Info - file BTWS

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FAX TO: J. JOHNSON
FROM: R. GALLO
1/24/84
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JAN - 5 1984

MEMORANDUM FOR: Ed Butcher, Section Leader
Operating Reactors Assessment Branch

FROM: J. T. Beard
Operating Reactors Assessment Branch

SUBJECT: ATWS RECIRCULATION PUMP TRIP BREAKERS

On January 3, 1983 I received a telephone call from Mr. Max Fornwalt of General Electric Company, Plainville, Conn. The primary purpose of the call was to discuss reported failures of the shunt trip devices in GE "breaker" type AK-F-2-25 (which were reported to be similar to the AK-2-25 type) which had occurred at the Pilgrim station. During the discussion, however, Mr. Fornwalt stated that GE-Plainville would recommend against using the AK-F-2-25 in any nuclear safety related (i.e. Class 1E) application.

At Pilgrim, GE type AK-F-2-25 devices are used to interrupt the field excitation current of the motor-generator sets which drive the recirculation flow pumps. While the AK-F-2-25 may resemble the AK-2-25, the two devices are significantly different internally. The AK-F-2-25 is a "field switch" and not a true circuit breaker, in that overcurrent protection is not a feature. The AK-F-2-25 has two poles that interrupt the d.c. field excitation current and a center pole that connects a resistor that dissipates the stored energy in the field when the excitation is removed. The center pole of the AK-F-2-25 is operated by a special cam arrangement intended to connect the field cam resistor slightly before the main dc poles open. Mr. Fornwalt indicated that the cam arrangement has a poor mechanical advantage (i.e. less than unity).

In the Pilgrim failures (April 1983), the shunt trip device did satisfactorily complete its function, in that it rotated the trip shaft and thereby started the trip action, according to Mr. Fornwalt. However, the cam arrangement failed to complete its intended action, and hence, the trip action was interrupted. Accordingly, GE contends that the shunt trip device did not fail and that they remain unaware of any shunt trip failures. I indicated that this description of the failure mechanism may not fully agree with information from the Region I, and the NRC resident inspector at Pilgrim, and specifically Inspection Report 50-293/83-09, dated June 6, 1983.

In discussing the AK-F-2-25 more generally, Mr. Fornwalt stated that, specifically because of the poor cam arrangement, GE stopped the manufacture of this design several years ago. He indicated that he had initiated action in April 1983 (through GE) to advise end-users of this device that it should not be considered for Class 1E applications. I explained that the application of this device at Pilgrim is now for ATWS protection and therefore has become nuclear safety related (or Class 1E). Mr. Fornwalt stated rather emphatially that the AK-F-2-25 should not be used for safety-related applications and therefore should be replaced at Pilgrim. There is some uncertainty regarding this systems application that needs to be resolved before any further action is taken.

new Rule does not classify this as safety related.

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1.) H. Kister [illegible]
2.) Tom Fr[illegible]/A. Luptak[illegible]
3.) N. Holden

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Based upon this information, I recommend the following ORAB actions:

1. Call a meeting with GE & Boston Edison (and support design organizations) to determine if there actually is a misapplication of the AK-F-2-25 device in this system (i.e. eliminate misunderstandings and define the problem, if it exists). The Resident Inspector should also attend.

2. If a problem is defined, treat it as a 10 CFR 21 determination/notification at that time and, as such, turn it over to IE for action.

RGN-I [signature] for

J. T. Beard
Operating Reactors Assessment Branch

cc: F. Miraglia
G. Holahan
V. Noonan
F. Rosa
R. Kendall
P. Leech
E. Rossi
J. Zwolinski
E. Greenman
P. Swetland
H. Eichenholz