DECLASSIFIED

DECLASSIFIED

By Authority of CG-PR-2 - 1 -

7-4331

CA Bauman 7-12-41

#1 R. M. Evans *By PM Eick 5-5-44*
 #2 R. M. Evans *Verified By J.H. Wells 5-5-44*
 #3 Area Engineer
 #4 Area Engineer
 #5 Area Engineer
 #6 Area Engineer
 Attention Patent Group
 #7 N. Hilberry
 #8 N. Hilberry
 #9 N. Hilberry

#10 D. A. Miller - T. N. Stapleton - 700
 #11 M. H. Smith
 #12 W. C. Kay
 #13 300 File
 #14 Pink Copy
 #15 Yellow Copy
 #16 W. E. Jordan
 #17 C. P. Kidder *700 File*
 #18 C. N. Gross

author: W E Jordan

July 5, 1946

100 AREAS

June 25 through July 1
 (For Technical Progress Letter No. 104)

COPY 1 OF 1 ~~REMOVED~~
 This Document consists of
 2 Pages No. ~~1~~ of ~~1~~
 10

PhysicsD Pile

The D Pile was shut down for about 21 hours on June 25. Seventeen lithium fluoride slugs (Request 15-1) were charged into Tube No. 1579 for an irradiation of fifty days. This column had formerly been a poison column of 38 inhours nominal strength. One beryllium nitride slug (Request 25-3) was charged into Tube No. 2669 for an irradiation of ninety days, and the remainder of the column was filled with lead pieces. This loading replaced regular uranium pieces. These changes were expected to cause a reduction of about three inhours in the effectiveness of the poison pattern. A reduction of two inhours was observed.

The power level was reduced to 22.5 MW below rated level for five hours on July 1 to check the power coefficients and graphite relaxation period observed in the last test on June 10. Preliminary results obtained from the drop in power are as follows:

Overall coefficient, C_o	0.34 ih/MW
Metal coefficient, C_m	-0.24
Graphite coefficient, C_g	0.58
Graphite period	58 minutes

The graphite period showed an apparent change about 50 minutes after the change in power level, so that the graphite period cited above is actually the average of the two observed periods. These results do not agree with those obtained on June 10, but are in better agreement with the trend indicated by previous tests. A satisfactory interpretation of the data obtained on the rise to rated level has not been obtained. The coefficients and period indicated by these data are completely out of line with other results. Further study of these data is in progress.

F Pile

Except for a scheduled shutdown on June 26, the unit was operated throughout the week at 50 MW below rated level. During the shutdown, a special casing was removed from the "B" Test Hole after two weeks' irradiation. This casing contained a variety of materials which were activated for use as monochromatic beta and gamma sources in the calibration of health instruments. Two columns of bismuth

DECLASSIFIED

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, make 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. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. 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

- 2 -

7-4331

slugs were discharged and reloaded.

There was a net gain of 5 inhours during the week.

General

The reactivity status of the operating piles was as follows. Data for the D Pile are given for a time just prior to the coefficient test of July 1 and the previously accepted overall power coefficient is employed.

<u>Reactivity Absorbed by</u>	<u>Reactivity, inhours</u>	
	<u>D Pile</u>	<u>F Pile</u>
Xenon	497	438
Permanent poison and special columns	296	311
Bismuth columns	16	16
Rods	51	62
C ₀ W	<u>-70</u>	<u>-66</u>
Reactivity of cold, clean pile	789	761

Water, Corrosion and Engineering

Process Water Control and Pressure Drop Studies

The iron content in the process water averaged 0.022, 0.007 and 0.011 ppm at B, D and F Areas, respectively. These values are about the same as those for the previous week.

The rates of pressure drop increase for D and F Areas were 0.09 and 0.16 lbs./ (sq.in.)(day), respectively.

Corrosion

Horizontal Rod No. 2 at D showed evidence of some abrasion when observed during the shutdown of June 17 - 20. A borescope examination was made of this thimble on June 25 to note if any corresponding wear could be seen on the thimble. Some slight abrasion was noticed on the first few inches of the aluminum strip reinforcing the top of the thimble in the shield portion of the pile. This condition did not appear to be at all serious.

Graphite Expansion

A sample of the neoprene strip recently removed from the far side of the D Pile failed after being stretched only 35%. This sample was formerly located close to the front face of the pile. It is planned to repeat the test with another sample selected from near the middle of the strip.

W. E. Jordan
W. E. JORDAN, CHIEF SUPERVISOR
100-300 TECHNICAL

WEJ:jld

DECLASSIFIED