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SCHOOL OF ENGINEERING AND APPLIED SCIENCE
LOS ANGELES, CALIFORNIA 90024

January 11, 1980

Mr. Robert W. Reid, Chief
Operating Reactors Branch #4/NRR
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket No: 50-142
License R-71

Dear Mr. Reid:

This letter is to supplement our letter of 26 December 1979 that reported an abnormal occurrence. That preliminary report by the staff has now been reviewed by our Radiation Use Committee. The attached "Minutes" of the review meeting indicate that the preliminary report was accepted by the Committee as accurate, but incomplete in regard to recommendations and actions to be taken to preclude a recurrence. The "Minutes" contain both actions and recommendations that are to correct the deficiency of the preliminary report.

Sincerely,

R.R. O'Neill, Dean
School of Engineering and
Applied Science

Reviewed and Approved by

W. Wegst, Director
Research and Occupational Safety

RRO/NCO/j

cc: I. Catton, Director, NEL
T. Collins, Assistant Dean, SEAS
J. Evraets, RSO
J.W. Hobson, Vice Chancellor
R.H. Engelken, Director, USNRC Region V

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MINUTES
RADIATION USE COMMITTEE
9 JANUARY, 1980

Members Present:
I. Catton
J. Hornor
g. Pomraning
A. Zane

Guests:
N. Ostrander
W. Wegst

Members Absent:
V. Dhir

Professor Catton called the meeting to order and stated that the sole purpose of the meeting is to critique and amend a staff report of an abnormal occurrence. The event occurred on 12/19/79, and the staff provided a preliminary report to the Nuclear Regulatory Commission by a letter dated 12/26/79. That letter stipulated a more complete report, including a review by the Radiation Use Committee, on or before, January 15, 1980.

G. Pomraning noted that there were several typographical errors in the preliminary report. The Committee accepted the preliminary analysis of the event. I. Catton summarized the cause as arising from three contributory factors: (1) operator error, (2) training inadequacy, and (3) control circuit deficiency. The contributing factors were acknowledged without attempt to order or weight the significance of each. It was noted that the operator error is irretrievable, and that attention should focus upon training and instrumentation review.

The Committee agreed to changing the name of the linear recorder to "Power Recorder-Controller". Monthly meetings of reactor operators were recommended, with the suggestion that such meetings review any procedural changes, and that brief quizzes be given to appriase operators of appropriate responses to hypothetical situations. The Reactor Supervisor was instructed to examine the possibility of using such meetings as a means of accomplishing the operator requalification program.

The Committee recommended the installation of an interlock between the instrument power switch and the scram circuit to force scram if power is removed from the controller. A. Zane, as Reactor Supervisor was instructed to determine an appropriate method of implementing this interlock.

The Committee questioned whether other instrumentation could similarly cause an uncontrolled change in reactivity.

Dr. Wegst asked about the period meter and its inter-ties with the scram and inhibit circuitry. A. Zane responded that the period meter would demand "inhibit" if the period fell below 6 seconds and "scram" at 3 seconds. He also remarked that "inhibit" would drop out the automatic power level controller. Dr. Wegst questioned the logic of this coupling. He offered a scenario in which a rabbit of sufficient negative reactivity could be fired out of the reactor and thereby initiate "inhibit". The auto-controller would drop-out, and the reactor restored to "manual" with excess positive reactivity.

Mr. Hornor noted that a rod limit switch could also initiate inhibit, and that the real question was whether an operator would perceive the auto-controller drop-out. Although there are visual indications (auto versus manual lights, and a period-inhibit light), an operator could be engaged in normal duties such as log entries or chart marking, and fail to see the indications.

Dr. Catton suggested adding an audible signal and a timer that would initiate scram if the operator failed to acknowledge within a specified time interval.

Dr. Wegst reiterated his feeling that automatic drop-out of the controller is not the best logical response to "inhibit", and suggested that a more favorable response might be a slow, controlled down-drive of the reg rod. By implication, this might be accomplished by introducing a bias signal on the Wheatstone bridge of the controller until the inhibit condition is cleared.

Mr. Ostrander noted that this was a safety-related matter, and that a decision could not be made at the present meeting. Mr. Zane should examine the possibilities and provide a design change that would be submitted to the Committee for approval.

The meeting was adjourned.

A. Zane, Secretary
Radiation Use Committee

Management Summary

Management will implement the recommendations of the Radiation Use Committee by the following actions:

1. A. Zane is instructed to initiate monthly meetings of reactor operators, and is to determine the feasibility of combining these meetings with the operator requalification program.

2. A. Zane will submit within 30 days, a plan for interlocking the recorder-controller power switch with the scram circuitry.

3. A. Zane is to examine the possibility of revising the inhibit circuitry to effect down-drive of the reg rod with a concurrent audible signal. A progress report within 30 days is requested.

N.C. Ostrander, Manager
Nuclear Energy Laboratory