

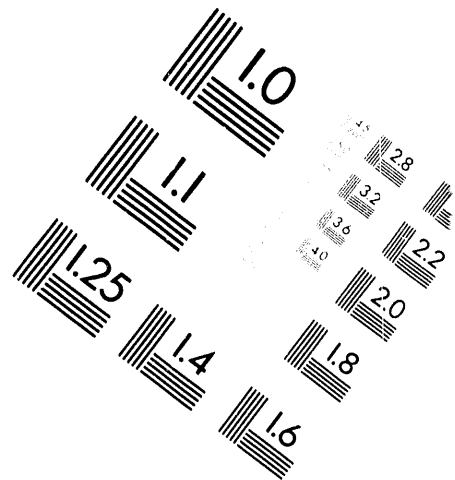
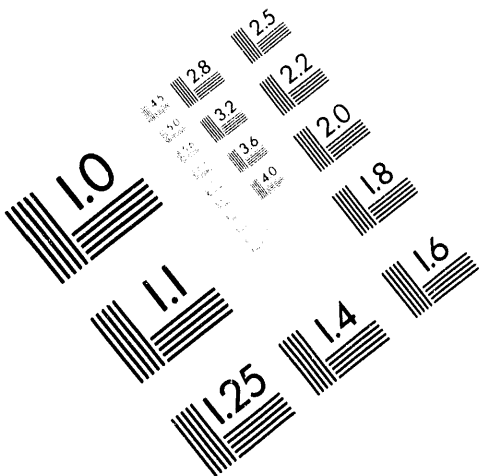


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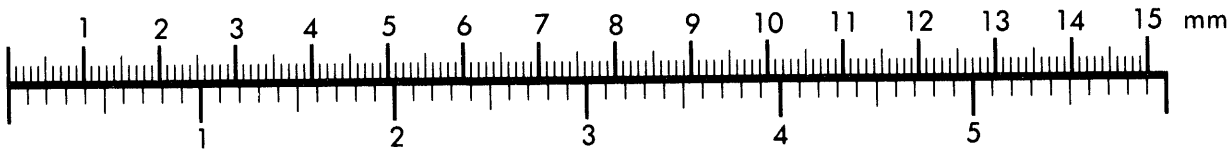
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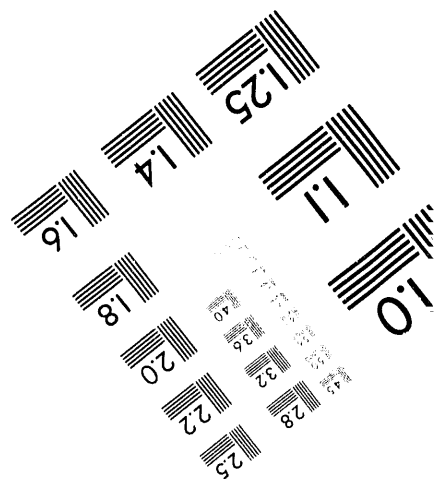
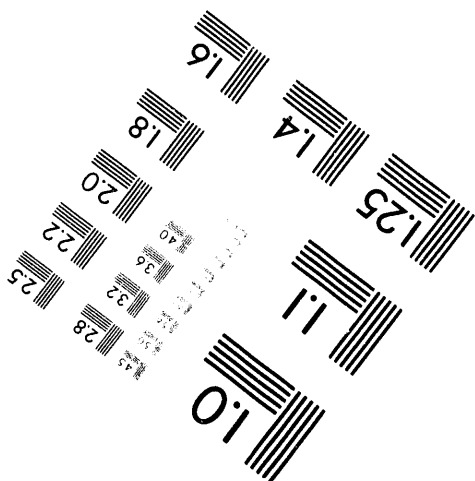
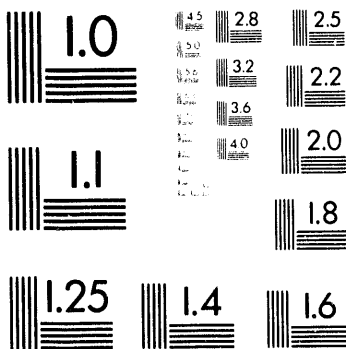
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Centimeter



Inches



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author: *W. E. Jordan*

August 25, 1946
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By Authority of R.D. C. 4
 Approved 12-12-80
 J.M. East 5-5-84

100 AREAS

August 13 through August 19
(For Technical Progress Letter No. 111)

This Document consists of
 2 Pages No. 2
 2

Physics

D Pile

The D Pile operated at rated level during this period except for a routine shutdown of 19 hours on August 13. Fifty regular tubes and one corrosion tube were discharged.

F Pile

The F Pile operated at 50 MW below rated level throughout this period except for a maintenance shutdown of about 14 hours on August 14. Corrosion Tube 2382 was discharged; it had been in the pile since July 27, 1945. No other metal was discharged.

All four inch screens on D riser were replaced in an effort to more nearly equalize the water flow through A and D risers. Typical flow rates for these two risers before and after the change are as follows:

Riser Flow Rates, gpm

Riser	Before Replacement	After Replacement
A	8500	8200
D	7950	8000

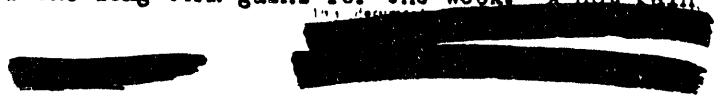
The flow in B and C risers remained constant at about 7600 gpm. The change of screens effected no significant improvement in the flows.

The two sewer lines for running area effluent, including pile process water, into the river were found damaged on August 16. One line is broken off completely; the other is damaged at the river bank and is bent downstream. This causes the water to enter the river near the bank instead of out toward the middle of the stream as intended. Surveys are in progress to determine possible contamination hazards brought on by this condition.

Since there was no appreciable metal discharge in connection with the shutdown, there was no reactivity loss to cancel the long term gains for the week. A net gain of four inhours was realized.

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General

Following is a summary of the reactivity status of the D and F Piles:

<u>Reactivity Absorbed By</u>	<u>Reactivity, 1h</u>	
	<u>D Pile</u>	<u>F Pile</u>
Rods	70	65
Xenon	497	435
Poison columns (Pb and Pb-Cd)	166	199
Special Requests	119	129
B columns	16	16
Dummy columns (Pb and Al)	2	7
Power coefficient	-77	-66
<u>Cold, clean reactivity</u>	<u>793</u>	<u>784</u>

It will be noted that an appreciable fraction of the reactivity formerly absorbed by lead-cadmium poison channels is now being absorbed by Special Request samples. Of the special sample absorption approximately three-fourths at D and one-fourth at F is due to slugs of Request 15 (L.F). There are on hand sufficient additional Request 15 slugs to reduce the Pb-Cd slug absorption close to the limit dictated by pile operating considerations. It is planned to charge these additional slugs during the next several weeks.

Helium density determinations have been run on a sample of unexposed graphite (No. 669) and a sample which had received an exposure of 690 Mw days/CT (No. 515). Four values with an average deviation of 0.14% were obtained for Sample 669; a like number with an average deviation of 0.43% were obtained for Sample 515. Data in the form of average values is tabulated below:

<u>Sample No.</u>	<u>Exposure Mw days/CT</u>	<u>Weight grams</u>	<u>Apparent Volume, cc</u>	<u>Apparent Density, g/cc</u>	<u>Helium Volume, cc</u>	<u>Helium Density, g/cc</u>
669	0	9.337	1.682	7.300	2.152	15.7139
515	690	9.288	1.683	7.151	2.185	15.6241

These are preliminary results and do not permit a conclusion as to the effect of exposure on helium density of graphite.

Water, Corrosion and Engineering

Process Water Control and Pressure Drop Studies

The iron content in the process water averaged 0.027, 0.008 and 0.009 ppm at B, D and F, respectively.

The rates of pressure drop increase for D and F were 0.01 and 0.20 lbs./sq.in. (day), respectively.

Corrosion

Corrosion Tube 2575 was discharged at B on August 8 after 298 days of operation and 147 days of downtime, or a total exposure of 445 days. This tube had an accumulated power of 46 MWd. Visually, no difference in corrosion from that found in tube exposed only to operating conditions was noted. There was no pressure drop film on the pieces; the unit was purged at its shutdown in March. Penetration rates based on total exposure were 0.00003 and 0.00005 inches per month average and maximum,

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respectively. Pieces numbered 2, 12, 17, 19, and 20 from the upstream end were slightly blistered.

Corrosion Tube 2461 was discharged at D on August 13. This tube had an accumulated power of 55 MWD. Pieces numbered 8, 9, 10, 16, 17, 24 from the upstream end were slightly blistered. The penetration rates have not as yet been calculated.

A rough examination was made this week of the thimble removed from No. 9 hole at D on June 28. No evidence of any collapsing of the thimble could be detected on examining the outside of the thimble nor by sighting down the inside of the thimble after it had been cut into three lengths and the graphite track removed. The graphite track was found to be cracked and somewhat out of place at approximately the location where the control rod stuck in the thimble when it was in the unit. However, it is impossible to state whether this condition existed in the thimble in the unit or if this condition of the graphite resulted from the handling the thimble received in being removed from the unit and then hauled to the burial grounds. Some slight abrasion was noted on the inside top of the thimble at approximately the point where the control rod stuck. No evidence of any unusual corrosion could be detected along the corner of the thimble where carbon dioxide gas was added during operation to purge the thimble.

Graphite Expansion

Production Test No. J06-72-P, "Monitoring of Van Stone Flanges", was authorized providing for the bi-monthly monitoring of the Van Stone flanges by optical and feeler gauges on a maximum of 12 process tubes, in order to detect strain resulting from graphite expansion.

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

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