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DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Responds to 850812 concerns re SPDS per NUREG-0737,Item II.F.2.Narrow-range water level indications available to diagnose tube rupture in steam generator.

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September 26, 1985
AEP:NRC:0531K

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
ADDITIONAL INFORMATION CONCERNING VARIABLES
DISPLAYED BY THE SAFETY PARAMETER DISPLAY SYSTEM

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

This letter responds to your staff's concerns expressed in your letter dated August 12, 1985 on the Donald C. Cook Nuclear Plant Safety Parameter Display System. Each item and its associated response is listed below.

1. It is not clear that reactor coolant subcooling is displayed as a discrete variable. If a discrete subcooling monitor is provided for D.C. Cook in compliance with NUREG-0737, Item II.F.2, it should be considered for display in the SPDS.

   Response

   The earlier submittals on the D. C. Cook Nuclear Plant SPDS did not specifically point out all of the features relating to the reactor coolant system (RCS) subcooling. There is a subcooling monitor located in the control room; however, there is no signal from the subcooling monitor to serve as a discrete input to the SPDS display. It should be noted that the subcooling monitor was installed in accordance with NUREG-0578 requirements, not those of NUREG-0737, Item II.F.2. However, the SPDS does display subcooling as a discrete variable on the Top-Level Wide-Range Iconic Display and on the Second-Level Plant System Status Display. The subcooling margin displayed is calculated by the SPDS computer using the maximum core exit temperature and the RCS saturation temperature which is calculated from the RCS wide-range pressure. The D. C. Cook SPDS was purchased and installation initiated in order to fulfill the requirements of the initial TMI Action Plan. This subcooling margin display, we believe, is in compliance with this plan.

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2. It is not clear that a "containment isolation" assessment is provided in the display system. Although valve position is provided for many "major valves," it is not clear that these constitute the set comprising "containment isolation," and it is not apparent that containment isolation is displayed as a discrete variable.

Response

Symptoms indicative of situations in which containment isolation may be beneficial are used to verify or initiate the containment isolation function. For this reason, we believe continual monitoring of the containment isolation function by presentation on the SPDS is not necessary. Upon entering the emergency procedures, for example, following a safety injection signal, containment isolation is verified by the operating staff.

Containment isolation was not included in the D. C. Cook SPDS because the initial TMI Action Plan required only that: (1) containment isolation be verified by the operating staff very shortly after the post-accident response begins; and (2) the emergency procedures be written to protect the fission product barriers, thereby minimizing any radioactivity release.

Transients resulting in the potential for increase of radioactivity above the normal Technical Specification allowable limit will result in a safety injection signal. Phase A isolation occurs automatically on a safety injection signal. Shortly after the operating staff implements the emergency operating procedure, 01-OHP-4023-E-0, "Reactor Trip or Safety Injection," Phase A isolation is verified. If isolation has not occurred, it is performed manually. Similarly, if the high containment pressure Phase B isolation setpoint is exceeded, isolation occurs automatically and is verified by the operator. Again, it will be performed manually if it has not occurred automatically.

The emergency operating procedures, including the critical safety function status trees, are written and prioritized on the basis of protecting the integrity of the fission product barriers.

Containment isolation, and similarly containment ventilation isolation, which are part of the third fission product barrier, are verified to have occurred with use of the symptom-based "containment" status trees and related procedures. Specifically, high containment pressure is indicative of an accident leading to the potential for release of radioactivity. Therefore, in the containment integrity function restoration guideline addressing high containment pressure, containment Phase A isolation is verified and manually performed if necessary. Likewise, for indications of high radioactivity in the containment environment, the appropriate function restoration guideline ensures that the

containment ventilation system is isolated and that the appropriate parties are notified to obtain additional recommendations on operator actions.

3. Apparently IMEC does not have instrumentation to monitor steam generator (steamline) radiation for an isolated steam generator. The control room operator will not be able to make a rapid assessment of radioactivity control when the steam generators and/or its steamlines are isolated.

Response

The principal use of steam generator or steamline radiation is for the diagnosis and control of radiation following a steam generator tube rupture. Without a tube rupture the secondary system radioactivity is expected to be well within the limits specified in the D. C. Cook Technical Specifications. To diagnose a tube rupture in a particular steam generator, narrow-range water level indications are available in each steam generator to detect an uncontrolled level increase. If the level is uncontrollable, a tube rupture has occurred. Appropriate actions are then taken to isolate this steam generator and minimize any primary-to-secondary leakage through the break.

These actions, specified in emergency operating procedure 01-OHP-4023-E-3, "Steam Generator Tube Rupture," and related procedures, are intended to minimize and terminate primary-to-secondary leakage. In following these, concerns such as steam generator overfill and the concurrent transfer of contaminated primary water are optimally addressed. Control of radioactivity is an inherent requirement in the tube rupture-related procedures. We believe providing a specific radiation monitor for each loop is, therefore, not essential for the operating staff to control radioactivity and would not provide any information (in addition to steam generator water level) that results in different operator actions or better control of radioactivity.

As stated above, it is our belief that the addition of loop-dependent secondary system radiation indicators in the SPDS design would not provide the operating staff with information to modify their actions and better control radioactivity. For this reason, it has not been included in the SPDS.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

M. P. Alexich
Vice President

RBK
9/26/85

cm

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