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DESCRIPTION:
Ltr w/attchments....concerning the requirements for spent fuel shipment/.....

ENCLOSURES:

ACKNOWLEDGED
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PLANT NAME: H B Robinson #2

FOR ACTION/INFORMATION 1-6-75 ehf

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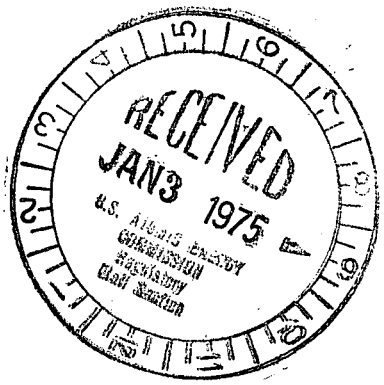
CP&L
Carolina Power & Light Company

December 26, 1974

File: NG-3514 (R)

Serial: NG-74-1445

50-261



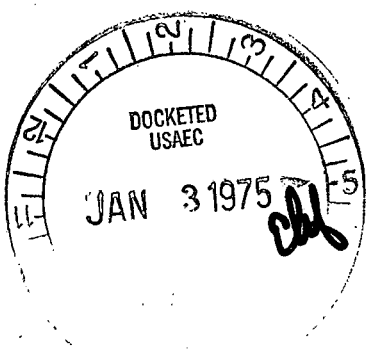
Mr. Edson G. Case, Acting Director
Directorate of Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Case:

H. B. ROBINSON UNIT NO. 2
LICENSE DPR-23
REQUIREMENT FOR SPENT FUEL SHIPMENT

During the preceding nine months, Carolina Power & Light Company has provided several packages of information to the Atomic Energy Commission concerning the facilities for spent fuel shipping cask handling and shipping at the H. B. Robinson Unit No. 2 Plant. In our last exchange of information with you, which was submitted on October 17, 1974, we indicated that modifications to the spent fuel building structure and installation and testing of the replacement 125-ton Whiting Crane would be complete by December 20, 1974, enabling shipment of spent fuel to begin in January, 1975. In this letter, we wish to provide you with additional information on alternate spent fuel shipping casks and lifting rig combinations that we intend to use for initial shipments of spent fuel and to better acquaint you with our schedule for spent fuel shipment and the need for timely shipment of spent fuel to ensure the continued power operation of the Robinson Plant.

As Carolina Power & Light Company has studied plans for and means of spent fuel shipment, we have found that construction and licensing delays have impacted not only the spent fuel receiving facility at the AGNS reprocessing plant in Barnwell, South Carolina, but also the availability of spent fuel shipping casks. For example, AGNS has informed us that it expects licensing of its spent fuel receiving facility no sooner than mid-January, 1975. In addition, construction of a cask cooldown facility at the reprocessing plant will not be finished before June, 1975, precluding shipment in the NLI single element cask until that time. The 10-element rail cask described in our submittal of October 17, 1974, will not be available until the first quarter of 1976 at the earliest.



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The need for prompt and timely removal of spent fuel elements from the Robinson spent fuel pool becomes more evident in light of the above problems. A recent inventory of available storage locations for spent fuel indicates a capability of discharging a maximum of seventy-nine assemblies. Since one region of replacement fuel is composed of fifty-two assemblies, time required for fuel shuffling during the next refueling outage, which is scheduled for October, 1975, will most likely be impacted by the loss in flexibility otherwise provided by at least an additional region's worth of storage locations. Also of immediate concern to Carolina Power & Light Company is the possibility of a significantly extended shutdown due to fuel or primary system problems which would require discharge of all or a major portion of the 157 assemblies that compose the reactor core. An extended shutdown would cause a severe impact not only on the economic resources of Carolina Power & Light Company and the customers it serves, but also on the power supply capability of the entire Southeastern United States. The refueling capability itself becomes a problem subsequent to the October, 1975, refueling outage when the pool is essentially filled.

In order to reduce or eliminate the impact of the above-mentioned problems, Carolina Power & Light Company now intends to begin spent fuel shipments by April 1, 1975. The two-month delay from the early January date indicated in our letter of October 17 arises largely from slippage in the scheduled shipping date of the Whiting Crane. This date is, of course, contingent on successful occurrence of two events: first, the completion of plant modifications; second, the licensing of the AGNS facility for receipt of spent fuel. Delays in either of these areas would cause further delay in the initial shipment date.

As we have indicated above, the NLI truck and rail casks will be unavailable on this date. Therefore, we intend to begin spent fuel shipments utilizing the General Electric IF-300 rail cask. This cask has a weight of 65 tons loaded, or about half the capacity of the replacement Whiting Crane. It has the capability of handling seven fuel assemblies in one shipment, thus twenty-three shipments would be required to remove the 157 assemblies now present in the Robinson spent fuel storage racks. At one shipment per week, all assemblies would be removed from the spent fuel pit prior to the next refueling outage.

The GE IF-300 cask and yoke description is provided in Docket 71-9001. The yoke will be modified prior to use at the Robinson facility as shown on the attached Drawing 164C6006 to provide redundancy in the attachment of the yoke to the redundant main hook of the crane and to provide positive locking action for the cask trunion-yoke interface. Safety factors for the lifting yoke and the secondary connections are shown on Attachment I. With these additions, the cask handling system will be at least as conservative as if not more conservative than the originally licensed handling system, which utilized the safety cable beam design.

In view of the Commission's desire to provide a totally redundant means of cask handling from the cask trunnions up through the hoisting and braking systems of the crane, we must admit that the GE IF-300 does not exactly fulfill that requirement. However, we feel that the modifications to the yoke add sufficient conservatism and increases the factors of safety in areas of concern such that a postulated cask drop is highly unlikely. We also do not intend to use this system subsequent to removal of the spent fuel now residing in storage. At that time, sufficient space will be available to handle full core discharge plus one region of spent fuel, and this capability will be available until refueling operations in the fall of 1976. Spent fuel shipment by the redundant yoke rail cask or truck cask should be available by that time, precluding the use of the IF-300 cask in the configuration described above.

During the shipping period subsequent to April 1, 1975, and prior to the fall 1975 refueling outage, all fuel assemblies in the Robinson spent fuel pit will have cooled at least ten months. As a result, offsite doses resulting from any postulated fuel handling accident will remain well within 10CFR100 limits, as is shown in the attached Table 1.

In summary, Carolina Power & Light Company has determined that it is imperative to remove spent fuel assemblies from its H. B. Robinson Plant prior to the scheduled refueling outage in October, 1975, in order to maintain full operating flexibility of the plant and continue to provide reliable electric service to our customers and the Southeastern United States. As a result of our studies of the GE IF-300 spent fuel shipping cask and the entire spent fuel building and storage system, we have concluded that these shipping operations will not result in an increased risk to the health and safety of the general public in the vicinity of the H. B. Robinson Unit No. 2 Plant.

Yours very truly,

E. E. Utley
Vice-President
Bulk Power Supply

DBW:mvp
Attachments

cc: Messrs. N. B. Bessac
W. B. Howell
J. B. McGirt
D. V. Menscer
D. B. Waters

ATTACHMENT I

IF-300 CASK LIFTING YOKE (M-19)

Major Ass'y	Component	Stress, ksi	Min. Yield, ksi	Min Safety Factor Based on Yield
Lifting Yoke				
	Hook	24.7 (max)	90	3.6
	Crossmember	11.4 (max)	90	7.9
	Vertical Member	4.4 (max)	90	20.5
	Vert. to crossmember weld	AISC Method		6.2
	6" Pin - Bending	20.1	125	6.2
	6" Pin - Shear	2.5	125 x .577	29.2
	6" Pin - Bending	6.7	90/0.6	22.5
Lifting Trunnion				
	Cylindrical lug - Bending	10.7	69	6.4
	Cylindrical lug - Shear	2.9	69 x .577	13.5
	3"ø Block Pin - Bending	27.4	125	4.6
	3"ø Block - Shear	6.3	125 x .577	11.4
	Block-on-Shell - Bearing	6.2	47.4 x 0.6	12.7
Lifting Ring and Shell				
	3" ø Pin Hole - Shear	7.7	58.4 x .577	4.4
	Ring - Bearing	11.9	58.4/0.6	8.2
	Ring-to-Block - Bending	17.5	58.4/0.6	5.6
	Shell - Min.	17.3	58.4	3.4

Secondary Connection
Safety Factor Table

Component	Min. Yield, ksi	Min. S.F. Based on Yield Static
Upper Lifting Pin	130	
bending		28
shear		19
Lower Lifting pin	130	
bending		12
shear		25
Connecting Link	100	
tension		24
3.5" hole shear		22
4.0" hole shear		23

Notes:
1. All of the above values are based on a system weight of 140,000 pounds (loaded) carried symmetrically by the lifting yoke.
2. Calculations by Whiting show that a 1/4 inch free drop at rated load will impart a 3 g deceleration to the load if one rope should fail. This shows that all safety factors shown above are adequate for a 3 g deceleration.

H. B. ROBINSON UNIT NO. 2
FUEL HANDLING ACCIDENT IN SPENT FUEL BUILDING
TWO-HOUR, I-131 THYROID DOSE AT SITE BOUNDARY
FOR 100-DAY DECAY, NO CHARCOAL FILTERS

$$D = \frac{F\ I\ FPBR(\chi/Q)}{(DF_p)(DF_f)} \quad \} \text{ per R. G. 1.25}$$

(delete - no filters)

$$= (0.1)(2.5 \times 10^{4})(2300)\left(\frac{1}{157}\right)(1.65)(3.47 \times 10^{-4})\left[\frac{0.9975}{133} + 0.0025\right](1.48\times10^{6})(8.7\times10^{-4})$$

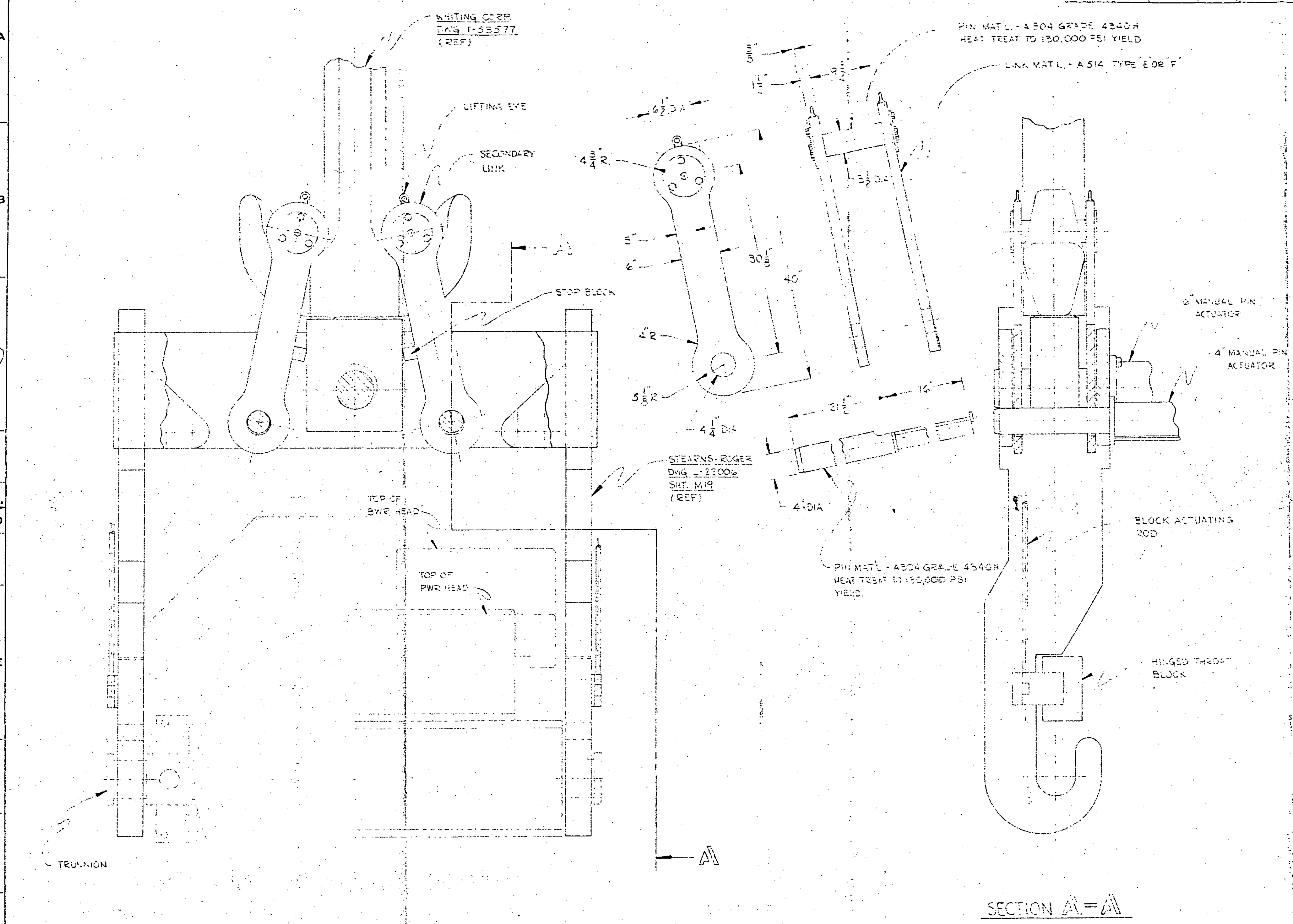
$$= 270.0 \text{ Rem}$$

- Applying 100 days' decay: $D = D_o e^{-\lambda t}$

$$= (270 \text{ Rem}) e^{-\left(\frac{.693}{8.04 \text{ days}}\right)(100 \text{ days})}$$

$$= \boxed{4.86 \times 10^{-2} \text{ Rem}}$$

TABLE 1



UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING

APPLIED PRACTICES	SURFACES	TOLERANCES		
	√	FRACTIONS ±	DECIMALS ±	ANGLES ±

164C[illegible]6

IF 300 YOKE MOD FOR C-BL[illegible]
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FCF- 3B7 N 03

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DESCRIPTION OF GROUPS	REVISIONS	PRINTS TO

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