

A-84-019
46-17

~~CONFIDENTIAL~~

UNCLASSIFIED

INTER-OFFICE MEMORANDUM

DATE 13 December 1944

TO: G. B. Kistiakowsky ✓

FROM Capt. Ackerman

SUBJECT: Effect of Imperfections in H. E. Castings

PUBLICLY RELEASABLE
LANL Classification Group
P. Lang 6-5-98

1. Reference is made to your memorandum on this subject, dated 11 November 1944. The tests which have been performed by Messrs. Bradner and Crumb have been very useful in clearing up some of the uncertainties as to the effect of deliberate defects on the detonation wave in H.E. castings. I am in perfect agreement with the conclusions listed in your memorandum of 11 November.

2. I understand that the present intention is to limit further work on this test method to the minimum necessary to provide essential information which is required at this time. For this reason, I believe it desirable to suggest that the tests not be discontinued until the following work has been performed:

- a. To determine the effect of cracks and joints on the detonation wave, the tests should include the effect of such joints parallel to, normal to and at an angle with the detonation wave. It would be desirable to extend this test from cases where the two blocks of AG are in contact to those where the blocks are separated by a thickness of felt expected to be used in the FM.
- b. Determine the apparent effect of differing crystal structure and, if possible, chemical composition of Composition B on the shape of the detonation wave front. I should be happy to receive suggestions as to how this could best be done. At the present it appears most feasible to cut a ^{radial} slab from a cylinder of Composition B. Cut good quality. The ^{radial} slab will extend from the exterior to the interior of the cylinder, therefore including the rapidly cooled material outside of the casting on one side of the slab and the slowly cooled material on the other side of the slab. To permit a determination of defects in wave propagation by the two materials, I will propose cutting this slab in two, up the middle, and then putting them together after one slab is rotated 180°. By this means, if there is any appreciable defects between the propagation rates and the shape of the wave front, the waves from the two ends should interact at an angle with instead of normal to the center line of the slab.
- c. Some tests of average quality slabs containing run of the mill defects would be desirable if the effects can be made to show up on the surface.

FINAL DETERMINATION
UNCLASSIFIED
L. M. Redman
NOV 06, 1980

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P. Lang 5-7 6-5-98

J. O. Ackerman
J. O. ACKERMAN
Captain, C. E.

cc Dr. Koski
Lt. Comdr. Bradbury
Lt. Hopper
T/4 Crumb

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UNCLASSIFIED CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973

JOA:ms