



**Wisconsin Electric** POWER COMPANY

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August 18, 1983

Mr. H. R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. NUCLEAR REGULATORY COMMISSION  
Washington, D. C. 20555

Attention: Mr. R. A. Clark, Chief  
Operating Reactors, Branch 3

Gentlemen:

DOCKET NO. 50-301  
CONTROL ROD WEAR  
POINT BEACH NUCLEAR PLANT, UNIT 2

During Unit 2 Refueling 9 a scheduled visual examination of rod cluster control assemblies (RCCA's) revealed a possible crack on one rodlet of one RCCA and more wear than expected on certain rodlets of other RCCA's. The examination was conducted on May 10, 1983 using a periscope to examine the lower half of six out of the 33 Unit 2 RCCA's. This letter is submitted to provide information concerning the details of the control rod wear and vendor recommendations for optimizing use of the control rods.

Westinghouse, the NSSS vendor, was notified and representatives were sent to the site. Westinghouse personnel examined 23 RCCA's and site personnel examined the remaining ten using criteria established by Westinghouse. These examinations were also conducted with the periscope and covered the lower half of the RCCA's.

Based on these examinations and subsequent off-site analysis of photographs, Westinghouse determined that one RCCA (R71) had a clad crack on one rodlet, one RCCA (R52) had cladding wear exceeding allowable limits, and all others had various degrees of acceptable wear.

The clad crack was longitudinal, about two inches long, and near the tip of the rodlet. The cause is believed to be a localized tubing defect having no implications for the other RCCA's.

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The clad wear is postulated to be a combination of two types. One is wear occurring as a result of RCCA stepping and trip insertion. The other is wear occurring as a result of vibratory interaction between rodlets and control rod guide tube cards and sheaths during long periods of steady-state power operation with all the rods essentially out of the core. (See Figures 1 and 2.)

Based on these findings, Westinghouse recommended the following:

- (1) R52 should be replaced prior to Cycle 10 operation.
- (2) R71 should be replaced or repaired prior to Cycle 10 operation.
- (3) R51 and R58 should be located in a shutdown bank away from the reactor vessel outlet nozzles.
- (4) All RCCA's other than those in control bank "D" should be positioned at 225-226 steps instead of the normal fully withdrawn position of 228 steps during full power operation. An RCCA which is withdrawn at or above 225 steps is fully withdrawn from the core and has no reduction in available shutdown margin or effect on plant operation. Bank "D" should be positioned 2-3 steps either above or below the 215 steps it has been positioned at for long periods of time during the past several cycles. This is to change the wear points on the RCCA's.
- (5) Consideration should be given to replacing R51 and R58 during the subsequent Unit 2 refueling shutdown at the end of Cycle 10.
- (6) Additional examinations should be performed on 17 RCCA's during the next Unit 2 refueling shutdown.
- (7) If possible, all remaining RCCA's should be visually examined in detail to obtain more accurate predictions of cladding wear.
- (8) If possible, all Unit 1 RCCA's should be visually examined in detail during that unit's next refueling outage.
- (9) A program for examining RCCA's in both Units 1 and 2 during future refuelings should be established.

Mr. H. R. Denton

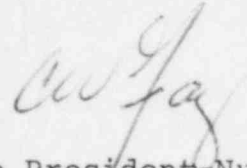
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Point Beach implementation of Westinghouse recommendations (1) through (4) have been implemented for Unit 2. Visual examinations of Unit 1 RCCA's, as recommended in (8), will be conducted during the fall 1983 outage. Wisconsin Electric will report any abnormalities discovered during the Unit 1 examination and subsequent evaluation of those findings. The remaining recommendations are currently being studied.

If you have any questions concerning this matter, please contact us.

Very truly yours,

A handwritten signature in cursive script, appearing to read "C. W. Fay".

Vice President-Nuclear Power

C. W. Fay

Copy to NRC Resident Inspector

Attachments

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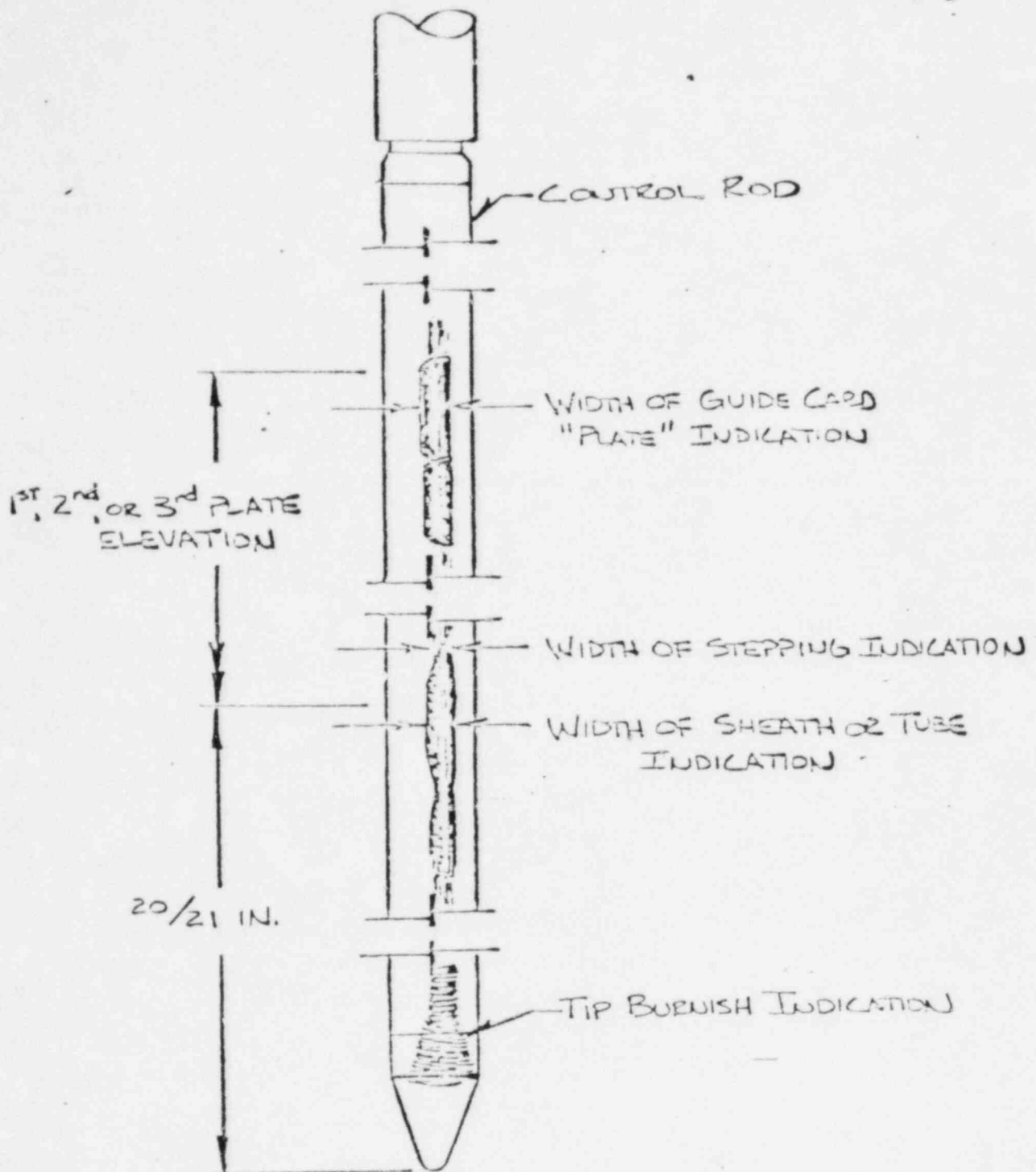


FIGURE 1

"TYPICAL CONTROL ROD WEAR PATTERN"

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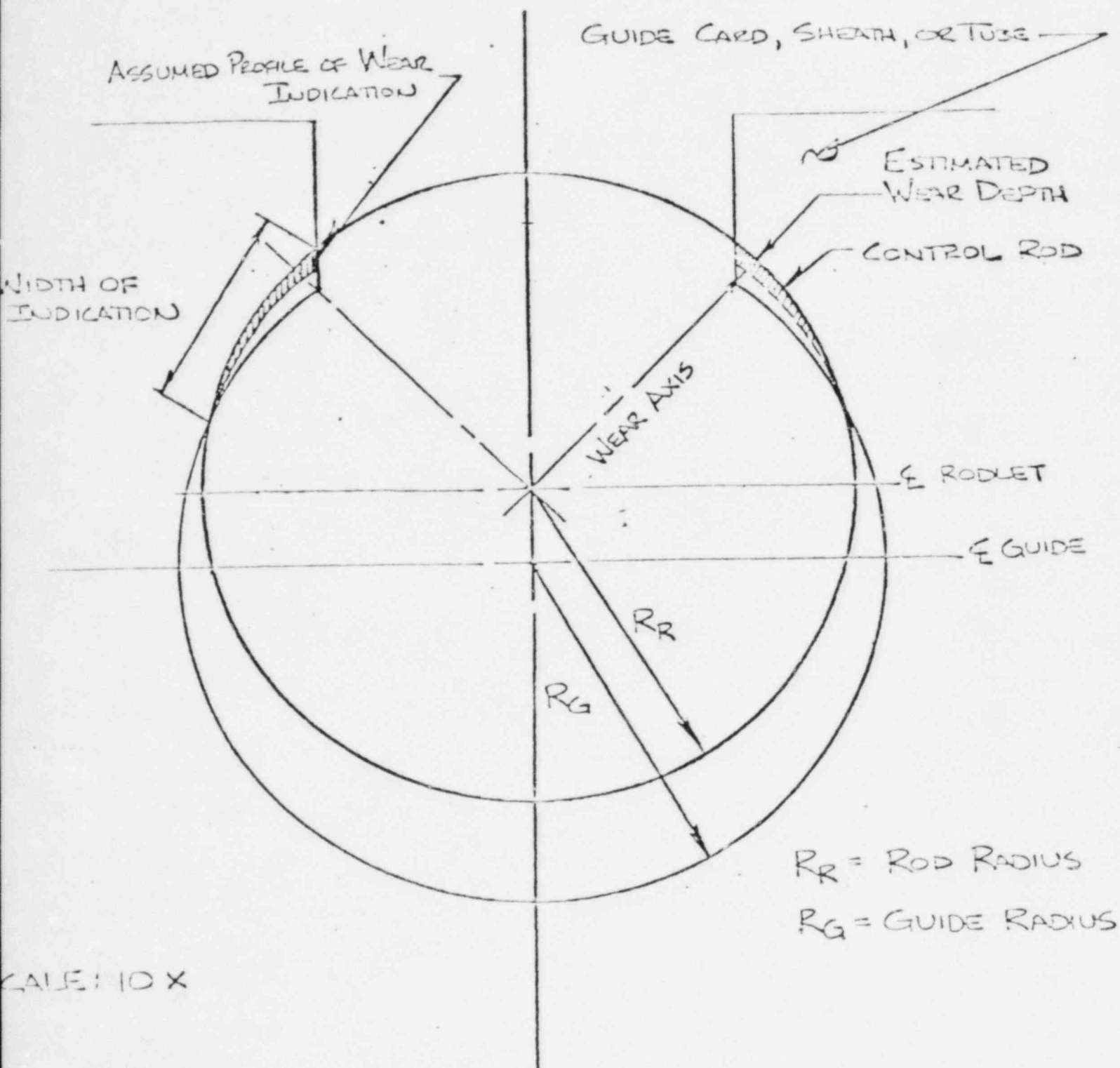


FIGURE 2

"CONTROL RODLET/GUIDE TUBE INTERFACE"