



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

DEC 3 1979

MEMORANDUM FOR: R. Reid, Chief
Operating Reactors Branch No. 4, DOR

A. Schwencer, Chief
Operating Reactors Branch No. 1, DOR

FROM: P. R. Matthews, Section Leader
Systems Group
B&O Task Force

SUBJECT: AUXILIARY FEEDWATER PUMP ENDURANCE TEST

In our letters on AFW System Requirements to all CE and Westinghouse operating plants, Additional Short Term Recommendation #2 recommended a 72-hour endurance test for all AFW pumps. Since that recommendation we have reviewed some partial test results from some B&W plants and consulted with H. Ripple of Franklin Institute regarding the necessity of a 72-hour test since the 72 hour testing could result in conflicts with existing Technical Specification limit for outage of one AFW train.

The test results we reviewed showed that the bearing temperatures reached an equilibrium within 10 hours following the pump reaching rated speed. We, therefore, are relaxing the 72-hour test to 48 hours. The enclosed ✓ revision to our earlier recommendation includes further criteria to ensure the 48-hour test is adequate. Please notify the Westinghouse and CE licensees that the enclosed revision should be followed rather than our original recommendation.

A handwritten signature in cursive script that reads "P. R. Matthews".

P. R. Matthews, Section Leader
Systems Group
Bulltins & Orders Task Force

Enclosure: As stated

cc: D. Ross
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Revision to Recommendation No. 2 of "Additional Short Term Recommendations" Regarding Auxiliary Feedwater Pump Endurance Test

The licensee should perform an endurance test on all AFW system pumps. The test should continue for at least 48 hours after achieving the following test conditions:

- Pump/driver operating at rated speed
- and
- Pump developing rated discharge pressure and flow or some higher pressure at a reduced flow but not exceeding the pump vendor's maximum permitted discharge pressure value for a 48-hour test
- For turbine drivers, steam temperature should be as close to normal operating steam temperature as practicable but in no case should the temperature be less than 400°F.

Following the 48-hour pump run, the pumps should be shut down and allowed to cool down until pump temperatures reduce to within 20°F of their values at the start of the 48-hour test and at least 8 hours have elapsed.

Following the cool down, the pumps should be restarted and run for one hour. Test acceptance criteria should include demonstrating that the pumps remain within design limits with respect to bearing/bearing oil temperatures and vibration and that ambient pump room conditions (temperature, humidity) do not exceed environmental qualification limits for safety-related equipment in the room.

The licensee should provide a summary of the conditions and results of the tests. The summary should include the following: 1) A brief description of the test method (including flow schematic diagram) and how the test

was instrumented (i.e., where and how bearing temperatures were measured).

2) A discussion of how the test conditions (pump flow, head, speed and steam temperature) compare to design operating conditions. 3) Plots of bearing/bearing oil temperature vs. time for each bearing of each AFW pump/driver demonstrating that temperature design limits were not exceeded. 4) A plot of pump room ambient temperature and humidity vs. time demonstrating that the pump room ambient conditions do not exceed environmental qualification limits for safety-related equipment in the room. 5) A statement confirming that the pump vibration did not exceed allowable limits during tests.