

**CP&L**

**Carolina Power & Light Company**

P. O. Box 1551 • Raleigh, N. C. 27602

JUL 20 1984

SERIAL: NLS-84-270

E. E. UTLEY  
Executive Vice President  
Power Supply and Engineering & Construction

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Director of Nuclear Materials Safety and Safeguards  
Attention: Mr. Richard E. Cunningham, Director  
Division of Fuel Cycle and Material Safety  
United States Nuclear Regulatory Commission  
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261/LICENSE NO. DPR-23  
DRY STORAGE DEMONSTRATION PROGRAM

Dear Mr. Cunningham:

SUMMARY

Carolina Power & Light Company (CP&L) has entered into an agreement with the U.S. Department of Energy (DOE) to conduct a licensed at-reactor dry storage demonstration program for spent nuclear fuel at the H. B. Robinson Steam Electric Plant Unit No. 2 (HBR2). The purpose of this letter is to summarize the activities to be conducted, and to provide the schedule by which CP&L expects to complete the program. It is CP&L's intent to file an application under 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation."

BACKGROUND

The Nuclear Waste Policy Act of 1982 (NWPA) established 1998 as an operational date for a spent fuel/high level radioactive waste repository. To assist utilities in providing for spent fuel storage until a repository is operational, the Nuclear Waste Policy Act requires DOE to "... establish a demonstration program in cooperation with the private sector, for the dry storage of spent nuclear fuel at civilian nuclear power reactor sites, with the objective of establishing one or more technologies that the Commission (NRC) may by rule approve for use at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific approvals by the Commission." Accordingly, on May 9, 1983, the DOE issued its Solicitation for Cooperation Agreement Proposal (#DE-SC06-83RL10432) for a Licensed, At-Reactor, Dry Storage Demonstration Program.

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Carolina Power & Light Company, in response to the DOE solicitation, submitted a proposal on August 23, 1983 to DOE to demonstrate the NUTECH Engineers, Inc. (NUTECH) Horizontal Modular Storage (NUHOMS) System at HBR2. DOE accepted CP&L's proposal in October 1983, and the contract was signed in March 1984.

## DETAILS

### Storage Concept

The NUHOMS system provides a complete storage and handling system for the horizontal, dry, on-site storage of irradiated nuclear fuel assemblies in a concrete module. The principal components are shown in the attached figure. The HBR2 demonstration will construct three horizontal storage modules (HSM) and store one dry-shielded canister (DSC) in each module. Each canister will contain seven intact pressurized water reactor (PWR) fuel assemblies. The existing shipping cask at HBR2 (IF-300 rail cask) will be used to transfer the canister from the fuel pool to the dry-storage modules. The modules will be located within the plant protected area. Once fuel is loaded, a test period of approximately one year will commence. Data will be obtained on the pressure, temperature, radiation, and air flow within the HSM. Nuclear, thermal-hydraulic, and mechanical/structural reanalyses will be performed to compare performance predictions with actual data.

### Program Management

The demonstration program will be managed by CP&L with support from NUTECH, DOE, and the Electric Power Research Institute (EPRI). NUTECH, CP&L's subcontractor, will provide certain engineering, technical support, and other services for the program relating primarily to the NUHOMS System. Carolina Power & Light Company and other subcontractors will provide remaining engineering, technical support, and services. EPRI, acting through and in cooperation with CP&L, may participate in the formulation and formal definition of the research and development aspects of the program. DOE is participating in the program through financial and/or in-kind services. Carolina Power & Light Company, DOE, and EPRI will be responsible for input to and approval of the schedular, technical, procedural, and administrative details of the program. Program review and guidance will be provided to CP&L by all participants.

### Quality Assurance

The dry storage demonstration program will be performed under the guidance of applicable portions of the CP&L Corporate Quality Assurance (QA) Program and applicable QA requirements as delineated in Amendment No. 2 to the HBR2 Updated Final Safety Analysis Report (to be submitted by July 20, 1984). Controls will be established for the applicable activities which CP&L will perform as well as for those appropriate activities which subcontractors will perform.

Quality Assurance personnel in CP&L's Corporate QA Department perform oversight to assure that appropriate quality requirements are being met in the normal implementation of technical programs. Work associated with this project will be performed in the same way as other nuclear plant related activities, and will therefore be covered by the normal surveillance and audit process.

#### Safety-Related Considerations

The accident analysis will define credible accident scenarios, including design and operating accidents, natural accidents, and man-made accidents, and perform analyses to determine the consequences of each.

#### ALARA Considerations

Shielding and the dose assessment tasks will be performed to assure that the HBR2-specific dose limits and criteria are met. In addition, CP&L's current policy on maintaining radiation exposures as low as reasonably achievable (ALARA) will be followed.

#### Schedule

Carolina Power & Light Company intends to file the license application required by 10 CFR Part 72 by January 31, 1985. Much of the design information will be based on a generic topical report scheduled to be submitted to NRC by NUTECH Engineers, Inc. in November 1984. It is requested that the license be issued by NRC by January 31, 1986 to support the commencement of construction in early 1986. Carolina Power & Light Company expects to load spent fuel in January 1987 for one year of operation until completion of the demonstration program. Upon completion of the first year of operation, CP&L may elect to continue storage of the spent fuel in the facility until a permanent repository is available. In addition, the facility may be expanded to store additional fuel assemblies, if needed.

Carolina Power & Light Company recognizes that this is an ambitious schedule; but we believe it is achievable. It is requested that the NRC commit to dedicating the resources necessary to achieve the final schedule, including the following interim milestones:

- Issue Safety Evaluation Report - July 1985
- Hold Public Hearing (if required) - November 1985
- Issue License - January 31, 1986

If there are any concerns with meeting the above schedule at any time during the program, please inform CP&L as soon as possible.

#### CONCLUSION

The CP&L program is seen as an alternative storage technology and as a complement to the bank of available technical data and technology, and as an extension of the experience in licensing, demonstrations, and analytical performance modeling. Furthermore, the CP&L/DOE/EPRI/NUTECH program will provide the utilities' and other DOE programs with additional, independent and alternative data, experience, and analytical performance models. The

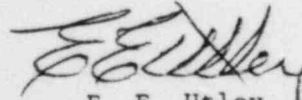


use of canisters that could be placed in any suitably-designed transportation cask will demonstrate that storage of spent fuel can be independent of future shipping and transportation requirements and regulations.

Carolina Power & Light Company will be putting forth significant effort to achieve the schedule discussed above. Any guidance or recommendations that the NRC could give to expedite the review and approval of this effort would be greatly appreciated.

If you require additional information with regard to these activities, or desire a meeting to further discuss or expand upon the information above prior to our preliminary report, please contact Mr. Sherwood Zimmerman at (919) 836-6242.

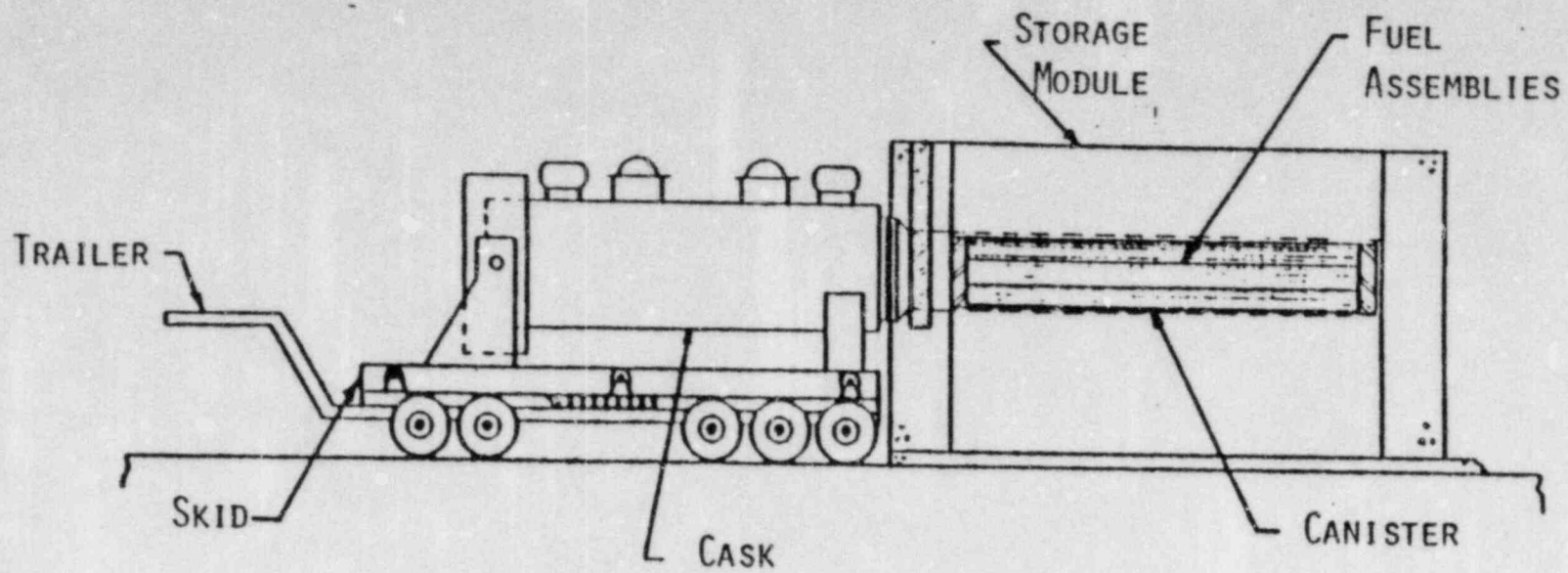
Yours very truly,

  
E. E. Utley

ONH/ccc (2550NH)

Attachment

cc: Mr. J. L. Daily (DOE, Richland Operations)  
Mr. R. W. Lambert (EPRI)  
Dr. J. V. Massey (NUTECH)  
Mr. J. P. O'Reilly (NRC-RII)  
Mr. G. Requa (NRC)  
Mr. J. P. Roberts (NRC-NMSS)  
Mr. L. C. Rouse (NRC-NMSS)  
Mr. S. A. Varga (NRC)  
Mr. Steve Weise (NRC-HBR)



DEMONSTRATION PROGRAM COMPONENTS