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TITLE

LOADING AND OPERATING CONDITIONS FOR A CHARGE
OF FIVE NIE-1 FUEL TUBES AND TWO TARGET
ASSEMBLIES IN KER-1 OR KER-2, PRODUCTION TEST
IP-584-D, SUPPLEMENT B

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AUTHOR

T. L. Deobald

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LOADING AND OPERATING CONDITIONS FOR A CHARGE OF FIVE NIE-1 FUEL TUBES
AND TWO TARGET ASSEMBLIES
IN KER-1 OR KER-2, PRODUCTION TEST IP-584-D, SUPPLEMENT B

T. L. Deobald

May 25, 1964

HANFORD ATOMIC PRODUCTS OPERATION
RICHLAND, WASHINGTON

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LOADING AND OPERATING CONDITIONS FOR A CHARGE OF FIVE NIE-1 FUEL TUBES
AND TWO TARGET ASSEMBLIES IN KER-1 OR KER-2
PRODUCTION TEST IP-584-D, SUPPLEMENT B

INTRODUCTION

Production Test IP-584-D, Supplement B(1) authorized the irradiation of target assemblies in KER-1 and KER-2. Furthermore, the production test authorized that these target assemblies be irradiated with other approved production tests; for this test, N Reactor inner fuel elements⁽²⁾ (NIE-1) will be irradiated.

The production test required that specific operating conditions and loading patterns would be approved by the managers of Testing, Process and Reactor Development, and Process Technology Subsections prior to charging.

PURPOSE

The purpose of this document is to provide the process tube loading and the high and low temperature operating limits for a charge of five NIE-1 fuel elements and two target element assemblies in KER-1 and/or KER-2.

PROCESS TUBE LOADING

<u>Position</u>	<u>Description</u>	<u>Authorizing Production Test</u>
1	8" Modified Triangular Perf	
2-27	Twenty-six 8" Spacers	
28	8" Modified Triangular Perf	
29-30	Two NIE-1 Fuel Elements	PT-IP-536-A, Supplement D(2)
31	8" Modified Triangular Perf	
32	One Lithium Target Assembly	PT-IP-584-D, Supplement B(1)
33-34	Two 8" Modified Triangular Perfs	
35	One Lithium Target Assembly	PT-IP-584-D, Supplement B(1)
36	8" Modified Triangular Perf	
37-39	Three NIE-1 Fuel Elements	PT-IP-536-A, Supplement D(2)
40	8" Triangular Perf	

The total length of the hardware charged in the tube will be approximately 384 inches; the empty tube length will be 587 inches. The void space will be between the upstream perf and the inlet cap insert.

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OPERATING LIMITS

For the loading of the material listed above, the operating conditions will conform to Production Test IP-638-D, Operation of KER-1, -2, -3, and -4 Simulating N Reactor Conditions, HW-79808.

The high outlet water trip, maximum operating temperature, and the boiling point suppression trip are given in Figure I. The low pressure trip will be set at 1225 psig. For low pressure recirculation, the high outlet temperature trip shall be set at 150 C, the low pressure trip shall be set at 500 psig, and the boiling point suppression trip shall be set according to Process Standards.

WATER SHUT-OFF TIMES

The allowable water shut-off times for the charge described herein are the same as those given in Reference 1.

T. L. Deobald

Engineer
Test Engineering

TL Deobald:mkc

- (1) Deobald, T. L., Production Test IP-584-D, Supplement B, Irradiation of Target Assemblies in the KER Loops, HW-79775 B, April 28, 1964.
- (2) Knight, J. T., Production Test IP-536-A, Supplement D, Irradiation of N Reactor Inner Fuel Tubes in KER Loops 1 and 2, HW-79619, November 12, 1963.
- (3) Kratzer, W. K., Loading, Operating Conditions, and Water Shut-off Times for a Charge of Six N Reactor Inner Fuel Tubes and for Two Charges of Dummies in KER-1 and KER-2, Production Test IP-536-A, HW-75353, October 23, 1962.

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FIGURE 1 - OPERATING LIMITS FOR A CHARGE OF FIVE NIE-1 FUEL ELEMENTS AND THREE LITHIUM-CONTAINING TARGET ELEMENTS IN KER-1 AND/OR KER-2

APPROVALS:

C. G. Lewis

C. G. Lewis, Manager
Testing Subsection

T. W. Ambrose

T. W. Ambrose, Manager
Process & Reactor Development

R. W. Reid

R. W. Reid, Manager
Process Technology

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