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DOCKET NUMBER 50-335

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TO:	FROM:	DATE OF DOCUMENT
Mr. Don K. Davis	Florida Power & Light Company Miami, Florida Robert E. Uhrig	12/08/77
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DESCRIPTION

Consists of info. re. FP&LCO's evaluation to determine the potential for boron dilution occurrences.....

(2-P)

PLANT NAME: St. Lucie Unit No. 1
RJL 12/14/77

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December 8, 1977
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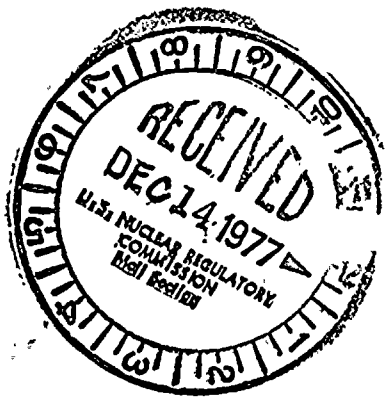

Office of Nuclear Reactor Regulation
Attention: Mr. Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Davis:

Re: St. Lucie Unit 1
Docket No. 50-335
Boron Dilution

As a result of your letter of September 15, 1977, we have evaluated St. Lucie Unit 1 to determine the potential for boron dilution occurrences. The evaluation has shown that no dilution sources other than those previously analyzed have flow paths into the reactor coolant system. Therefore, the only dilution occurrences that are credible at St. Lucie Unit 1 are those analyzed in Section 15 of the FSAR.

St. Lucie Unit 1 does not presently have a sodium hydroxide system. However, such a system is scheduled for installation during the unit's first refueling outage (Spring, 1978). This system (iodine removal) is generally described in Section 6 of the FSAR. We have evaluated the proposed sodium hydroxide system to determine its potential for diluting the reactor coolant system. The results of the evaluation are:

(1) The iodine removal system is an extension of the containment spray system and shares some common piping with the shutdown cooling system. This is the only flow path capable of diluting the reactor coolant system.

(2) Review of the system design indicates that no single valve failure or mispositioned valve can establish a flow path into the reactor coolant system.

(3) Even if the existence of a flow path into the reactor coolant system is postulated, the following administrative controls, control room alarms, and visual indications will alert the operator to the fact that NaOH is flowing from the storage tank, thus enabling the operator to terminate the flow prior to any significant reactivity addition:

-NaOH tank volume = 5000 gallons

-Technical Specifications will require 4000 gallons minimum.

-The system will have control room level indication and alarms on NaOH level (2 alarms prior to dropping to 4000 gallon level).

-The system will have control room NaOH flow indication.

-Nuclear instrumentation in the control room will indicate reactivity changes.

Both visual and audible indications will alert the operator to an inadvertent NaOH flow before 1000 gallons of NaOH could be put into the reactor coolant system. Using the extremely conservative assumptions listed in your September 15 letter, a 1000 gallon dilution would not result in reactor criticality.

Based on our review of this issue, the only potential for a boron dilution occurrence not previously analyzed for St. Lucie Unit 1 would be via the iodine removal system (NaOH system) which is scheduled for installation during the Spring, 1978 refueling outage. However, the system design is such that multiple failures are required in order to establish a flow path into the reactor coolant system. The probability of such an occurrence is remote. Moreover, even if the dilution is assumed to occur, control room alarms and visual indications will preclude a significant reactivity addition. We have therefore concluded that the potential for boron dilution occurrences associated with the NaOH system is appropriately and adequately addressed by system design.

Very truly yours,

Robert E. Uhrig

Robert E. Uhrig
Vice President

REU/MAS/RJA/lah

cc: Mr. James P. O'Reilly, Region II
Robert Lowenstein, Esquire