

YANKEE ATOMIC ELECTRIC COMPANY



20 Turnpike Road Westborough, Massachusetts 01581

B.3.2.1

WYR 80-75

July 3, 1980

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Reference: (a) License No. DPP-3 (Docket No. 50-29)
(b) USNRC Letter to YAEC dated November 9, 1979
(c) USNRC Letter to YAEC dated June 16, 1980

Subject: Auxiliary Feedwater Pump Endurance Test

Dear Sir:

As required in Reference (b), we have performed an endurance test of the auxiliary feedwater pump. Throughout the test and subsequent one hour re-run, all parameters remained within normal operating ranges. The specific information requested in the attachment to Reference (c) is provided below:

- (1) Testing was performed in accordance with the specified criteria with the exception of steam temperature. This exception is unique to Yankee and was discussed with and agreed to by the staff prior to the test. During the test, steam temperature at the turbine inlet was as close to the actual operating steam temperature as practicable, however, was less than the 400°F criteria in Reference (b). Steam supplied to the turbine control valve is throttled upstream to 100 psig (see drawing M-24) and results in a maximum achievable temperature during any transient of approximately 360°F (i.e. throttling is a constant enthalpy process). The test was run operating the auxiliary boilers at 125 psig (maximum capacity) to bring the steam temperature to within 20°F of the worst case.

The auxiliary feedwater pump is a turbine driven positive displacement reciprocating pump. The pump was run continuously for a period of 48 hours with the pump in the recirculating mode and taking suction from TK-1 or TK-39 at a discharge pressure of greater than or equal to 950 and less than 1050 psig (see drawing M-14). Design flow was verified by monitoring pump speed using a strobe tachometer. Pump discharge and steam supply pressure were monitored

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using test gauges. Bearing temperatures were monitored using a pyrometer and vibration readings were taken with a hand held instrument. A psychrometer was used to measure humidity and a thermometer installed for temperature.

Bearing temperatures were measured at the following locations:

Turbine

coupling end bearing (#2)
thrust bearing (#1)

Pump

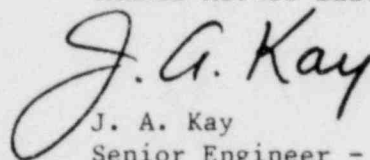
pinion counter shaft gear box bearings (#2 and 4)
eccentric gear shaft gear box bearings (#1 and 3)

- (2) All test conditions measured within acceptable limits. All bearing temperatures measured below the 200°F maximum allowed. Pump gland seal water temperature averaged between 105°F and 110°F, well below the 160°F maximum allowed.
- (3) The attached plots of bearing temperature vs. time demonstrate that the bearing temperature design limits were not exceeded. The low readings indicated at approximately 28 hours into the test were due to a slight amount of anti-seize lubricant on the end of the probe.
- (4) The attached plots of pump room temperature and humidity vs. time show that the pump room ambient conditions remained below excessive limits. Temperatures remained below 100°F and humidity remained below 40%. Ventilation equipment was secured for the duration of the test.
- (5) Pump vibration did not exceed allowable limits during the test. Vibration measured between the allowed range of 1-3 mils.

We trust this information is satisfactory; however, if you have any questions, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

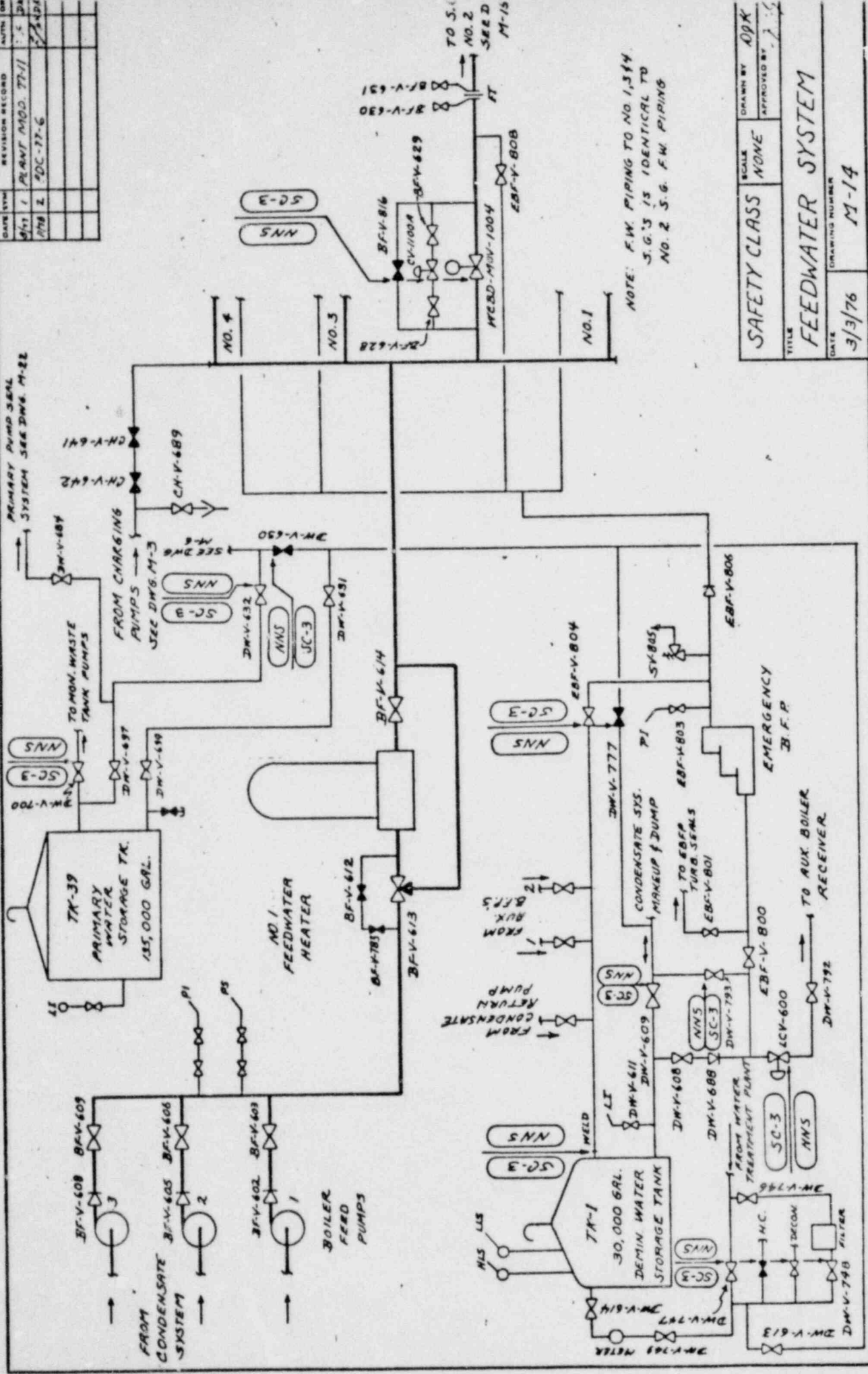

J. A. Kay

Senior Engineer - Licensing

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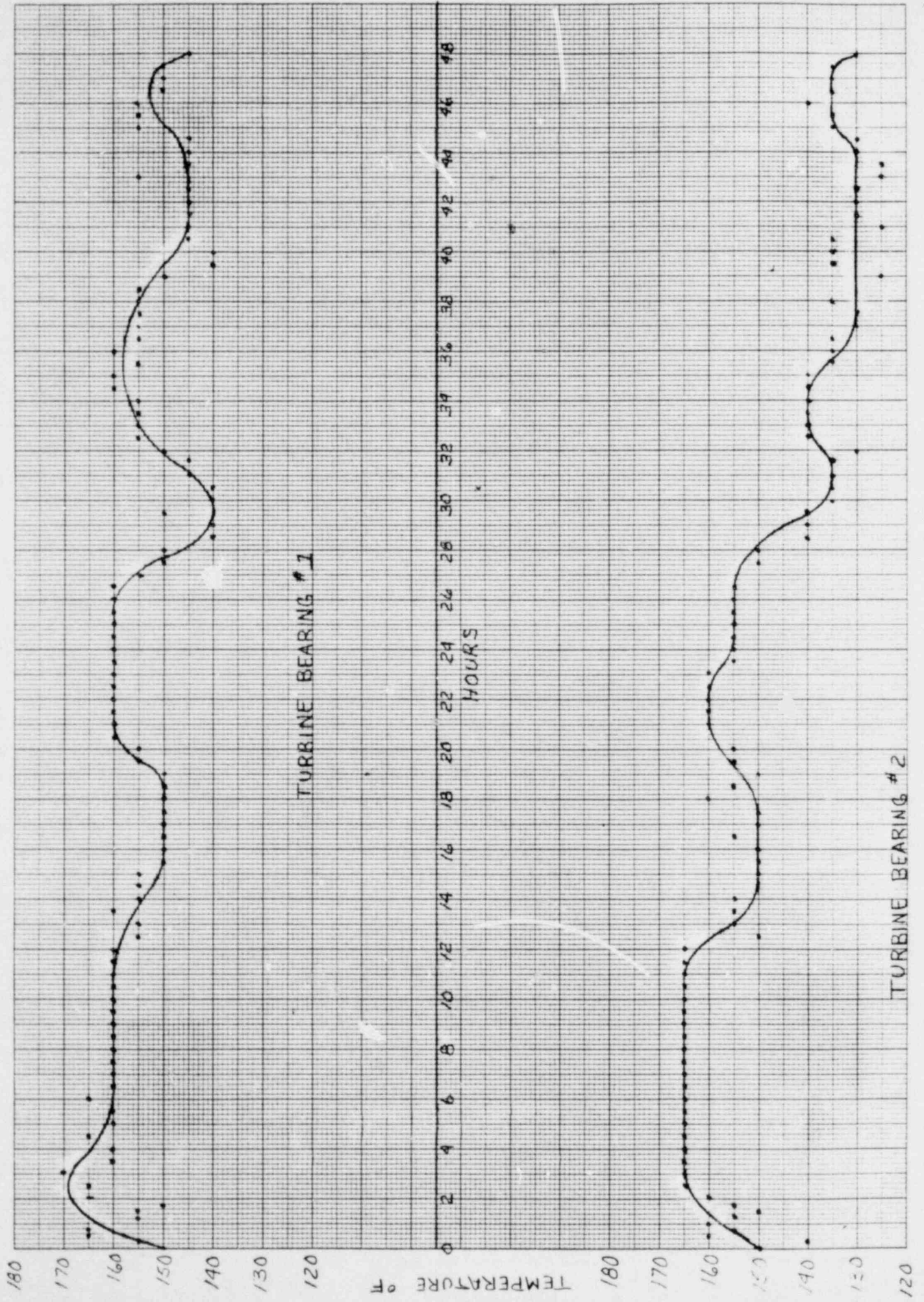
Attachment

DATE	BY	REVISION RECORD	AUTH	DR
9/11	1	PLANT MOD. 77-1		
1/18	2	DOC-77-6		

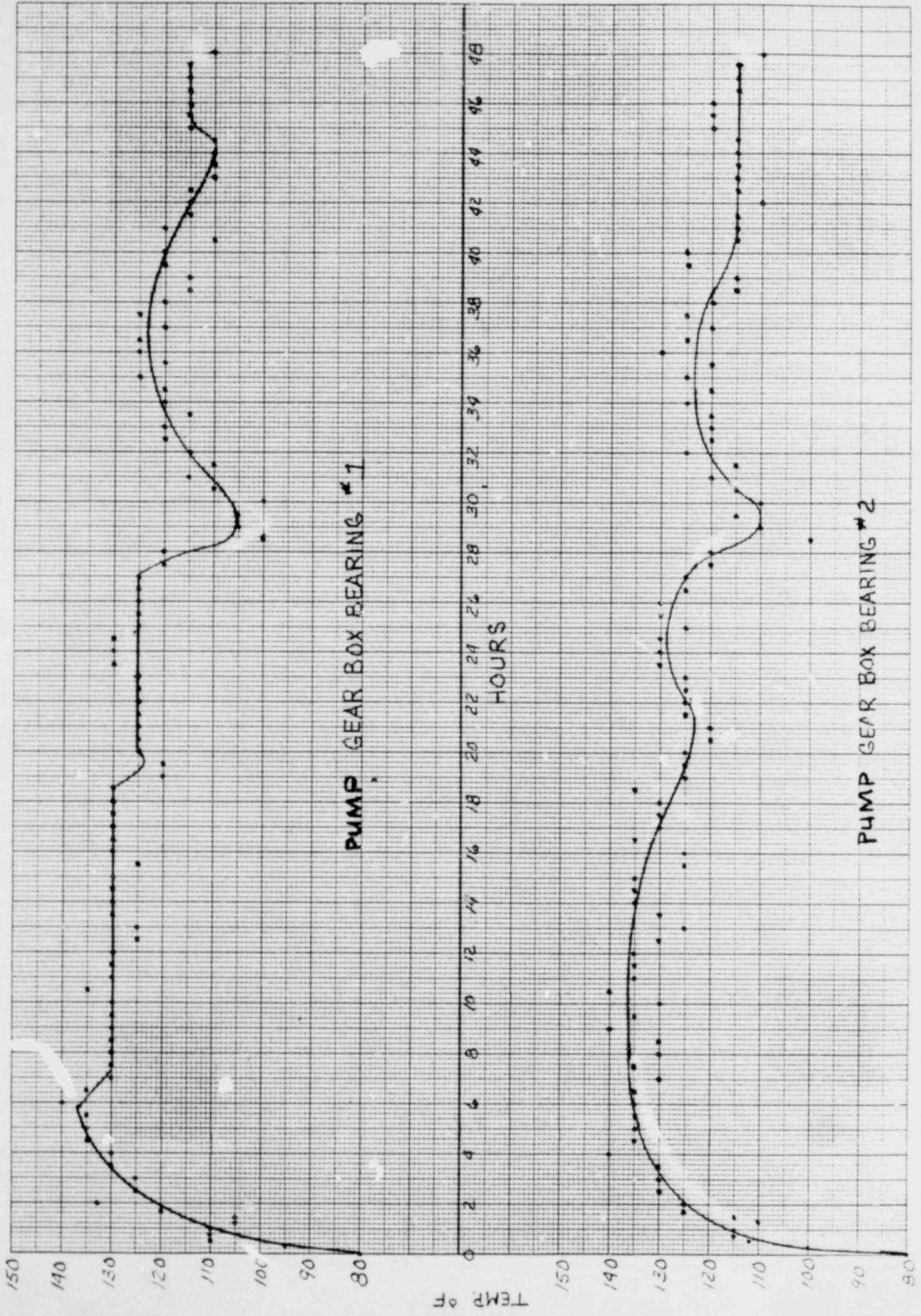


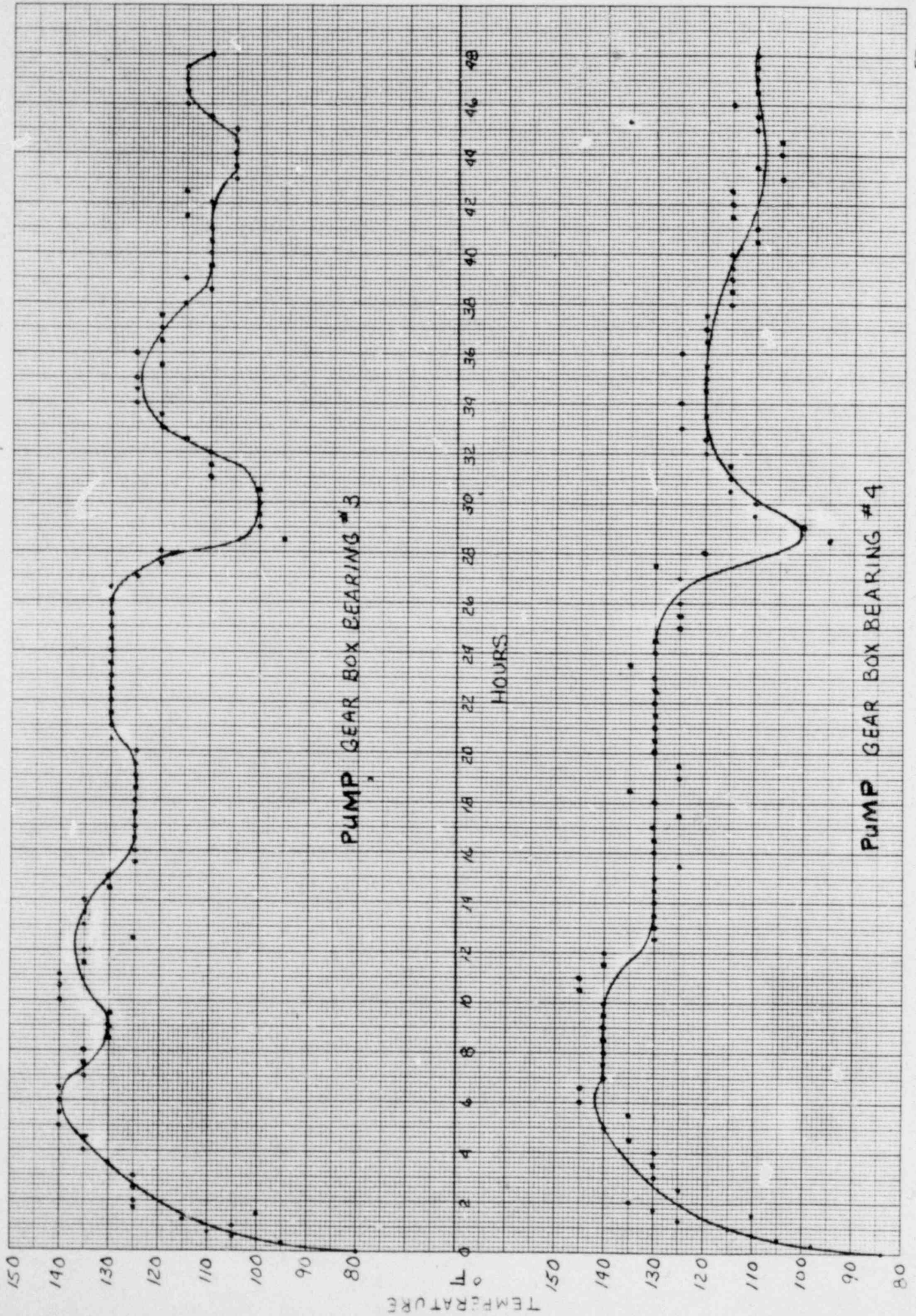
NOTE: F.W. PIPING TO NO. 1, 3 & 4
 S.G.'S IS IDENTICAL TO
 NO. 2 S.G. F.W. PIPING

SCALE	NONE	DRAWN BY	ADK
SAFETY CLASS		APPROVED BY	
TITLE FEEDWATER SYSTEM			
DATE	3/3/76	DRAWING NUMBER	M-14

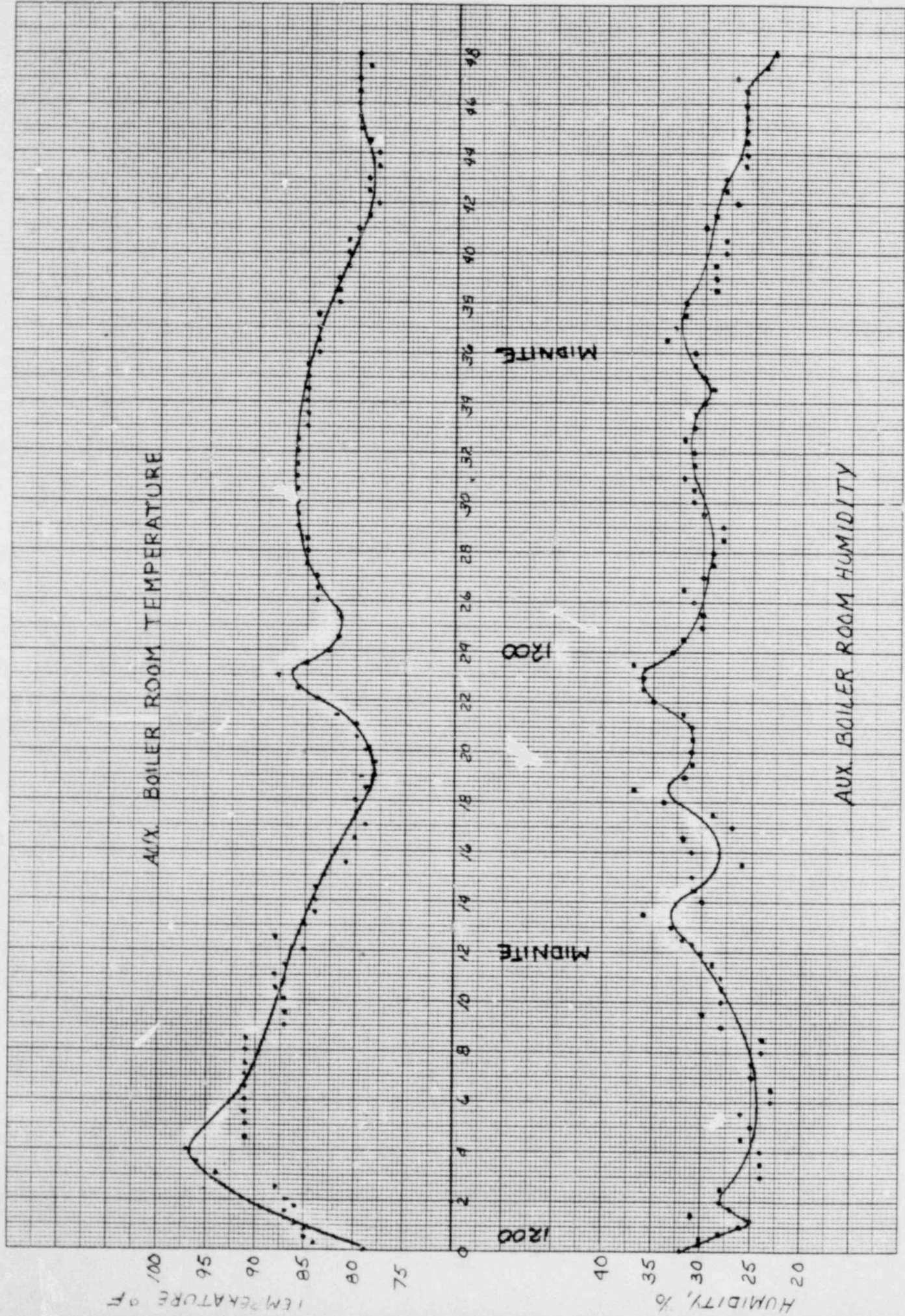


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