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WATERTOWN ARSENAL
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MEMORANDUM REPORT

NO. WAL 710/598

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Preliminary Metallurgical Examination of Six (6) Samples
of Cast Homogeneous Armor to be Fired During
the 1943-44 Cold Test Program

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Jr. Engineer

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DATE 29 March 1944.

WATERTOWN ARSENAL
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Watertown Arsenal Laboratory

Memorandum Report No. WAL 710/593

Fourth Partial Report on Problem B-12.1

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29 March 1944

Preliminary Metallurgical Examination of Six (6) Samples
of Cast Homogeneous Armor to Be Fired During
the 1943-44 Cold Test Program

1. In accordance with a directive from the Office, Chief of Ordnance, (1) six (6) samples of cast homogeneous armor were received from the Ordnance Research Center for metallurgical examination preliminary to their being fired as part of the 1943-44 Cold Test Program.

2. These samples had been cut at Aberdeen from ballistic test samples in sections approximately 3"x18". From one end of each section, an eight-inch fibre fracture sample was cut at this arsenal. These samples were nicked-in 1" on each side and broken uniformly first by a steam forge hammer. The results appear in Table I.

3. From the opposite end of the section supplied by Aberdeen a two-inch section was cut and prepared by Blanchard grinding and a traverse of four Brinell hardness impressions on the cross section and three on the surface were made as nearly as possible to the edge cut at The Research Center. The individual readings on the cross-sectional traverse and the average of the surface readings are listed also in Table I.

4. Additional examinations of ballistic test samples for this program will be reported as soon as possible after receipt from Aberdeen.

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APPROVED:

M. A. Matthews
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(1) O.O. 470.5/5139(r) - Wtn 470.5/7578(r), dated 28 October 1943.

TABLE I

Summary of Preliminary Metallurgical Examination of

Six Cast Homogeneous Armor Samples to Be Fired during the

1943-44 Cold Test Program

Sample No.	Nominal Gauge	Fracture Rating	Brinell Hardness Number				
			Cross Section			Surface Ave.	
			1	2	3		4
16306M10	1"	Fc 1/4	321	321	321	321	327
20307M10	1"	FC	321	311	321	319	321
80308M10	1"	Fc 1/8	321	341	321	331	314
60309M10	1"	FC	302	321	321	316	321
70310M10	1"	FC	302	321	331	321	321
80311M10	1"	Fc 1/8	321	321	321	324	327

KEY: FC - 1/2 Fibrous; 1/2 Crystalline
 Fc 1/4 - 3/4 Fibrous; 1/4 Crystalline
 Fc 1/8 - 7/8 Fibrous; 1/8 Crystalline

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