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R. S. Boyd, Assistant Director for BWR's, DRL(2)

COMMONWEALTH EDISON COMPANY (DRESDEN 2) - PARTIAL SCRAM DURING SURVEILLANCE TESTING OF THE MAIN STEAM LINE RADIATION MONITORS

The enclosed Inquiry Report from our Region III (Chicago) Office is forwarded for information. The report describes an occurrence in which only one-half of the total number of control rods scrammed, but failed to insert fully. The scram was initiated by a momentary trip signal for one trip system and rod motion was stopped by the operator who was resetting a one-half scram condition on the other trip system that had occurred during surveillance testing of the main steam line radiation monitors.

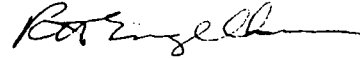
The possibility of control rods not scramming to completion was previously identified during Niagara Mohawk Power Company's review of an earlier occurrence at Nine Mile Point. (Reference CO Inquiry Memorandum 220/69-E dated 11/12/69, and Niagara Mohawk's report to DRL dated 11/18/69). As a result of this occurrence at Nine Mile Point, the General Electric Company provided a design change which incorporated a 10-second time delay to prevent manual resetting of the trip systems until the control rods were fully inserted. This design change was made at all GE-BWR reactors. This recent occurrence at Dresden 2 indicates that the design modification made by GE does not completely eliminate the possibility of stopping rod motion once scram action is initiated.

We do not consider this problem to be of immediate safety concern because the occurrence of this problem requires the existence of the following conditions: 1) a momentary trip signal on one trip system which clears before the rods are full inserted, 2) a one-half scram condition to be present on the other trip system with the capability of being reset, and 3) operator reset of the trip systems during the time interval between the initiation of the momentary trip signal and full rod insertion. We do, however, have a fundamental problem with scram circuitry that permits incomplete rod insertions once a scram is initiated. This matter is being

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reviewed further by our Technical Support Branch and we may have additional comments on this subject in the near future.



R. H. Engelken, Assistant Director  
for Inspection and Enforcement  
Division of Compliance

Enclosure:

CO Inquiry Report No. 71-0

cc: E. G. Case, DRS(3)  
R. C. DeYoung, DRL(2)  
D. J. Skovholt, DRL(3)  
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A. Giambusso, CO, w/o enclosure  
L. Kornblith, Jr., CO, w/o enclosure  
V. Moore, DRS  
Regional Directors, CO  
~~REG Files~~

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U. S. ATOMIC ENERGY COMMISSION  
DIVISION OF COMPLIANCE

REGION III

CO Inquiry Report No. 71-0

Prepared By: \_\_\_\_\_

*B. Maura*  
F. Maura

*7/23/71*  
/(Date)

Subject: Commonwealth Edison Company  
Docket No. 050-0237  
License No. DPR-19  
Dresden Unit 2  
Reactor Scram During Surveillance Test of the Main  
Steam Line Radiation Monitors

A. DATE AND MANNER AEC WAS INFORMED

Telecon from Mr. Worden (Assistant Superintendent) to F. Maura  
at 4:30 p.m. on July 20, 1971.

B. DESCRIPTION OF PARTICULAR EVENT OR CIRCUMSTANCE

The licensee was performing the weekly scram functional surveillance test on the main steam line radiation monitors. As a result of the test a half scram condition existed in safety channel B. The radiation monitor high radiation signal had been reset and the control room operator was in the process of resetting safety channel B half scram condition. To accomplish this a three position switch in the control room must be turned to the "2-3" position and then to the "1-4" position. The center position in the switch is neutral. The operator had turned the switch to the "2-3" position and was in the neutral position getting ready to turn to "1-4" when a spurious signal from another radiation monitor tripped the "A" safety channel.

Half of the control rods started to scram. At this time the operator completed resetting the safety channel by turning the switch to the "1-4" position. His action stopped the rod motion (rods went in approximately six notches).

The cascading events which followed resulted in an eventual scram of the reactor:

1. The reactor power decreased due to the partial rod insertion.
2. The turbine control valves started closing to maintain pressure. The power output was reduced from 406 to 320 Mwe.
3. The indicated reactor water level dropped as a result of the steam void reduction.
4. The reactor water level control called for an increase in feedwater flow.
5. The level overshoot and caused a high level signal which tripped the turbine.
6. The bypass valves open to control pressure, but the steam generation is slightly larger than the bypass valves capacity.
7. A 30 psi pressure spike occurred (930 to 960 psig).
8. Reactor power increased and the APRM's tripped the reactor. The recirculation flow was 60% throughout the incident.

C. ACTION BY LICENSEE

The licensee placed a hold on further operations until a review could be performed to determine if all the systems operated as required and no design deficiency existed. The Station Review Board and the Nuclear Review Board met, followed the event step-by-step using drawing 12E-2464 through 2467 and discussed the incident with GE personnel. Both boards reached the conclusion that the event had no safety significance.

Mr. Worden stated that CE discussed the matter with DRL and has agreed to report the subject on a matter of special interest. They expect to submit the report in approximately two weeks.