

THE BABCOCK & WILCOX COMPANY  
POWER GENERATION GROUP

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To | Engineering Operations Manager

From | J. T. Willse

*Approved for JTW*

THE-79-179

805 441.5

Cust.

File No.  
or Ref.

Subj.

Action Item 143

Date

April 6, 1979

This letter to cover one customer and one subject only.

Reference: C. T. Rombough to Engineering Operations Manager,  
Action Item 143, 4/5/79.

The purpose of this memo is to elaborate on conclusions no. 3 and 4 in the referenced memo. The increase in selected thermocouple readings is no cause for concern. The temperature is still 200°F below saturation temperature. The increased readings are caused by two factors. The first and smallest effect is a 4° increase in the core inlet temperature. The primary cause for the change in thermocouple readings is the change in the flow distribution caused by the shifting debris in the core. This was vividly demonstrated when the A1 pump tripped and the A2 pump was started. I would anticipate that some thermocouples would continue to change for several days until the debris redistributes into a stable configuration reflecting the change of coolant pumps.

Conclusion number 4 is inaccurate since resistance readings will show wide variations from thermocouple to thermocouple and also the readings will depend on whether the chromel or alumel wire resistance is being measured. However, if needed, we can state the following:

A test can be performed to determine whether a gross failure of a thermocouple has occurred. For a good thermocouple the resistance between one T/C lead and ground should be approximately 750 ohms while the other lead to ground should measure approximately 300 ohms to ground.

JTW:mp

cc: F. E. Unit Managers  
J. S. Tulenko *J. S. Tulenko*  
Shift Technical Leader

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THE BABCOCK & WILCOX COMPANY  
POWER GENERATION GROUP

To |  
Engineering Operations Manager

From

C.T. Rombough, Fuel Management & Development

OS 633-5

Cust.

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File No.  
or Ref. ONCP-79-038

Subj.

B&W's View of Increasing  
Incore Thermocouple Readings (Instruction 143)

Date 3:30 p.m.  
April 5, 1979

This letter to cover one customer and one subject only.

As requested in Action Item 143, the increasing thermocouple data has been reviewed by both WPCD and LRC personnel. These personnel have included J.B. Andrews, G.A. Meyer, J.A. Weiner, J.T. Mayer, T.L. Wilson, E.T. Chulick, P.E. Marola, R.A. Copeland, J.W. Ewing, H.D. Warren, and J.G. Brown.

A summary of the pertinent data and their conclusions is attached for D.H. Roy's response to Bill Lowe.

CTR/dlw

*[Handwritten initials]*

*[Handwritten signature: C.T. Rombough]*

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Incore thermocouple data from TMI-2 have been evaluated. As shown below, six of the thirty thermocouples for which we have data have shown a temperature rise of 7 - 33°F over the past 5 days (117 hours) or 1.4 - 6.8°F per day.

<u>Location</u>	<u>T/C at</u> 0845,3/31	<u>T/C at</u> 0542,4/5	<u>Net</u> <u>Increase (°F)</u>	<u>Increase</u> <u>Per Day (°F)</u>
13C	290	297	7	1.4
13F	298	307	9	1.8
13H	310	320	10	2.1
11G	427	445	18	3.7
12F	303	327	24	4.9
11L	302	335	33	6.8

Temperature vs time for locations 13F, 12F, and 11L are shown in the attached figure.

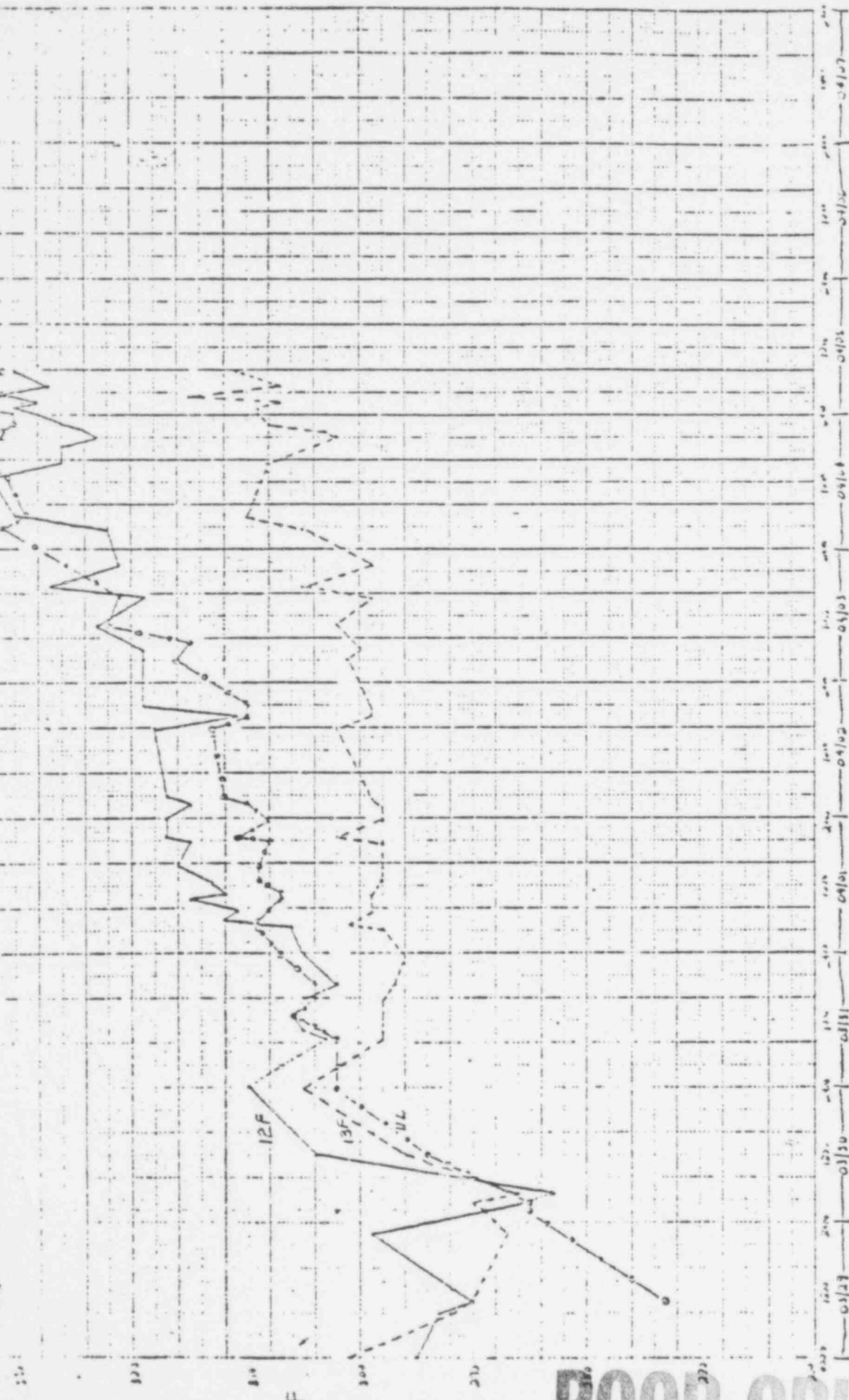
The following conclusions have been reached based on this data.

1. There is no mechanism which has been postulated that would cause decalibration to the extent shown by the data. Therefore, it is concluded that the thermocouple readings are accurate and that true temperatures are being monitored to  $\pm 5^\circ$ .
2. There is nothing in the fuel, structural materials, or fission products which would cause a chemical reaction that would result in the observed rate of temperature rise.
3. As indicated in the attached map of temperature changes for 30 selected locations, the increasing readings are located preferentially in the core (in the center of the right half). This leads to the most probable explanation that a very gradual flow redistribution is occurring; either increased flow blockage in this region or decreased flow blockage in another region causing temperature increases in this region.
4. If Met Ed questions the thermocouple readings, a simple test can be performed. The resistance between the T/C lead and ground should be approximately 750 ohms.

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Location 12P  
Location 13F  
Location 11L



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