ORIGINAL

Banc National d'Epreuve
Saint-Etienne

TEST REPORT N° 8-EN/17/BNE

on January 9th, 2017

DELIVERED TO:

INDUSTEEL FRANCE, site du Creusot

56 rue Clémenceau

71201 LE CREUSOT Cedex FRANCE

PURPOSE: Validation of the protection level of one armor plate target against the ammunition of the Standard AEP 55 vol.1, Edition C, Ver. 1, KE threat, level 2, according to the customer's specification dated on August 26th, 2016.

TESTED SAMPLE(S): MARS 600

TESTING DATE: August 31st, 2016

Publication: INDUSTEEL FRANCE – 2 copies

This test report certifies only to characteristics of the sample subjected to the tests and does not prejudge characteristics of similar products. It does not thus constitute a certification of product in the sense of the article L115-27 of the code of the consumption and the law of June 3rd, 1994.

In order to notify the conformity or non-conformity to the requirements, the uncertainty of the test results has not been explicitly taken into account.

The present report contains 5 page(s).

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TESTED SAMPLE(S)

One sample is supplied by the customer.

Sample number: 64542 R3
Size: 300x300
Grade: MARS 600
Nominal thickness: 8.50mm
Real thickness: 8.50mm
Cast: F9730
Hardness: /

TESTING CONDITIONS

Shooting range temperature: 22.6°C
Shooting range humidity: 60 % RH

The sample is conditioned at +80°C for 24 hours minimum.

Used equipment

Climatic enclosure: FRANCE ETUVES XU490
Target frame: BLINDAGE ETBS
Velocity measurement: Radar DOPPLER 10GHz
Carriages: PROTOTYPA STZA 14A n°55

Test barrels caliber:
7.62x39 n° 4192, 650mm length, right hand twist 240mm, 4 grooves

Ammunition caliber:
7.62x39 API BZ batch n° 50-N-711, weighing 7.67g produced by KLIMOVSK Arsenal, Russia

Implementation

According to the Standard AEP-55 Volume 1, Edition C, Version 1 (dated April 2014) for the threat; see following test set-up and customer's specification dated on August 26th, 2016.

The panel is tested at an angle of 0° NATO.

A nominal 0.5mm thick 2024 T3 Aluminum alloy sheet was placed at a standoff distance of 150mm behind and parallel to the rear surface of the target. The distance from the muzzle to the target is indicated in the result sheets.

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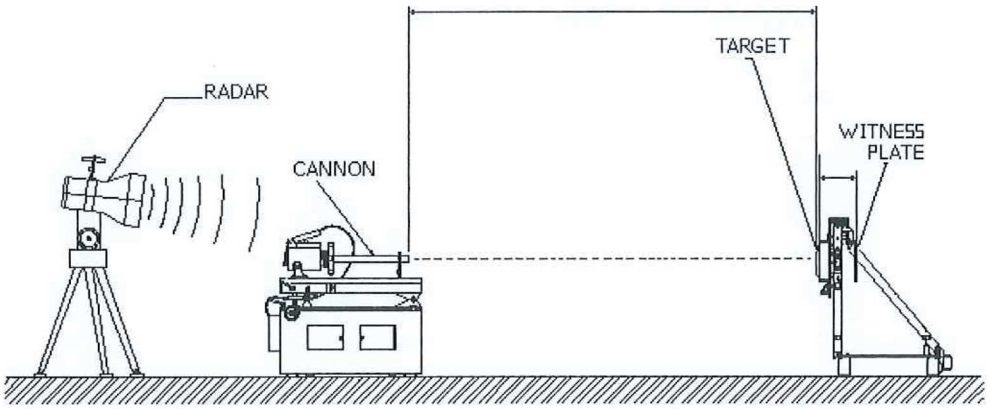

TESTING RESULTS

See the enclosed results sheet n° 11612.
See pictures.

CONCLUSION

The armor panel supplied by INDUSTEEL CREUSOT FRANCE has been submitted to the ballistic testing.

The samples withstood 22 impacts of the ammunition level 2 (7.62x39 API BZ) of the Standard AEP-55, Volume 1, Edition C, Version 1, at +80°C (no complete penetration).

The director
P.RENAUDOT

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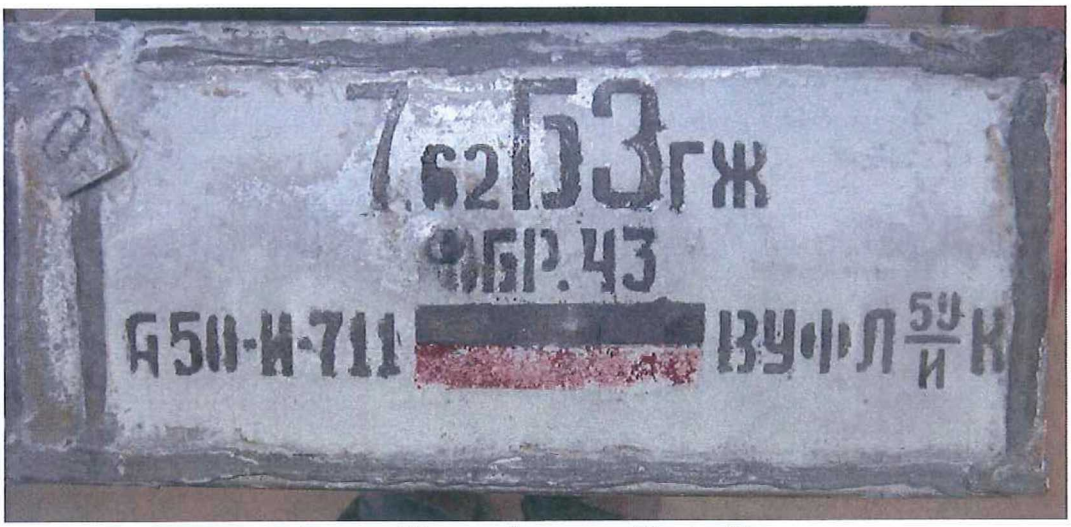
Pictures

Ammunition



Ammunition package used for testing

Ammunition headstamp

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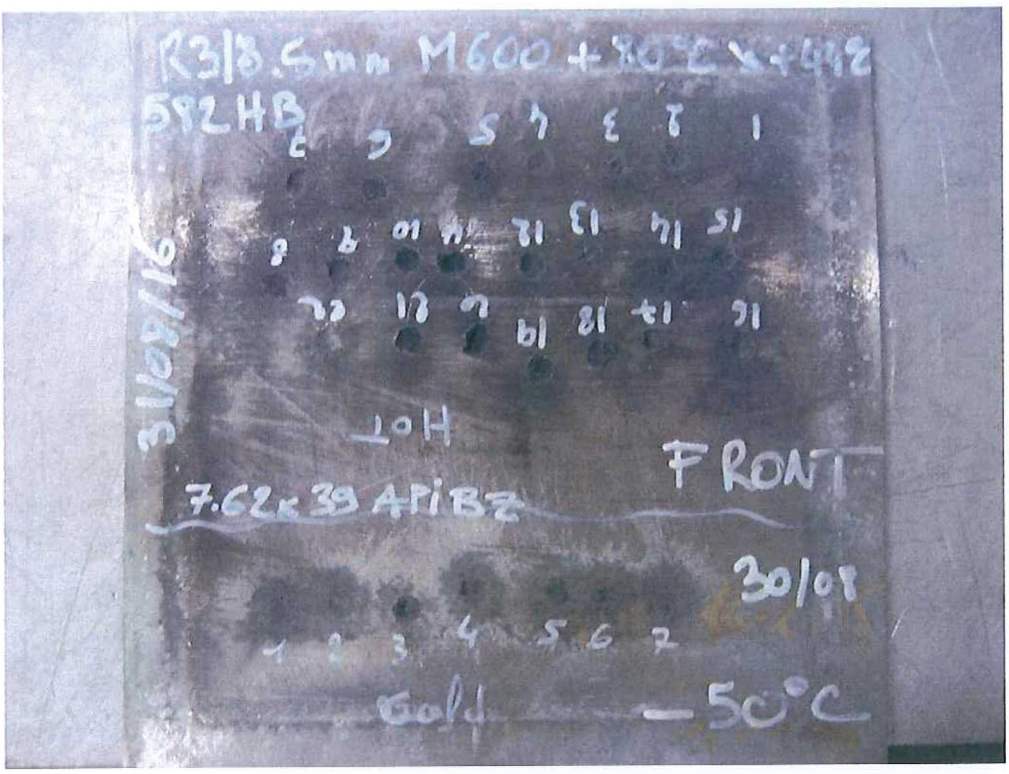
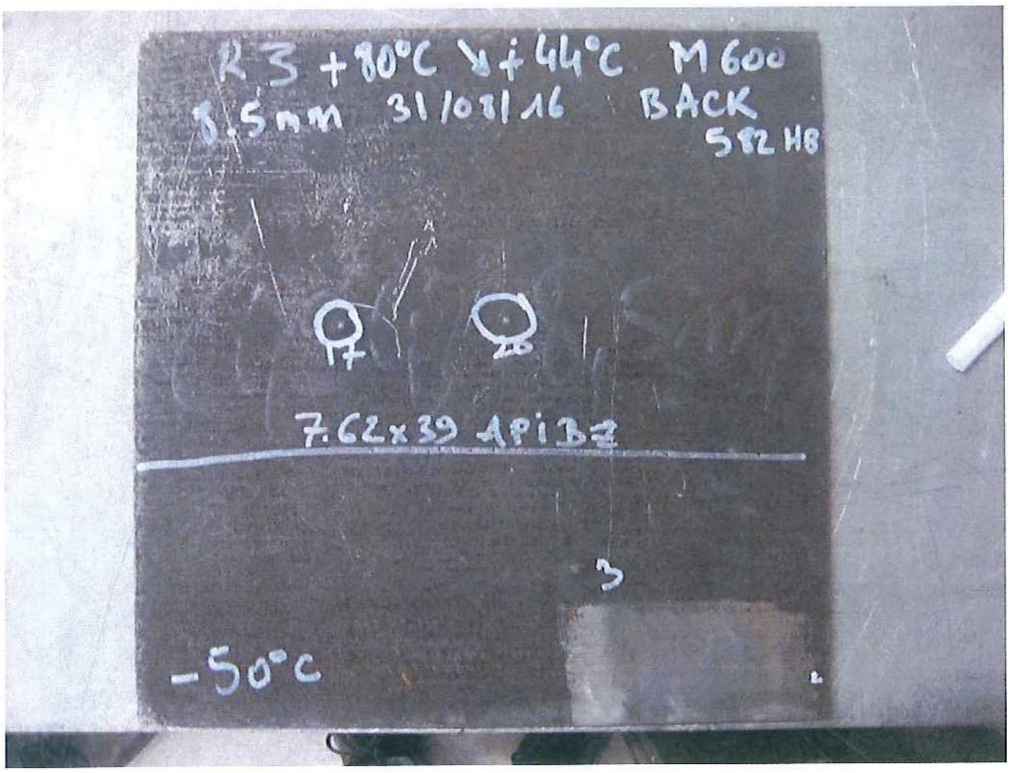
Results sheet n° 11612, sample n° 64542 R3 (front and back faces)





BANC NATIONAL D'EPREUVE DES ARMES ET MUNITIONS

Chambre de Commerce et d'Industrie de Saint-Etienne/Montbrison

Impact resistance testing

Result sheet N° : 11612 **Sample N° :** 64542 R3

BNE Ref. : RBM-16-2055

Customer : INDUSTEEL CREUSOT Date : 31/08/2016

Size : 300 X 300 mm

Real thickness : 8,50 mm

Composition : Steel MARS 600 ; n° de coulée: F9730

Scales : OHAUS PA413 (R2)
Climatic enclosure : FRANCE ETUVES XU490
Target frame : BLINDAGE ETBS
Recorder : M-THR-24
Additional information about metrology : M-RAP-02, M-RAY-01, M-TEL-03, M-MEX-15, M-RUB-25
Velocity measurement : RADAR DOPPLER 10GHz
Carriage : PROTOTYPA STZA 14A N° 55

Calibre :	7,62 X 39
Distance :	15,00 m
Barrel :	4192

Shooting range N° : 1

Shooting range temperature : 22,6 °C Sample temperature : 80,0 °C

Shooting range humidity : 60 %

Series	Shot	Calibre	Projectile type	Batch	Incidence	V15 (m/s)	Protection	Remarks
1	1	7,62 X 39	API BZ	50-N-711	0°	701,5	YES	(+80.0°C)
1	2	7,62 X 39	API BZ	50-N-711	0°	697,0	YES	Distance shot: 32mm
1	3	7,62 X 39	API BZ	50-N-711	0°	707,3	YES	Distance shot: 24mm
1	4	7,62 X 39	API BZ	50-N-711	0°	701,2	YES	Distance shot: 30mm
1	5	7,62 X 39	API BZ	50-N-711	0°	697,3	YES	(+71.8°C) Distance shot: 23mm
1	6	7,62 X 39	API BZ	50-N-711	0°	702,9	YES	Distance shot: 44mm
1	7	7,62 X 39	API BZ	50-N-711	0°	695,2	YES	Distance shot: 33mm
1	8	7,62 X 39	API BZ	50-N-711	0°	699,7	YES	Distance shot: 25mm
1	9	7,62 X 39	API BZ	50-N-711	0°	690,7	YES	Distance shot: 27mm
1	10	7,62 X 39	API BZ	50-N-711	0°	699,6	YES	(+61.1°C)Distance shot: 18mm
1	11	7,62 X 39	API BZ	50-N-711	0°	692,5	YES	Distance shot: 31mm
1	12	7,62 X 39	API BZ	50-N-711	0°	693,1	YES	Distance shot: 24mm
1	13	7,62 X 39	API BZ	50-N-711	0°	696,6	YES	Distance shot: 35mm
1	14	7,62 X 39	API BZ	50-N-711	0°	693,9	YES	Distance shot: 23mm
1	15	7,62 X 39	API BZ	50-N-711	0°	698,8	YES	(+56.4°C) Distance shot: 34mm
1	16	7,62 X 39	API BZ	50-N-711	0°	699,9	YES	Distance shot: 22mm
1	17	7,62 X 39	API BZ	50-N-711	0°	697,4	YES	Distance shot: 25mm
1	18	7,62 X 39	API BZ	50-N-711	0°	696,7	YES	Distance shot: 26mm
1	19	7,62 X 39	API BZ	50-N-711	0°	696,5	YES	Distance shot: 27mm
1	20	7,62 X 39	API BZ	50-N-711	0°	696,9	YES	(+48.9°C) Distance shot: 32mm
1	21	7,62 X 39	API BZ	50-N-711	0°	692,2	YES	Distance shot: 30mm
1	22	7,62 X 39	API BZ	50-N-711	0°	699,8	YES	(+48.9°C) Distance shot: 35mm

Cet essai a été réalisé dans un laboratoire dont le système de management de la qualité est certifié AFAQ ISO 9001"

Operator(s) : M. PIETROWSKI "This test was conducted in an AFAQ ISO 9001 certified laboratory"

BANC NATIONAL D'EPREUVE DES ARMES ET MUNITIONS

Chambre de Commerce et d'Industrie de Saint-Etienne/Montbrison

Impact resistance testing

Result sheet N° :	11612	**Sample N° :**	64542 R3
		BNE Ref. :	RBM-16-2055
Customer :	INDUSTEEL CREUSOT	Date :	31/08/2016
Size :	300 X 300 mm		
		Real thickness :	8,50 mm
Composition :	Steel MARS 600 ; n° de coulée: F9730		

Attending person(s) :

Remarks :

Specifications :

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"Cet essai a été réalisé dans un laboratoire dont le système de management de la qualité est certifié AFAQ ISO 9001"
"This test was conducted in an AFAQ ISO 9001 certified laboratory"