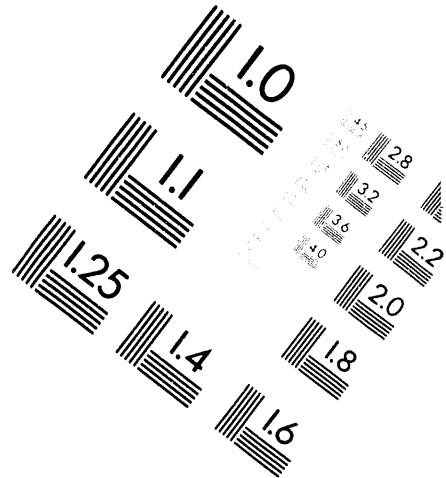
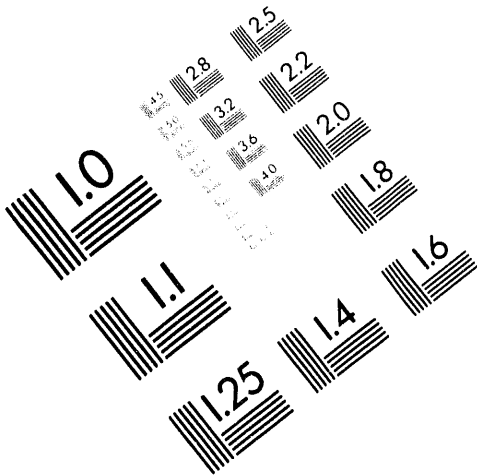




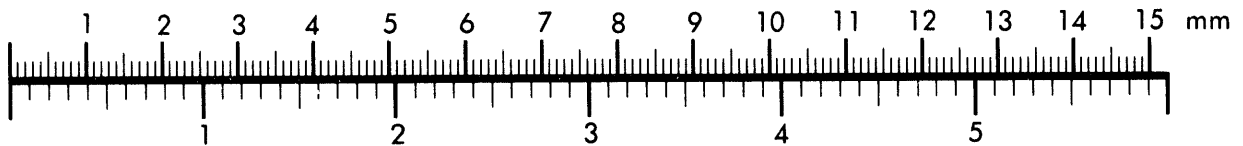
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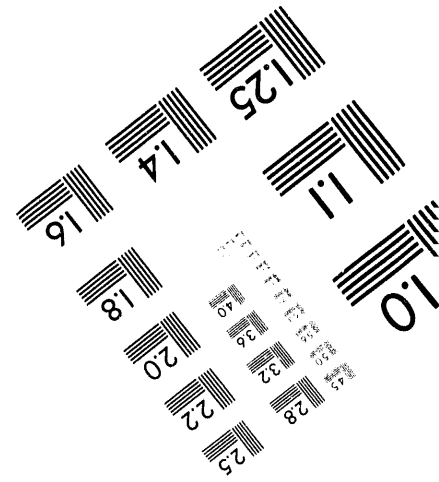
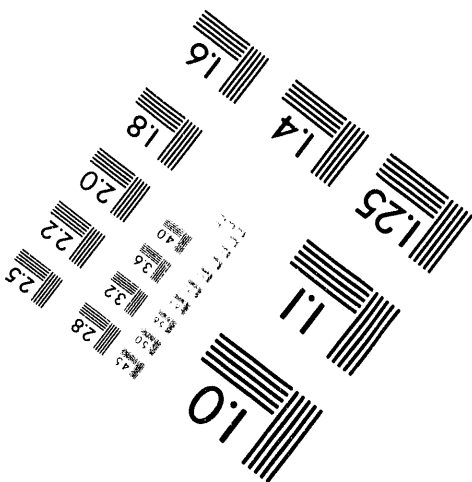
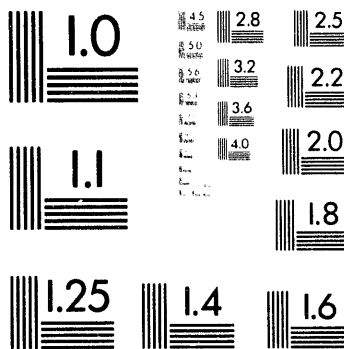
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SPEED-OF-CONTROL LIMITS - 105-DR

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August 1, 1961

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SPEED-OF-CONTROL LIMITS - 105-DR

Speed-of-control limits for 105-DR have not previously been issued, since the reactor has not approached the limit, and the data have been held in abeyance pending refinements and the press of other work. The current operating conditions at 105-DR, however, because of the recent Ball 3X drop, dictate temporary lower speed-of-control limits. While it is still not expected that this reactor will be limited by the speed-of-control criterion, it is felt that the limit curves have been temporarily sufficiently reduced as to warrant publication of formal limits. Figures 1 and 2 contain limit curves as a function of weighted graphite temperature for the continuous and block discharge schemes respectively.

The reduction in the speed-of-control limit comes from two sources:

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- a) While the speed-of-control limit is commonly expressed in MW of pile power level, it is actually a function of the maximum tube power in the pile. Since the pile flattening at 105-DR has decreased below that assumed during generation of the original speed-of-control curves, a lower pile power level is now equivalent to the same maximum tube power, and the lower power level becomes the speed-of-control limit.
- b) the poisoning effect of the balls lodged in the stack has been estimated at about 15 mk. Since the actual location of these balls is unknown, it must be conservatively assumed that they immediately surround the VSR channel. This being the case, the incremental change in control strength of the VSR system when dropped must be reduced by the observed worth of the balls in place, since the combined strength of the balls plus VSR's is probably little higher than that of the VSR's alone.

More-or-less daily contact with Operational Physics personnel has thus far provided assurance that the speed-of-control limit at 105 DR is not being approached. To relieve the necessity of such monitoring, it is recommended that the attached limits be placed into effect immediately. They are conservative. When pile operating conditions approach these limits it will probably be found that a) the pile flattening has improved, and b) ball burnout has occurred, thus permitting a relaxation of these limits. The limits will be reviewed and modified as necessary on December 1, 1961.

W S Nechodom

Acting Supervisor, Reactor Physics
Process and Reactor Development Subsection

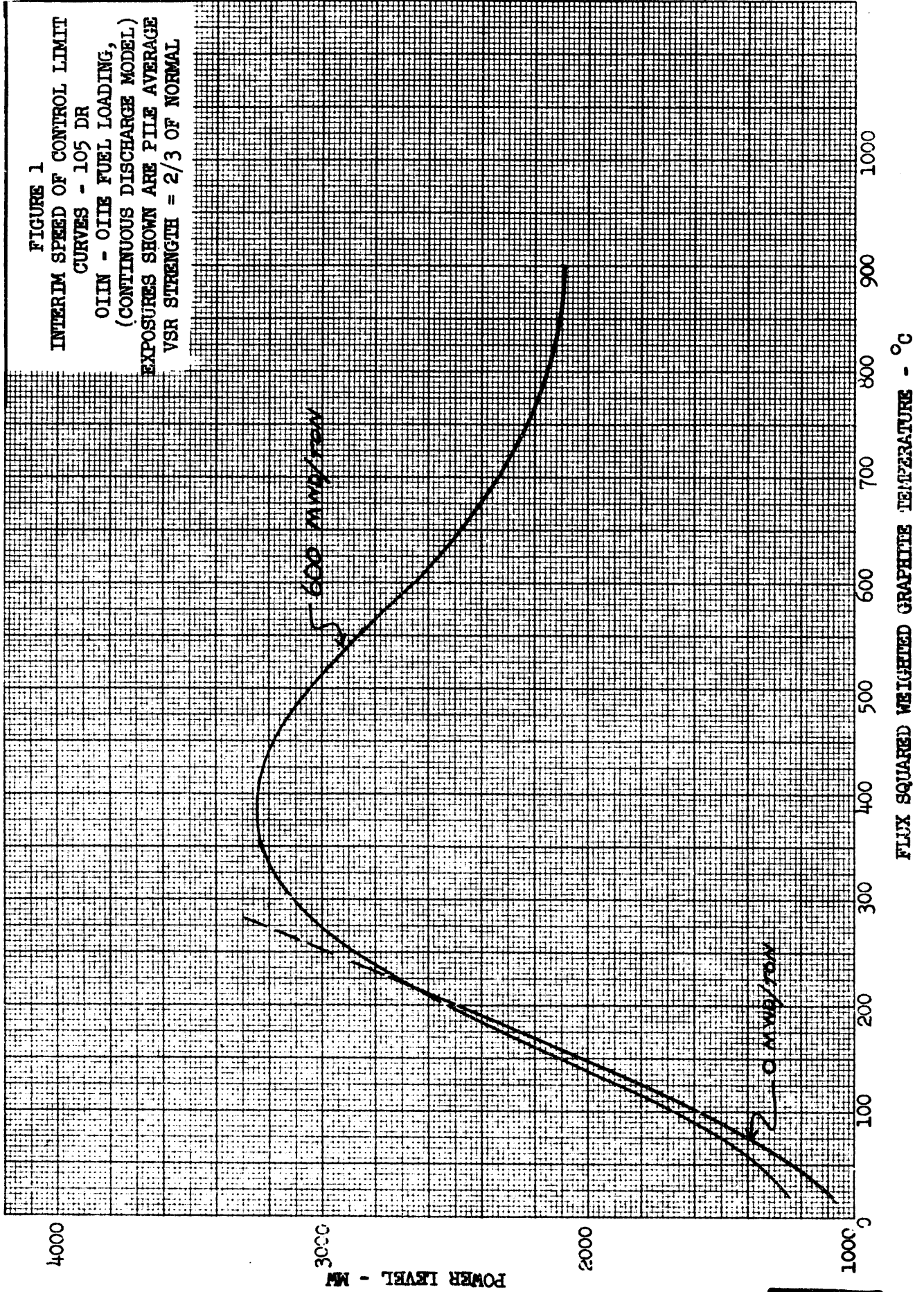
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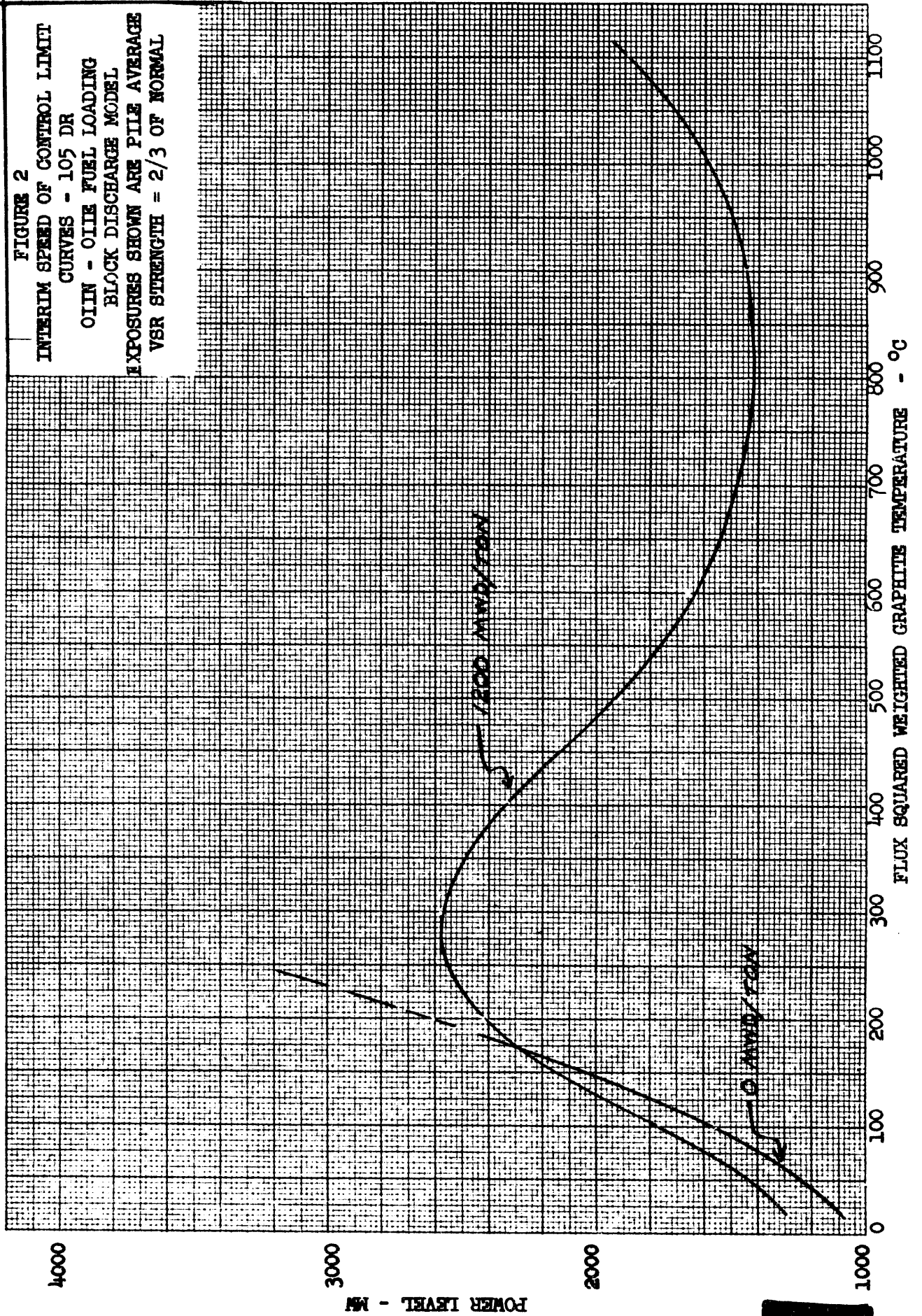
APPROVED:

J K Brown

Manager,
Process and Reactor Development Subsection

FIGURE 1
INTERIM SPEED OF CONTROL LIMIT
CURVES - 105 DR
OILIN - OIIE FUEL LOADING,
(CONTINUOUS DISCHARGE MODEL)
EXPOSURES SHOWN ARE FILE AVERAGE
VSR STRENGTH = 2/3 OF NORMAL





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