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TECHNICAL INFORMATION TO PITA-IP-10-I, IRRADIATION OF
ALLOYED DINGOT URANIUM FUEL ELEMENTS

AUTHOR

R. D. Shimer

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SUPPLEMENT C TO PITA-IP-10-I
IRRADIATION OF ALLOYED DINGOT URANIUM FUEL ELEMENTS

OBJECTIVE

The objective of this supplement is to authorize charging of additional dingot uranium and to extend the charging to all old reactors, (B, D, DR, F and H).

BASIS AND JUSTIFICATION

The original test⁽¹⁾ authorized charging 360 tons of dingot uranium at a rate of approximately 60 tons per month. Charging began in May 1960 and at present the majority of this material has been charged. The present delivery schedule⁽²⁾ calls for accepting 90 tons of dingot uranium per month from MCW, starting in November 1960. To meet this schedule it is necessary to either authorize additional charging under a suitable test program, such as this PITA, or to accept dingot uranium as normal material.

In line with the recent improvement in O-II-N metal performance, one rupture has been experienced, as of October 12, 1960, in dingot material irradiated under this PITA. During the same time period one control material rupture was sustained. Control material is O-II-N ingot material that is irradiated during the test period at reactors having dingot material charged. It is clear that, to date, there is practically no data for evaluating the rupture performance of dingot uranium and further, the possibility of obtaining a reasonable amount of data (ruptures) from the original 360 tons of dingot uranium is practically nil. In view of this, it appears desirable to continue large scale testing of dingot uranium.

To meet the programmed metal delivery schedule and to evaluate the suitability of dingot uranium as a reactor fuel, this supplement provides for irradiating an additional 540 tons of dingot uranium at a charging rate of approximately 90 tons per month. To provide a desirable ratio of dingot to ingot in each reactor, dingot material will be charged into all old reactors, (B, D, DR, F and H).

TEST DETAILS

All provisions of the basic test, as amended by supplements A⁽³⁾ and B⁽⁴⁾, will remain in effect unless otherwise specified.

- (1) HW-63595, Shimer, RD, "PITA-IP-10-I, "Irradiation of Alloyed Dingot Uranium Fuel Elements," 1/21/60, (Secret).
- (2) Unclassified letter from JT Stringer to PM Midkiff, "Dingot Acceptance," 7/14/60.
- (3) HW-63595 SUP A, Shimer, RD, "Supplement A to PITA-IP-10-I, Irradiation of Alloyed Dingot Uranium Fuel Elements," 4/29/60, (Secret).
- (4) HW-63595 SUP B, Shimer, RD, "Supplement B to PITA-IP-10-I, Irradiation of Alloyed Dingot Uranium Fuel Elements" 6/30/60, (Secret).

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Fuel Elements

1. The uranium cores will be either O-II-N or O-III-N size cores.
2. Cladding will be the cladding(s) authorized for use in the old reactors during the test period.

Charging

1. This test authorizes charging a total of 900 tons of dingot uranium fuel elements. This 900 tons includes the 360 tons authorized by the basic test.
2. The dingot test material will be charged into all old reactors (B, D, DR, F and H). The charging ratio of dingot to ingot will be as specified in reference 4.

COSTS

The costs associated with this test are unchanged.

RESPONSIBILITIES

The responsibilities associated with this test are unchanged with the exception that F and H Processing Operations will have the same responsibilities as B, D, and DR Processing Operations.

R. D. Shimer

R. D. Shimer

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Research and Engineering Section

IRRADIATION PROCESSING DEPARTMENT

RDS:mf

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