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DECEMBER 11, 1952

HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

TITLE

AUTHORIZATION FOR USE OF AN ALTERNATE
METHOD OF PROCESSING TURNINGS- 234-5
BUILDING - BRIQUETTING OF PLUTONIUM
TURNINGS

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To: File

From: P.E. Collins - Leader
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Per Doc May 1973

By L. Pope 12/18/73

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AUTHORIZATION FOR USE OF AN ALTERNATE METHOD OF PROCESSING TURNINGS

**SPECIAL RE-REVIEW
FINAL DETERMINATION
DECLASSIFICATION CONFIRMED**

234-5 BUILDING

BRIQUETTING OF PLUTONIUM TURNINGS

BY KL [unclear] DATE 5-26-81
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Present Method of Processing Turnings

Plutonium turnings formed in the machining operation are processed by recycling them to the reduction operation. The turnings are here combined in the reduction charge to form a button with the plutonium from the reduction of the fluoride.

Basis for Authorization of Briquetting

Occasionally an inventory of turnings will accumulate, especially when a number of machined pieces are recycled to be recast. Since the amount of turnings to plutonium in plutonium fluoride considered safe for reduction is a maximum ratio of 1.35, a high turnings inventory can only be expended at a limited rate. Briquetting offers a convenient way of depleting the turnings inventory in a rapid manner.

Briquetting plutonium turnings and recycling the briquettes to the casting operation is authorized as an alternate method of processing turnings on the basis of the results obtained in Production Test 235-6 (HW-23899). Results of the test were reported in Separations Technology Unit - Process Assistance Progress Report for April, 1952 (HW-24426), and for May, 1952 (HW-24682). The final report - Production Test 235-6 (HW-26141) has been written and is awaiting publication.

A total of twenty-four briquettes were pressed. Eight castings were made by casting three briquettes into a form suitable for further processing. Six of the eight castings were accepted at final inspection. One was too small to machine due to an interrupted heating cycle and the other was recast after two coating failures with subsequent stripping caused the piece to be out of specifications in size. Castings made from briquettes were comparable with those made from buttons in purity, homogeneity of the alloy, and lack of voids. Skulls from the casting of briquettes varied from 10 to 11 per cent of the weight charged as compared to normal skulls of 2 or 3 per cent of the weight charged when buttons are cast. Because of the large skulls, briquetting is not as efficient as recycling the turnings to the reduction operation. However, since the skull recovery operations are now in service, the plutonium in the skulls is returned to the process within a short time.

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Approvals

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R.B. Richards Separations Technology Unit

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