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GENERAL ELECTRIC

HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

DATE

November 16, 1962

TITLE

FRINGE TUBE THICKNESS AND CORROSION RATES -
K REACTORS

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RADIATION PROCESSING DEPARTMENT

November 16, 1962

S. M. Graves, Supervisor
Process Engineering

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FRINGE TUBE THICKNESS AND CORROSION RATES -
K REACTORS

Ref: Young, J.R., 100-K Reactor Fringe Tube Thickness and Corrosion Rates, HW-73953, June 11, 1962, Confidential.

The reference document points out the existence of certain abnormally thin fringe tubes at the K reactors, and suggests that Process Engineering study the previous operating history to determine a possible explanation.

Such a study has been completed and includes the following items:

1. Review of the average temperature of the thin wall tubes and adjacent tubes for the period July, 1960, to present. (It was believed this would cover the period of maximum outlet temperature operation.)
2. Re-examination of the thin tubes' probolog traces to determine if an abnormal corrosion pattern existed.
3. Review of the type metal charged from July, 1956, to present.

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The following data were obtained:

OUTLET TEMPERATURE HISTORY AND CHARGE TYPE

<u>Tube</u>	<u>Probolog Wall Thickness</u>	<u>Average Outlet Temperature 7/60 to Present</u>	<u>Unusual Charges 7/56 to Present</u>
*5865-KW	52	89.7	None
*5883-KW	45	85.0	None
5684-KW	56	99.1	
5562-KW	56	80.8	
*5581-KW	47	94.4	None
5583-KW	56	92.9	
4695-KW	50	88.4	
*4595-KW	47	89.0	None
4344-KW	56	87.7	
*4244-KW	45	89.0	None
0453-KW	56	86.6	
*0454-KW	43	87.7	None

* = Thin wall tubes. Others for comparison only.

Since six of the seven thin tubes were at KW, only the operating history of the KW tubes was studied.

RE-EXAMINATION OF PROBOLOG TRACES

<u>Tube</u>	<u>Location of Minimum Wall</u>
5865-KW	10' to 11' from rear Van Stone
5883-KW	11' to 13' from rear Van Stone
5581-KW	9.5' to 13.5' from rear Van Stone
4595-KW	8.5' to 13.5' from rear Van Stone
4244-KW	9.5' to 16' from rear Van Stone
0454-KW	9.5' to 11.5' from rear Van Stone

The history of these tubes, summarized by the above data, gives no indication of why corrosion has occurred more rapidly than in surrounding tubes.

R.D. Benson.

Process Engineering Unit
Research and Engineering

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