is loaded into the fuel pool which then, in turn, completely fills the spent fuel pool. As a conservative measure the licensee desires to maintain the pool temperature to a maximum of 150°F. The licensee has proposed a technical specification which would limit the fuel pool temperature to a maximum temperature of 150°F. This temperature can be limited by controlling the amount of spent fuel placed in the pool. When the pool temperature exceeds 125°F the pool temperature will be monitored hourly. Each assembly will increase the pool temperature on the order of 0.5°F; therefore, the maximum temperature can be approached gradually without a rapid temperature rise. If the spent fuel pool water exceeds 150°F, fuel assemblies will be transferred to containment to reduce the pool temperature back to 150°F. We have independently reviewed the cooling system and the heat load calculations and agree that operation with the system to 150°F is acceptable. The system is designed to operate to temperatures in excess of 150°F.

An analysis was made by the licensee, and independently evaluated by us, of the spent fuel pool heatup time in the event the spent fuel pool cooling system fails. The minimum time to reach boiling from 150°F under the most adverse condition resulting from the Robinson-2 core discharge is ten hours. Water from the fire protection system will be used for makeup in the event of system failure. Thus, we conclude that there is sufficient time for the operator to effect a repair or connect to additional cooling.

We conclude that with the added technical specification and the administrative control of the rate of fuel loading to the spent fuel pool system the heat removal capability of the modified fuel pool is adequate and, therefore, acceptable.

F. Spent Fuel Storage Rack Installation Considerations

1. Accident Considerations

In order to avoid unnecessary risk of spent fuel damage resulting from accidents during spent fuel rack installation, special written installation procedures will be adopted during the modification. These procedures comply with the requirements of the Corporate QA Program and are developed to assure that all necessary activities are carried out in a planned, controlled and orderly manner. We have reviewed the outline of the procedure for the storage rack installation and find the approach acceptable. Included in these procedures are requirements for redundancy in attaching the racks to the crane prior to handling operations. Utilization of these measures provide reasonable assurance that no damage will result to the spent fuel in the pool during the installation of these storage racks.

2. Personnel Radiation Exposure

The installation of the spent fuel racks will be accomplished by installing the racks into the now vacant positions. It is planned that all underwater work will be done remotely and that no exposure will be encountered beyond the normal radiation levels above the pool (with 23 feet of water shielding the spent fuel). In view of this plan and the radiation protection procedures routinely utilized by the licensee we consider this operation to be relatively minor from a radiation exposure standpoint. Therefore, we have concluded that personnel performing the installation of the spent fuel racks would be exposed to radiation levels that are acceptable.

G. Release of Radioactive Materials

During storage of spent fuel under water, radioactive wastes are released through both liquid and gaseous pathways. Small amounts of fission and activation products such as isotopes of cesium and cobalt are released from the assemblies and are dispersed in solution or as particulates in the cooling water. The licensee employs a continuous water purification system to remove these liquid wastes through filtration or demineralization, thereby maintaining the quality of the water at a high level and the radiation background at a minimum.

An increase in the number of spent fuel assemblies in the pool will increase the amount of long-lived radionuclides, primarily cesium-134 and cesium-137 transferred to the cooling water. Therefore, the principal results will be more rapid depletion of filters and demineralizers resulting in more frequent replacement of these purification components, thereby leading to an approximately ten percent increase in the amount of solid radioactive waste generated by the fuel storage pool. This increase in the amount of solid radioactive waste will have an insignificant effect on the total waste generated by the plant.

Radioactive gases may be released from the spent fuel directly into the atmosphere of the fuel building. Under normal conditions, this atmosphere is exhausted with the ventilation air without treatment unless radiation measurements exceed a predetermined value. Based on the information provided by the licensee we have determined that gaseous waste, principally krypton-85, will increase from 10.6 to 15 Ci/yr, if the licensee fills the proposed expanded facility on a schedule of one-third core per 12 to 14 months. The upper limit represents approximately less than five tenths of a percent increase in the total gaseous release of this plant (2360 Ci/yr). Based on the information provided by the licensee, we find that the proposed modification will have an insignificant effect on radioactive materials released from the site and is, therefore, acceptable.

H. Direct Radiation

The licensee has supplied current information related to the concentrations of radioactive cesium and cobalt in the pool water and radiation levels above the pool. On the basis of this information we have estimated the additional man-rem doses likely to result from the proposed modifications, using reasonable assumptions as to occupancy times and water cleanup periods. These calculations indicate that the total man-rem occupational radiation exposure as reported for 1974 (672 man-rems) is not likely to be increased by more than approximately two tenths of a percent.

CONCLUSIONS

We have reviewed the proposed modification to the Robinson-2 spent fuel storage pool, with special attention to matters of criticality requirements, fuel cask drop considerations, structural design including seismic adequacy, material acceptability, heat removal capability, spent fuel storage rack installation considerations, release of radioactive materials, and direct radiation. We conclude that all of the above considerations have been adequately taken into account in the design of the proposed modification. We conclude, therefore, that the proposed modification of the Robinson-2 spent fuel storage pool is acceptable.

We have concluded, based on the considerations discussed above, that:

- (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and
- (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date:

February 9, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-261

CAROLINA POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 19 to Facility Operating License No. DPR-23 issued to Carolina Power and Light Company which revised Technical Specifications for operation of the H. B. Robinson Steam Electric Plant Unit No. 2, located in Darlington County, Hartsville, South Carolina. The amendment is effective as of its date of issuance.

The amendment revises the Technical Specifications relating to the spent fuel storage pool. As amended, the Technical Specifications permit the licensee to install 36 additional storage locations in the present spent fuel storage pool, increasing its capacity from 240 fuel assemblies to 276 fuel assemblies.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license

amendment. Notice of Proposed Issuance of Amendment to Facility Operating License in connection with this action was published in the FEDERAL REGISTER on October 31, 1975 (40 F.R. 50753). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

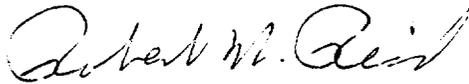
In connection with issuance of this amendment, the Commission has issued a Negative Declaration and Environmental Impact Appraisal. The Negative Declaration is being published in the FEDERAL REGISTER concurrently with this notice.

For further details with respect to this action, see (1) the application for amendment dated September 5, 1975, as supplemented by letters dated October 31, 1975, and November 13, 1975, (2) Amendment No. 19 to License No. DPR-23, (3) the Commission's related Safety Evaluation, and (4) the Commission's Environmental Impact Appraisal. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street N. W., Washington, D. C. and the Hartsville Memorial Library, Home and Fifth Avenues, Hartsville, South Carolina.

A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 9th day of February, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Robert W. Reid".

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

FEB 11 1976

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Docket No. 50-261

Chase R. Stephans
Docketing and Service Section
Office of the Secretary of the Commission

FEDERAL REGISTER NOTICE

Enclosed for your transmission to the Office of the Federal Register for filing and publication are two signed originals of two Federal Register Notices as follows dated February 9, 1976 and November 21, 1975.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-261

CAROLINA POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

AND

NEGATIVE DECLARATION

SUPPORTING FACILITY MODIFICATION

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2

OPERATING LICENSE DPR-23

DOCKET NO. 50-261

Twelve copies of the above notices are also enclosed for your use and distribution of the Public Document Room.

Sincerely,
Original signed by
~~Robert W. Reid~~

Robert W. Reid
Robert W. Reid, Chief
for Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:

OFFICE >

As Stated

ORB4 *mt*

SURNAME >

Ringram:mt

DATE >

2/11/76