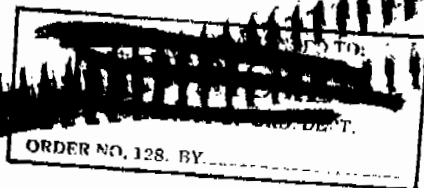


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REPORT NO. 710/13
TEST OF SPACED PLATES ON
ARMOR PLATE

by

D. J. MARTIN
1st. Lt., Ord. Dept.

1934

Approved for public release -
Distribution is Unlimited

UNCLASSIFIED

April 9, 1934

Test of Spaced Plates on Armor Plate

The plates shown within this small report were made to study the affect of the space between two given plates on the resistance of the combination to penetration in the construction of double walled armored vehicles.

It was thought that the first plate would cause the bullet core to tumble and be broken up on second plate.

A. The 2-1/2" & 3-1/2" plate separations were found to resist better than the 1-3/4" separation which tends to show that any space greater than 1-3/4" would have the better resistance.

This scheme of combinations has been discarded for reasons of the weight, and awkward methods which would be required to construct armored vehicles.

The photographs in this report were taken before firing and show construction of the plates. Photos were not taken after the firing as the expense did not warrant such.

Respectfully submitted:

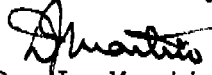
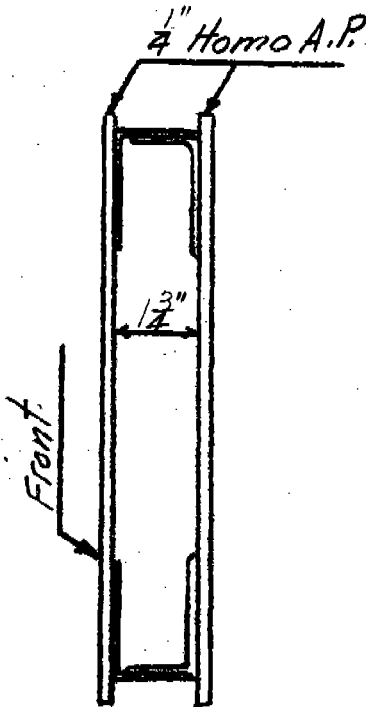

D. J. Martin,
1st.Lt., Ord. Dept.

PLATE NO. 1-3/4" Spaced

DATE Feb. 19, 1934



Angles welded on plates and then bolted together.

1/4" 50 C. - Homogeneous Plate

Mfg'd. by Disston & Co.

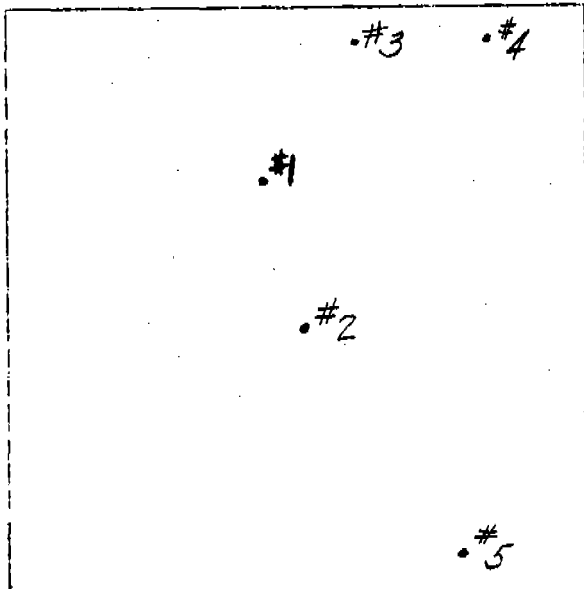
Heat treated in the standard manner by Disston & Co. Oil quench 1600°F Draw 1100°F.

Brinell 400 to 430.

Purchase order No. 6622

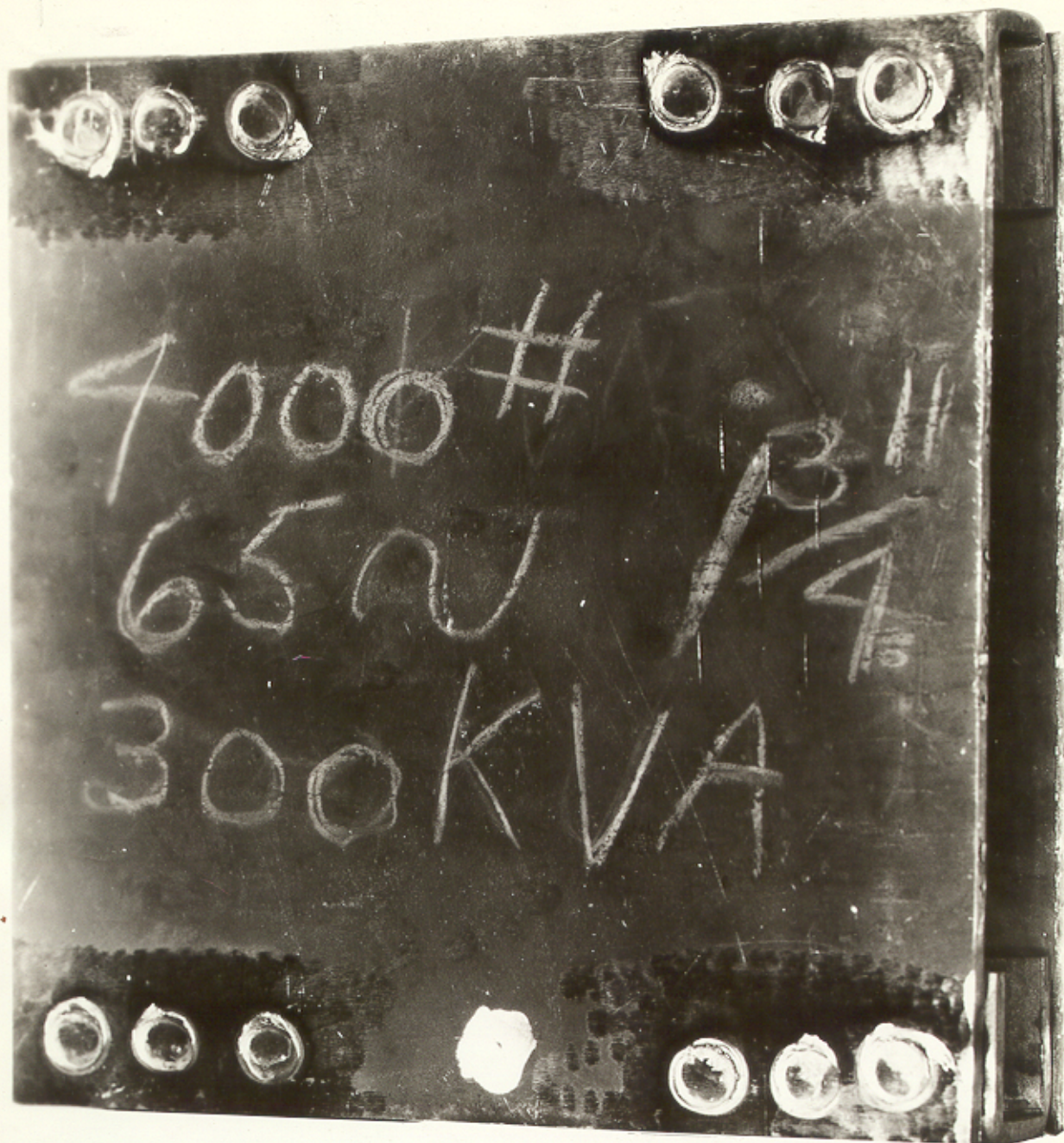
Armor Plate Composition

C	Mn	P	S	Si	Cr.	Mo.	V ₂
.45/.55	.40/.60	.03	.03	.15/.25	.10/.30	.60/.80	.20/.30



ROUND NO.	STRIKING VELOCITY	REMARKS
1	2460	Through front Pl. and partial pen. in back plate. 4 petal.
2	2460	Through front Pl. dent in back.
3	2460	Through front Pl. core broke off in back pl.
4	2460	{ Core stopped by clip angles in front pl.
5	2460	

PLATE NORMAL, 100 YD. RANGE, .50 CAL. M1922 A.P. PULLETS, XXXX
 XXXXXX UNLESS NOTED OTHERWISE.



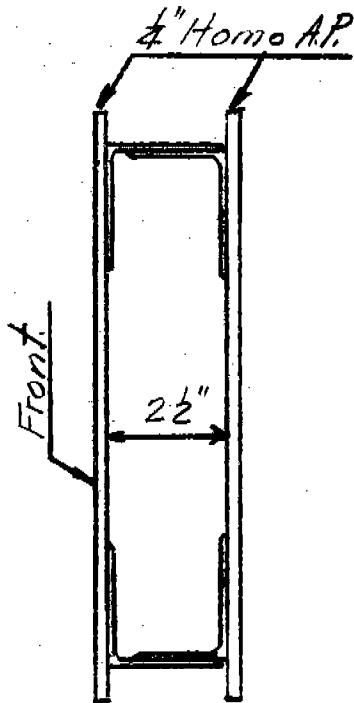
WATERTOWN ARSENAL

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1-17 -34 / 710-16

PLATE NO. 2-1/2" Spaced

DATE Feb. 19, 1934



Angles welded on plate then bolted together.

1/4" C. Homogeneous Disston Plate
Heat treated by Disston Co. in
standard manner, oil quench

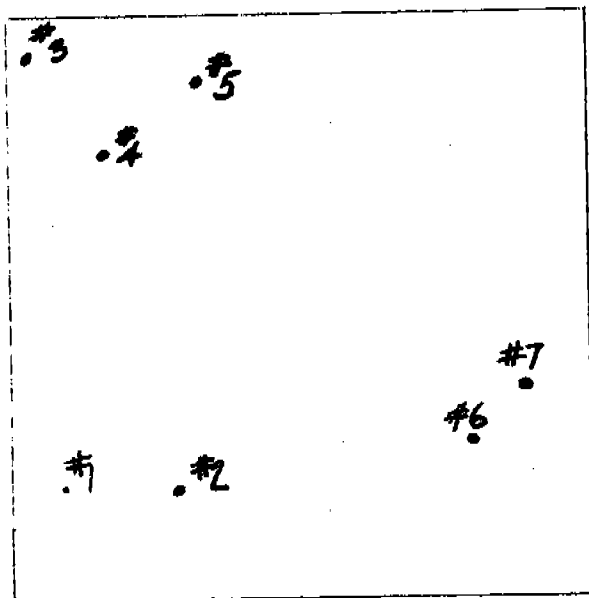
1600°F Draw 1100°F.

Brinell 400 to 430

Purchase order No. 6622.

Armor Plate Composition

C	Mn	P	S	Si	Cr	Mo	Va.
.45/.55	.40/.60	4.03	4.03	.15/.25	1.10/1.30	.60/.80	.20/.30



ROUND NO.	STRIKING VELOCITY	REMARKS
1	2460	All rounds penetrated front plate and splashed on back plate with no pene- tration in back plate.
2	"	
3	"	
4	"	
5	"	
6	"	
7	"	

PLATE NORMAL, 100 YD. RANGE, .50 CAL. M1922 A.P. PUMMERS, XXXX
XXXXXX UNLESS NOTED OTHERWISE.

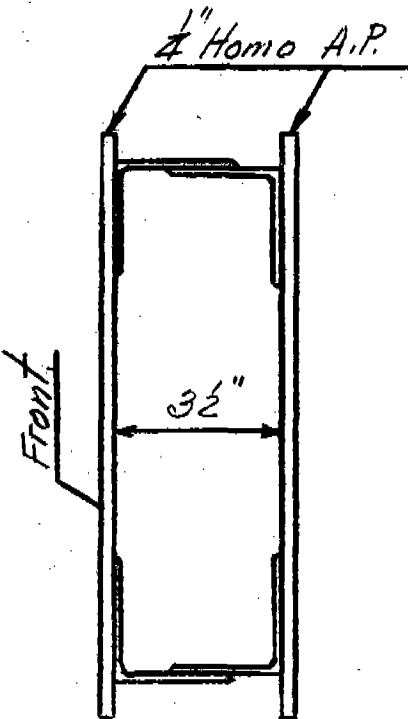


WATERTOWN ARSENAL

1-17 -34 / 710-16A

PLATE NO. 3-1/2" Spaced

DATE Feb. 19, 1934



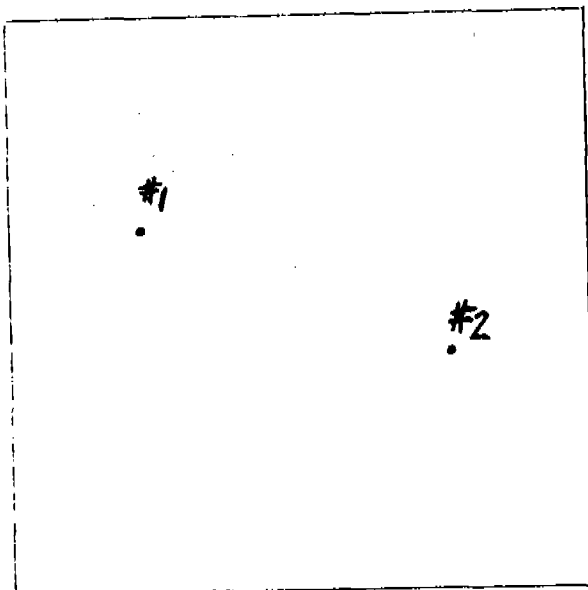
Angles welded on plates and then bolted together.

$\frac{1}{4}$ " C Homogeneous Disston Plate
Heat treated by Disston Co. in standard manner, oil quench 1600°F Draw 1100°F.
Brinell 400 to 430.

Purchase order No. 6622

Armor Plate Composition

C	Mn.	P	S	Si	Cr	Mo	Va
.45/ .55	.40/ .60	<.03	<.03	.15/ .25	1.10/ 1.30	.60/ .80	.20/ .30



<u>ROUND NO.</u>	<u>STRIKING VELOCITY</u>	<u>REMARKS</u>
1	2460	Complete penetration on front plate and slight dents in back plate.
2	2460	

PLATE NORMAL, 100 YD. RANGE, .50 CAL. M1922 A.P. PULLETS, XXXX
XXXXXX UNLESS NOTED OTHERWISE.

4000# 3-11
65 W
300 KVA

WATERTOWN ARSENAL

1-17-34 710-15

Navy 4/11/35

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Main Office File	1	1	1 ✓	1	1
Chief of Ordnance	-		1 ✓	2	-
Technical Staff	-		1 ✓	1	-
Springfield Armory	-	as directed in each case	1	1	-
Watervliet Arsenal	-		1	1	-
Rock Island Arsenal	-		1	1	-
Frankford Arsenal	-		1	1	-
Picatinny Arsenal	-		1	1	-
Aberdeen Proving Ground	-		1 ✓	1	-
Chief, Bureau Ordnance	-	-	- ✓	1	-
Naval Gun Factory	-	-	- ✓	1	-
Chief, Bureau C & R	-	-	- ✓	1	-
				welding and as directed	
Local Circulation	1	1	1	1	as directed
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