1 of 1

**Cover Sheet for a Hanford
Historical Document
Released for Public Availability**

Released 1994

**Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute**

DISCLAIMER

This is a **historical document** that is being released for public availability. This was made from the best available copy. Neither the United States Government nor any agency thereof, nor Battelle Memorial Institute, nor any of their employees, makes any **warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.** The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DECLASSIFIED

HW-65867

This document consists of 4
pages, copy no. 4 of 24 copies,

CONTOURED I & E SLEEVES

C. A. Burgess
Engineer, Process Engineering
Fuels Preparation Department

~~CLASSIFICATION CANCELLED~~

Per

~~DOE May 14/73~~
~~By B. Roberts 2/6/77~~

Classification Cancelled and Changed To

DECLASSIFIED

June 28, 1960

By Authority of R M Lten

CG-PR-2, 1-25-94

By J E Savely 2-3-94

Verified By J Mally 2-11-94

DISTRIBUTION

1. H. E. Berg
2. W. A. Blanton
3. A. G. Blasewitz
4. C. A. Burgess
5. K. Drumheller
6. F. W. Grubb
7. L. T. Hagie
8. J. P. Keenan - J. R. Killen
9. W. M. Mathis
10. G. Miller - E. N. Wells
11. H. C. Money
12. T. D. Naylor
13. E. V. Padgett
14. C. A. Strand
15. J. T. Stringer
16. J. W. Talbott
17. E. A. Weakley
18. D. C. Worlton
19. H. F. Zuhr
20. 300 Area File
21. Records Center
- 22-24. Extra

~~SECRET REVIEW
FINAL DETERMINATION
DECLASSIFICATION CONFIRMED~~

~~DATE 8-25-81
DATE 9-14-81~~

~~Classification Cancelled (Change to
CONFIDENTIAL~~

~~By Authority the dated
3/8/82, for DOE, Wash., D.C.
12/26/84~~

This document contains restricted data
Atomic Energy
1954. The transmittal of this disclosure
of its contents in accordance to an un-
authorized person is prohibited.

CONTOURED I & E SLEEVES

DECLASSIFIED

INTRODUCTION

The feasibility of contoured I & E cans for production use has been demonstrated using our present flat base I & E sleeve (HW-37187). Studies by Process Engineering and Quality Control have shown that only a material savings would result from the use of only the contoured I & E can. Consideration was then given to the use of contoured sleeves (H-3-16879) to improve the contact areas and the resulting heat transfer during fuel assembly.

DISCUSSION

The use of contoured sleeves with the contoured can reduces the time required for the base to reach canning bath temperature by twenty-five percent (Fig. 1). This improved heating rate is nearly equivalent to that attained when using the optimum canning cycle. It was shown that significant improvements in bond porosity could be achieved by using this cycle. It is fully anticipated that similar quality improvements can be realized when using the contoured sleeve on the present canning cycle.

It is relatively important that the design of the sleeve be such that the can base support and principal base contact area be on the twenty-two degree slope (Fig. 2). By having the support at this point, any tendency to push up on the base tip and a resulting flaring of the base of the fuel element is eliminated. Other than this essential feature, the sleeve has been designed to give the best contact area feasible. A fillet was included in the selected design to provide better wafer stability.

Contoured cans and sleeves have been recommended, and Manufacturing is proceeding with a full-scale production test for using these component configurations.

C. A. Burgess, Engineer
Process Engineering

CAB:gab

1. FWR 214-148, "Demonstration of the Canning of Contoured Base Cans". E. A. Weakley. November 3, 1959.
2. FWR 55, "Production Demonstration of the Canning of Contoured Base Cans". H. G. Powers. April 18, 1960.

FIGURE 1
CAN - SLEEVE BASE HEATING RATES

DECLASSIFIED

DECLASSIFIED

- 4 -

HW-65867

REINFORCED
CONTOURED
SLEEVE

CONTOURED
SLEEVE

FIGURE 2

REGULAR
SLEEVE

**DATE
FILMED**

6/10/94

END