

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 12612

FILE: _____

FROM: Carolina Power & Light Co Raleigh, N.C. E. E. Utley			DATE OF DOC 10-31-75	DATE REC'D 11-3-75	LTR XX	TWX	RPT	OTHER
TO: Mr Rusche			ORIG one signed	CC	OTHER	SENT NRC PDR <u>XX</u> SENT LOCAL PDR <u>XX</u>		
CLASS	UNCLASS XXX	PROP INFO	INPUT	NO CYS REC'D 1		DOCKET NO: 50-261		

DESCRIPTION:

Ltr re their 9-5-75 submittal....trans the following:

ENCLOSURES:

Supplemental & addl info to their report entitled "HB Robinson Unit 2 Spent Fuel Storage Expansion"....(40 cys encl rec'd)

DO NOT REMOVE

PLANT NAME: HB Robinson #2

FOR ACTION/INFORMATION 11-6-75 ehf

BUTLER (L) W/ Copies	SCHWENCER (L) W/ Copies	ZIEMANN (L) W/ Copies	REGAN (E) W/ Copies	REID (L) W/ 6 COPIES
CLARK (L) W/ Copies	STOLZ (L) W/ Copies	DICKER (E) W/ Copies	LEAR (L) W/ Copies	
PARR (L) W/ Copies	VASSALLO (L) W/ Copies	KNIGHTON (E) W/ Copies	SPIES W/ Copies	
KNIEL (L) W/ Copies	PURPLE (L) W/ Copies	YOUNGBLOOD (E) W/ Copies	LPM W/ Copies	

INTERNAL DISTRIBUTION

REG FILE NRC PDR OGC, ROOM P-506A GOSSICK/STAFF CASE GIAMBUSSO BOYD MOORE (L) DEYOUNG (L) SKOVHOLT (L) GOLLER (L) (Ltr) P. COLLINS DENISE WILL REG OPR FILE & REGION (2) INGR MIP	TECH REVIEW SCHROEDER (L) MACCARY KNIGHT PAWLICKI SHAO LEE (L) STELLO HOUSTON NOVAK ROSS IPPOLITO TEDESCO J. COLLINS LAINASILL BENAROYA VOLLMER	DENTON GRIMES GAMMILL KASTNER BALLARD SPANGLER ENVIRO MULLER DICKER KNIGHTON YOUNGBLOOD REGAN PROJECT LDR HARLESS	LIC ASST R. DIGGS (L) H. GEARIN (L) E. GOULBOURNE (L) P. KREUTZER (E) J. LEE (L) M. RUSHBROOK (L) S. REED (E) M. SERVICE (L) S. SHEPPARD (L) M. SLATER (E) H. SMITH (L) S. TEETS (L) G. WILLIAMS (E) V. WILSON (L) R. INGRAM (L) M. DUNCAN (E)	A/T IND. BRAITMAN DIGGS (L) SALTZMAN MELTZ PLANS MCDONALD CHAPMAN DUBE (Ltr) E. COUPE PETERSON HARTFIELD (2) KLECKER EISENHUT WIGGINTON
---	---	--	---	---

EXTERNAL DISTRIBUTION

1 - LOCAL PDR <u>Hartsville, S.C.</u>	1 - NATIONAL LABS	1 - PDR-SAN/LA/NY
1 - TIC (ABERNATHY) (1)(2)(10)	1 - W. PENNINGTON, Rm E-201 GT	1 - BROOKHAVEN NAT LAB
1 - NSIC (BUCHANAN)	1 - CONSULTANTS	1 - G. ULRIKSON ORNL
1 - ASLB	NEWMARK/BLUME/AGBABIAN	
1 - Newton Anderson		
1 - ACRS HOLDING SENT		
TO L.A. Ingram		

[Handwritten signature]

[Handwritten signature]

REGULATORY DOCKET FILE COPY

CP&L

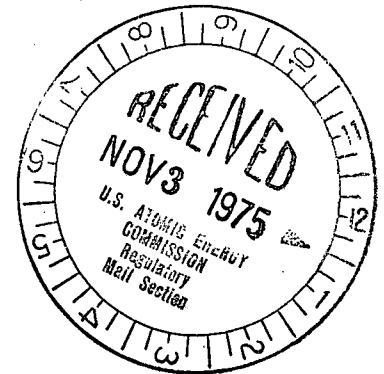
Carolina Power & Light Company
October 31, 1975

FILE: NG-3514(R)

SERIAL: NG-75-

Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

RE: H. B. ROBINSON UNIT NO. 2
DOCKET NO. 50-261
FACILITY OPERATING LICENSE NO. DPR-23

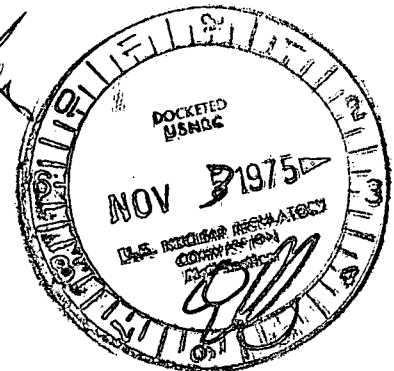


Dear Mr. Rusche:

In response to a request from your Staff, Carolina Power & Light Company submits three signed originals and 37 copies of this letter and enclosure. The enclosure contains responses to three requests for additional information from your Staff and information to supplement our report titled, "H. B. Robinson Unit 2 Spent Fuel Storage Expansion," submitted with our letter of September 5, 1975.

Yours very truly,

E. E. Utley
E. E. Utley
Vice President
Bulk Power Supply



RLM/nja

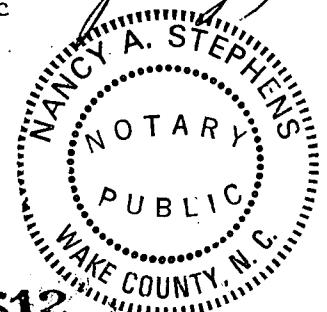
Enclosure

cc: Messrs. H. R. Banks S. McManus
N. B. Bessac W. W. Reynolds
P. W. Howe R. L. Sanders
R. E. Jones D. B. Waters
W. B. Kincaid R. A. Watson
J. B. McGirt

Sworn to and subscribed before me this 31st day of October, 1975.

Nancy A. Stephens (Yancey)
Notary Public

My Commission Expires: June 29, 1976



ENCLOSURE

H. B. ROBINSON UNIT 2
SPENT FUEL STORAGE EXPANSION

Responses to NRC Staff
Requests for Additional Information
and Information Submitted
to Supplement CP&L Report Titled
"H. B. ROBINSON UNIT 2 SPENT FUEL STORAGE EXPANSION"

Question No. 1

Experience has shown that diffusion theory codes, such as PDQ-7, yields nonconservative results for reactivity when there is significant spacing between assemblies as in a storage pool. Please provide values for the transport theory correction factor at the design spacing for the racks.

Answer

In a March 28, 1975 letter to the NRC (Docket No. 50-266 and 50-301), Wisconsin Electric Power Company and Wisconsin - Michigan Power Company submitted an amendment for review entitled, "Spent Fuel Storage Rack Replacement." The attachment to this letter contained K_{eff} values obtained using diffusion and transport calculations for various rack configurations.

The conditions and geometries investigated for the Point Beach pool modifications were set up using CP&L's diffusion codes. Figure 1 presents the results obtained from XPOSE/PDQ-7 and compares the results with those given in the Point Beach submittal. This comparison is excellent; therefore, it is reasonable to use the Point Beach diffusion-to-transport correction for the CP&L design. For the 15.5" spacing, this correction is $0.005\Delta k$. If this correction is conservatively added to the nuclear methods and structural absorbing uncertainties presented in our submittal (Section 3.1.3) a worst case K_{eff} of 0.925 is obtained.

Question No. 2

Comment on the reactivity effect of the boundary between the new storage racks and the old. Assemblies in the new racks are not in line with those in the old racks and a localized region of higher reactivity than has been analyzed may result.

Answer

The effect of going from the infinite systems analyzed (15.5" and 21.0" cases) to the real case where the new racks are not in line with the old racks is to shift the flux distribution. Due to this flux change, the K_{∞} of a particular assembly may be higher or lower than calculated for the infinite system. However, since no assembly is closer than 15.5" to its nearest neighbor, the upper limit on K_{eff} is that reported in our submittal (Section 3.1.3) for the nominal 15.5" case.

Question No. 3

Comment on the reactivity effect of dropping a fuel assembly on top of the storage racks and on any other fuel mishandling incidents which may occur.

Answer

The racks are designed to preclude buckling, and hence change in pitch, due to a dropped fuel assembly. Thus, the only concern remaining relative to a dropped fuel assembly is whether there will be a criticality condition with one fuel assembly lying across the top of the racks.

The space between active fuel in the dropped assembly and active fuel in assemblies in the storage racks is occupied by the space from the dropped assembly to the top nozzle of the stored assembly, the top nozzle itself, the gap between the fuel rods and top nozzle, and the gas plenum in the top of each fuel rod. If it is conservatively assumed that the dropped assembly completely crushes the lead-ins on top of the racks, the distance between active fuel is about 14.3". This is greater than the 12.57" (nominal) space between active fuel in the existing fuel storage racks (21" pitch). Since that is the case, and since the existing rack array maintains the fuel in a sufficiently subcritical state, it is concluded that no criticality will result from a fuel drop accident.

The above spacing applies to the existing racks as well as the new racks, and hence represents no change insofar as a dropped fuel assembly is concerned. Similarly, other "fuel mishandling incidents" are unaffected by the proposed addition.

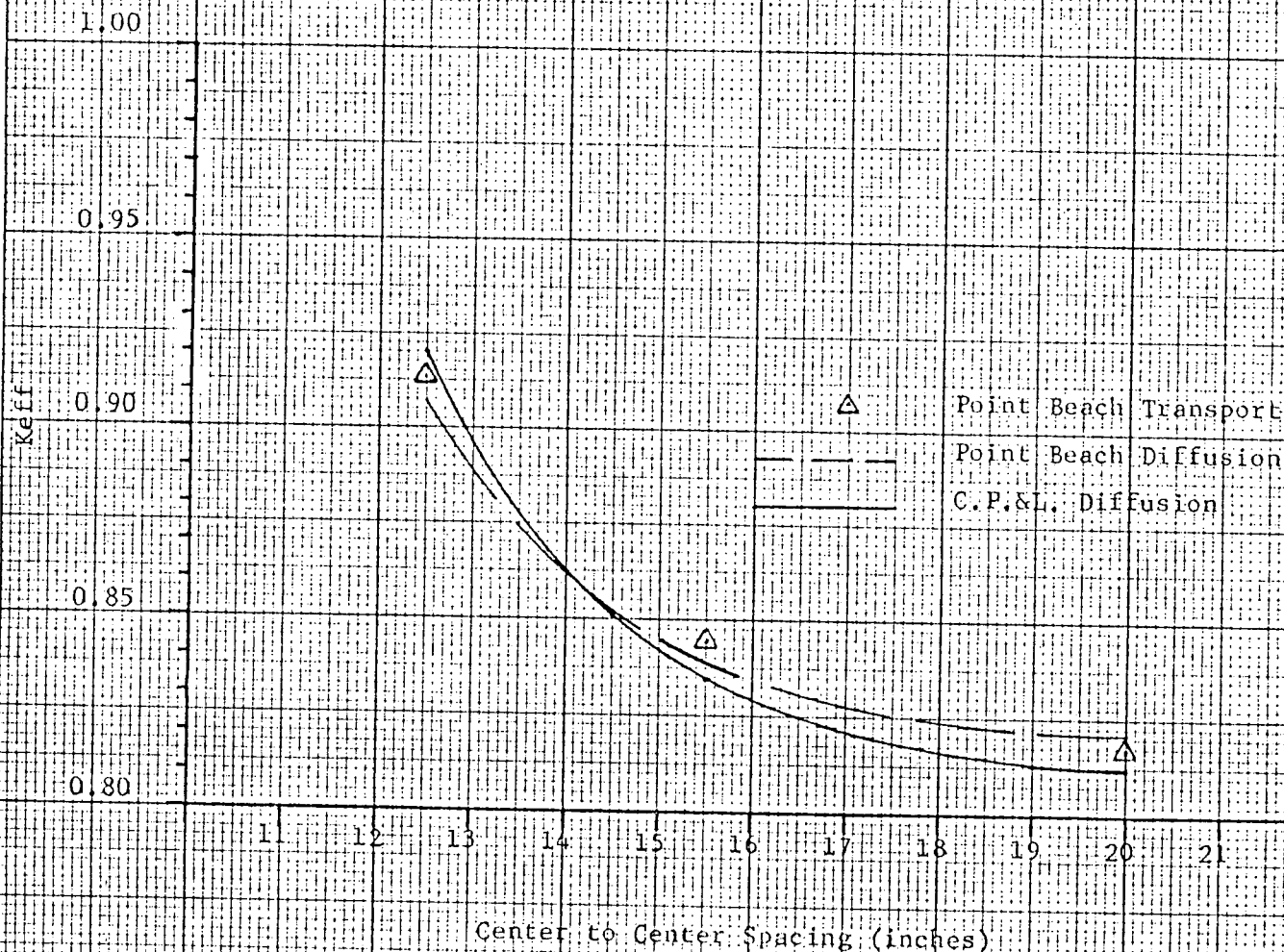
Supplemental Information

The report titled "H. B. Robinson Unit 2 Spent Fuel Storage Expansion" submitted to the NRC with our letter of September 5, 1975, should be supplemented in two areas, based on detailed design work performed subsequent to September 5. These are as follows:

1. The first paragraph of Section 2.1 of the report states that the 36 additional cells will be provided in 2 rack modules. Fabrication and installation considerations indicate that 4 rack modules of 9 cells each (in a 3 x 3 array) are preferred. Therefore, the design is proceeding on the basis of 4 modules.
2. The second paragraph of Section 2.1 of the report states that the new racks will be constructed entirely of Type 304 stainless steel. This is true with one exception. Each corner of each module will be equipped with a leveling device consisting of a bolt running vertically through a block. The bolt is welded to a circular pad at its bottom end, thus supporting that corner. Leveling will be done by remotely rotating this bolt to provide a longer or shorter leg as required. Due to the potential for galling between the Type 304 bolt and block, it has been decided to use a 17-4 PH stainless steel bolt running in a Type 304 stainless steel block. The difference in hardness between the two materials will minimize the galling problem. Metallurgically, the 17-4 PH is compatible with the environment in the spent fuel pool and with interfacing parts. Therefore, the design is proceeding on this basis.

Figure 1: Comparison of Keff Values Calculated
for Point Beach

G - to - G Spacing (In)	Point Beach		CP&L
	Transport	Diffusion	Diffusion
12.5	0.9133	0.9069	0.9200
14.5	---	0.8518	0.8506
15.5	0.8441	0.8387	0.8341
20.0	0.8171	0.8208	0.8120



Docket No. 50-261

Exxon Nuclear Company, Inc.
ATTN: G. F. Owsley, Manager
Reload Licensing
2101 Horn Rapids Road
Richland, Washington 99352

Gentlemen:

By letter dated July 2, 1975, you submitted three documents; Report XN-74-56, "Analysis of the Ginna RCC Drop Tests," dated December 31, 1974; Report XN-74-36, "Analysis of the Ginna Fuel Departure from Nucleate Boiling Tests", dated August 15, 1974; and Report XN-74-44, "Single Phase Hydraulic Performance of Westinghouse and Exxon Nuclear H. B. Robinson Fuel Assemblies", dated October, 1974. Your correspondence informed us these reports contained proprietary information and requested that they be withheld from public disclosure.

The reasons for withholding this information were stated to be:

1. They reveal certain distinguishing aspects of fuel design and testing methods where prevention of their use by any of Exxon Nuclear's competitors without license from Exxon Nuclear constitutes a competitive economic advantage over other companies.
2. They contain product design and test data, which data secures competitive economic advantage by design optimization and improved marketability.
3. Their use by a competitor would reduce his expenditure of resources or improve his competitive position in the design of similar products and testing programs.

We have examined the subject material and pursuant to Section 2.790(b) of 10 CFR Part 2, have approved your request.

Distribution:

Docket
NRC PDR
Local PDR
ORB#4 rdg
KRGoller
TJCarter
RWReid
DNBridges
RIngram
OELD
OIE (3)
DEisenhut
Abernathy
ACRS (16)
gray file

OCT 22 1975

OFFICE	ORB#4	OELD	ORB#4	TR	PL:AD/OR'S
SURNAME	DNBridges/dg	RWReid	DRoss	KRGoller	
DATE	9/30/75	9/7/75	10/1/75	10/6/75	9/1/75

OCT 22 1975

Exxon Nuclear Company, Inc.

- 2 -

~~007-2-1975~~
007-2-1975

Accordingly, pursuant to Section 2.790(b) of 10 CFR Part 2, we are withholding from public inspection the three documents that were included with your letter of July 2, 1975 and marked proprietary information. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned to inspect the documents.

Sincerely,

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

cc: Carolina Power & Light Co.
ATTN: J. A. Jones

OFFICE ➤						
SURNAME ➤						
DATE ➤						