CENTRAL FILES

SEP 7 1978

50-289

MEMORANDUM FOR: K. Goller, Assistant Director, Operating Reactors DOR

FROM: D. Eisenhut, Assistant Director, Operational Technology DOR

SUBJECT: PREMATURE EMPTYING OF SODIUM HYDROXIDE AND SODIUM THIOSULFATE TANKS

REFERENCE: TAR No. ORB-4-73 Three Mile Island - Unit 1 (50-289)

The Reactor Safety Branch has reviewed the subject matter to determine the effect of premature emptying of the Sodium Hydroxide and Sodium Thiosulfate tanks on ECCS performance. In the event that these tanks would empty prematurely (while the Residual Heat Removal (RHR) and Reactor Building Spray (RBS) pumps are still drawing borated water from the RWST) air could be drawn through the empty tanks thereby compromising the ECCS performance.

The purpose of Sodium Hydroxide and Sodium Thiosulfate tanks is to inject the additives needed for maintaining pH and for helping to remove iodine from the reactor containment during a post accident condition. The tanks are connected to the pipeline between the suction side of the RHR and RBS pumps and the RWST. They inject the additives into the borated water drawn from the RWST.

Recent analysis, performed by Babcock and Wilcox, indicated that, under certain circumstances, the content of the additive tanks can be depleted before the suction of the RHR and RBS pumps is switched to the containment sump. In this case, pure borated water will be introduced into the RBS and ECC systems and air will be drawn through the empty tanks, if negative heads exist at the injection points in the main pipeline.

The staff has performed an analysis of the problem and found that, for the maximum possible flow rates (assuming runout of both RHR and RBS pumps) pressure heads at all injection points remain positive.

Contact:
KParczewski, DOR
X28050

This indicates that, for all the anticipated operating conditions of the ECC system, the performance of the RHR and RBS pumps will not be affected by the premature emptying of the Sodium Hydroxide and the Sodium Thiosulfate tanks and the performance of the ECC system will remain unchanged.

Original signed by
Darrell G. Eisenhut

Darrell G. Eisenhut, Assistant Director
for Operational Technology
Division of Operating Reactors

cc: V. Stello
R. Baer
C. Berlinger
F. Coffman
S. Weiss
R. Reid
C. Nelson
K. Parczewski

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