

*Official*

JUL 11 1986

Docket No. 50-335  
License No. DPR-67  
EA 86-53

Florida Power and Light Company  
ATTN: Mr. C. O. Woody  
Group Vice President  
Nuclear Energy Department,  
P. O. Box 14000  
Juno Beach, FL 33408

Gentlemen:

SUBJECT: NRC INSPECTION REPORT NO. 50-335/86-01

Thank you for your response of May 27, 1986, to our Notice of Violation issued on April 24, 1986, concerning activities conducted at your St. Lucie facility. We have evaluated your response and found that it meets the requirements of 10 CFR 2.201. We will examine the implementation of your corrective actions during future inspections.

After careful review of the bases for your partial denial of the violations, we have concluded, for the reasons presented in the Enclosure to this letter, that the violations occurred as stated in the Notice of Violation. We have also considered your view that the proposed Severity Level is not warranted, but we conclude that the violations were appropriately categorized as a Severity Level III problem. The corrective actions stated in your response are acceptable and no further response is required.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosure will be placed in the NRC's Public Document Room.

We appreciate your cooperation in this matter.

Sincerely,

8608110413 860711  
PDR ADOCK 05000335  
Q PDR

J. Nelson Grace  
Regional Administrator

Enclosure:  
Staff Assessment of Licensee Response

cc w/encl:  
✓ K. N. Harris, Vice President  
St. Lucie Nuclear Plant  
✓ A. Sager, Plant Manager  
✓ J. B. Harper, Site QA Superintendent

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bcc w/encl:  
NRC Resident Inspector  
Document Control Desk  
State of Florida

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## ENCLOSURE

### STAFF ASSESSMENT OF LICENSEE RESPONSE

1. Finding A: Failure to prepare personnel protection procedures for steam generator sludge lancing.

#### Licensee Comment

Health Physics Procedure HP-1, Radiation Work Permits, and Administrative Procedure 3300120, St. Lucie Plant ALARA Program, were the applicable procedures that were used for the sludge lancing of the steam generators. These procedures were reviewed by the Facility Review Group and approved by the Plant Manager. The informal internal memoranda were used in addition to and not in lieu of approved procedures.

#### NRC Response

The radiation protection instructions contained in your internal memoranda were of the type expected to be found in approved procedures in that they specified significant exposure control measures. For example, one memorandum was the only document describing the use of steam generator "jump sheets," which were the primary means used by you to administratively control worker exposures during this work. Another memorandum specified dosimetry requirements for personnel entering steam generators. Your ALARA and radiation work permit procedures did not contain the level of specific guidance found in the internal memoranda. We do not consider procedures which provide significant radiation protection instructions as program enhancements, but rather view them as necessary and required components of the licensee's radiation protection program. Since you did not have such procedures, relying instead on these internal memoranda, the position taken in the Notice of Violation was appropriate.

2. Finding B.1: Failure to perform adequate exposure evaluations during steam generator work in that worker assigned pocket dosimeters were not checked periodically.

#### Licensee Comment

The practice of using stay time to control the exposure of workers is standard Health Physics practice of long standing. Previous entries in the hand hole showed good agreement between the pocket dosimeter doses recorded and the pocket dosimeter doses expected by use of the stay time. While a strong argument can be made for reading pocket dosimeters on a more frequent basis, and FPL agrees with this argument, FPL also strongly believes that effective exposure control can be and has been accomplished through the use of established stay times.



NRC Response

It is also standard health physics practice to frequently check pocket dosimeters while in high exposure areas to verify that actual exposures are consistent with those expected and to maintain exposures below administrative and regulatory limits. Using stay times as the lone exposure control measure increases the potential for excessive exposures if dose rates change unexpectedly. In the case in question, the use of stay times was clearly not an effective exposure control measure in that the worker's stay time was consistent with that prescribed, yet the worker received a whole body exposure in excess of licensee administrative controls and may have exceeded NRC limits.

3. Finding B.2: Failure to perform evaluations prior to the sludge lancing work to verify that direct reading dosimeters adequately measured individual exposures under the conditions and in the geometry that they were going to be used.

- a. Licensee Comment

We concur with the statement as written, but provide the following comments. It is our opinion that based on industry practice, a reasonable evaluation was performed. This included a determination of both radiation levels and gradients present, and comparisons between pocket dosimeter response and radiation survey instrument response (in the steam generator) prior to performing sludge lancing work. Pocket dosimeter underresponse was not expected due to close agreement between them and radiation survey meter results.

NRC Response

You did not test the dosimeters in the geometry in which they would be worn in the steam generator. The fact that a radiation instrument and pocket dosimeter survey were in agreement is irrelevant since the exposure geometry was not duplicated. The staff believes that the geometry dependence of ion chamber dosimeters should have been considered in this case.

- b. Licensee Comment

By procedure, pocket dosimeters are checked for acceptable response on a semiannual basis. The dosimeters are exposed to known amounts of radiation and the dosimeter response is evaluated against established criteria. Nonconforming dosimeters are removed from service. The pocket dosimeters used in the sludge lancing work had passed the acceptance criteria. The net effect from performing this procedure is to provide Health Physics personnel with reasonable assurance that the exposure recorded by the pocket dosimeter is representative of the exposure actually received by the worker wearing the dosimeter.



NRC Response

The semiannual dosimeter response checks were performed in a geometry different than that associated with this exposure event. A satisfactory response check does not provide assurance that the exposures measured by the dosimeter are representative of actual exposures if there are significant differences between the test and actual exposure geometries.

c. Licensee Comment

This level of detailed analysis is not currently in place in the industry. FPL surveyed several utilities to determine the methods used by the industry for close control when performing sludge lancing. All those utilities contacted, with the exception of one, used stay times as the control measure and had not determined that there was an under response of the pocket dosimeters. The one utility that was the exception used stay times for dose control and had determined that pocket dosimeters significantly under responded during sludge lancing conditions. This information had not been made available to the industry. Upon confirmation of pocket dosimeter under response during sludge lancing, FPL immediately notified the industry of its findings.

NRC Response

The level of control exercised by licensees should be proportional to the potential risk. In this case, a worker may have received a cumulative whole body exposure of approximately 4700 millirem. We would therefore expect that licensee evaluations would be of sufficient detail and scope to preclude such exposures. The level of evaluations may also not be the same for all licensees due to differences in dose levels in their steam generators and the proximity of administrative allowable exposure levels to regulatory limits.

