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OVERBORE FUEL FAILURE SUMMARY

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OVERBORE FUEL FAILURE SUMMARY

By

K. L. Hladek

March 23, 1964

Classification Cancelled and Changed To

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By Authority of RM Jten

CG-PR-2, 4-11-94

By DR Hanson, 4-17-94

Verified By J E. Savelly 4-18-94

**HANFORD ATOMIC PRODUCTS OPERATION
RICHLAND, WASHINGTON**

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OVERBORE FUEL FAILURE SUMMARY

<u>Failure Date</u>	<u>Tube Number</u>	<u>Fuel Lot Number</u>	<u>Fuel Column Length</u>	<u>Column Exposure</u>	<u>Column Position No. of Failures</u>	<u>Tube Power</u>	<u>Average Column Specific Power</u>
1-16-62	4463-C	KX895A	32	631 Mwd/t	4	1475 kw	60 kw/ft

Failure Cause and Mechanism: The element failed by groove corrosion penetration of the aluminum cladding as a result of charging machine damage to the fuel element supports. Four support "bridges" had been sheared off during the charging operation.

4-16-62	3062-C	KX010A	19	676 Mwd/t	12 14 15	1439 kw	102 kw/ft
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Failure Cause and Mechanism: All three elements split longitudinally as a result of high stresses in the uranium cores developed during extreme reactor flux cycling.

8-29-62	3162-C	WP004A	19	640 Mwd/t	16	1243 kw	88 kw/ft
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Failure Cause and Mechanism: The element had split transversely into two pieces; no apparent cause for this dingot uranium core failure was established.

9-03-62	1494-C	WP003A	32	714 Mwd/t	1	1201 kw	51 kw/ft
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Failure Cause and Mechanism: The element failed by groove corrosion penetration of the aluminum cladding as a result of charging machine damage to the fuel element supports.

9-06-62	2969-C	WP004A	19	401 Mwd/t	16	1265 kw	90 kw/ft
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Failure Cause and Mechanism: The element had split into two separate pieces; no apparent cause for this dingot uranium core failure was established.

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OVERBORE FUEL FAILURE SUMMARY (Continued)

<u>Failure Date</u>	<u>Tube Number</u>	<u>Fuel Lot Number</u>	<u>Fuel Column Length</u>	<u>Column Exposure</u>	<u>Column Position No. of Failures</u>	<u>Tube Power</u>	<u>Average Column Specific Power</u>
8-25-63	3062-C	CP804D	19	490 Mwd/t	12	1266 kw	90 kw/ft

Failure Cause and Mechanism: The element failed as a result of water entry at the female endcap. A defective core-to-cladding bond on the end of the element caused the initial cladding separation.

10-29-63	1464-C	CP804D	19	269 Mwd/t	Unknown	1352 kw	96 kw/ft
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Failure Cause and Mechanism: The element failed as a result of pressure build up beneath the female endcap, ultimately severing the endcap from the cladding. A poor core-to-cladding bond on the end of the element caused the separation.

12-30-63	2969-C	CP805D	19	185 Mwd/t	Unknown	1427 kw	100 kw/ft
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Failure Cause and Mechanism: The female endcap was completely separated from the outer surface cladding by pressure build up beneath the endcap. A poor core-to-cladding bond on the end of the element caused the separation.

1-18-64	3366-C	CP805D	19	315 Mwd/t	Unknown	1475 kw	105 kw/ft
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Failure Cause and Mechanism: The female endcap was completely separated from the outer surface cladding by pressure build up beneath the endcap. A poor core-to-cladding bond on the end of the element caused the separation.

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Page 3

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