UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 818
ATLANTA, GEORGIA 30303

SEP 13 1976

In Reply Refer To:
IE:II:NCM
IE Circular 76-03
50-269
50-270
50-287

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President of Steam Production
422 South Church Street
P. O. Box 2178
Charlotte, North Carolina 28242

Gentlemen:

The enclosed Circular 76-03 is forwarded to you for action. The same document is being transmitted to each applicant for, or holder of a Construction Permit for information. Therefore, if you have a nuclear power plant in the construction stage, you will also receive a copy of Circular 76-03 which will not require a separate response.

Very truly yours,

Norman C. Moseley
Director

Enclosure:
IE Circular 76-03

NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D. C. 20555

IE Circular No. 76 - 03
DATE: September 13, 1976

RADIATION EXPOSURES IN REACTOR CAVITIES

DESCRIPTION OF CIRCUMSTANCES:

On March 18, 1976, an employee at the Zion station received a "whole body" radiation dose of 8 rems or more upon entering the cavity beneath the reactor vessel during a refueling outage. On April 5, 1976, a similar reactor cavity entry at Indian Point resulted in a 10-rem whole body dose to a licensee employee. A similar entry on October 5, 1972 caused a 5-rem dose to a Point Beach employee.

These three overexposures appear to have been caused by failure to appropriately control entry into high radiation areas, failure to conduct adequate surveys and failure to compensate for exposure rate variations that can occur in various areas in power reactors, e.g., the cavity beneath the reactor vessel. With the incore thimbles and detectors inserted into the core, radiation levels in the cavity appear to be low. With the thimbles or detectors withdrawn into the cavity, however, exposure rates of hundreds or possibly thousands of roentgens per hour can exist. Overexposures can occur in seconds.

All three overexposure events involved entry into potentially high radiation areas without surveys and/or special controls over equipment which could cause transients in the exposure rate.

ACTION TO BE TAKEN BY LICENSEES:

While the three exposures above occurred at pressurized water reactors, similar situations could develop at other types of reactors, e.g., pneumatic irradiation equipment areas (research reactors) and traveling incore probe equipment areas (boiling water reactors). Accordingly, holders of power, test and research reactor operating licenses are to complete the following:

1. Perform a thorough review of plant areas and operations to identify high radiation areas, both continuous and transient, as defined in 10 CFR 20.202(b)

2. Verify that entryways into high radiation areas are conspicuously posted and locked or otherwise controlled in such a manner as to explicitly identify the nature of the hazard, appropriately control entry, and require [illegible]ate pre-entry surveys,

3. Ensure that radiation protection procedures and radiation protection training and retraining programs specifically address the matter of control of and access to such areas and initiate appropriate retraining of all plant personnel,

4. Ensure that the procedures governing personnel entry into all actual or potential high radiation areas permit such entry only after appropriate management review and approval so that conditions within the area are known and not subject to change while the area is occupied,

5. Periodically audit whatever controls result from item 1-4, above, to ensure their continued effectiveness, and

6. A reply in writing should be submitted within 60 days that the actions for items 1-4 above, have been or are being taken should be submitted directly to the Director, of the NRC Regional Office and a copy should be forwarded to the NRC, Office of Inspection and Enforcement, Division of Reactor Inspection Programs, Washington, D. C. 20555. A record, detailing findings, actions taken, and actions to be taken should be retained for review by NRC during the next radiological safety inspection.

This request for information was approved by GAO under a blanket clearance number B-180225 (R0072); this clearance expires July 31, 1977.