COMPANY RESTRICTED

TNO innovation for life

Fax message

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Laboratory for Ballistic Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496ZATheHaqte

To
Haebichim Company
Mr. Seong Min Kim

Fax

Subject
Ballistic test ord. no. 120D00308

Date
t9-09-2012

Reference
053.02841

Contact
J. Beetsma
E-mail
jonit.beetsma@tno.nl
Direct dialing
+31 888661444
Direct fax
+31 8886 66944
Number of pages
I of I

Ifyou havo not received all pages, please call us

Dear mr. Seong Min Kim,
I hereby send you the result(s) in concept of the ballistic innovation for life test(s) on your sample(s).

H.B.C. - 2012 - 02 (12MB03374) : Multihit - 5.45x39 AP (7N10)			
Shot number	**Impact velocity [m/s]**	**Stop / Perforation**	**Valid (Yes/No)**
KKW2 12SN05540	873	Stopped	Yes
KKW2 12SN05541	880	Stopped	Yes
KKW2 12SN05542	877	Stopped	Yes

Best regards,
J. Beetsma

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Test report number 12MB03373 / 12MB03374 page 4 of 4
Assignor Haebichim Company Experiment date 19-09-2012

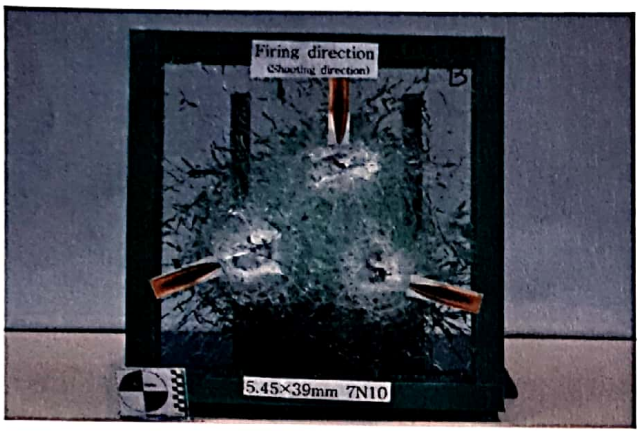

Figure 1 : Strike face of 12MB03373 after experiment

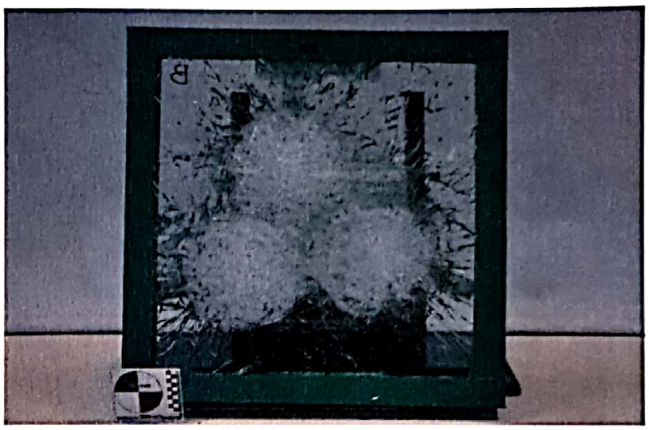

Figure 2 : Back face of 12MB03373 after experiment

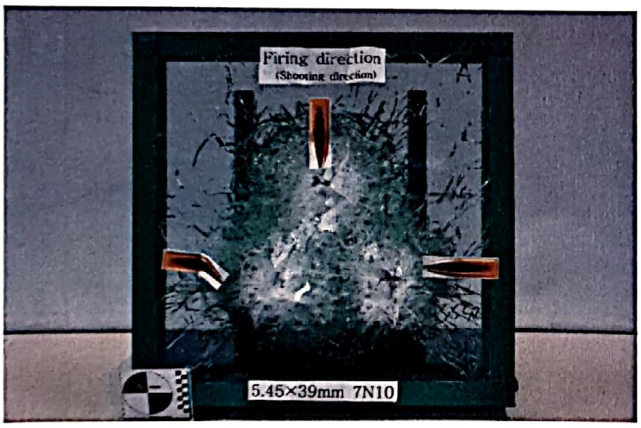

Figure 3 : Strike face of 12MB03374 after experiment

Figure 4 : Back face of 12MB03374 after experiment

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H.B.C. - 2012 - 01 (12MB03373) : Multihit - 5.45x39 AP (7N10)			
Shot number	**Impact velocity [m/s]**	**Stop / Perforation**	**Valid (Yes/No)**
KKW2 12SN05537	883	Stopped	Yes
KKW2 12SN05538	877	Stopped	Yes
KKW2 12SN05539	892	Stopped	Yes

Best regards,
J. Beetsma

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Test report number 12MB03373 / 12MB03374 page 4 of 4
Assignor Haebichim Company Experiment date 19-09-2012

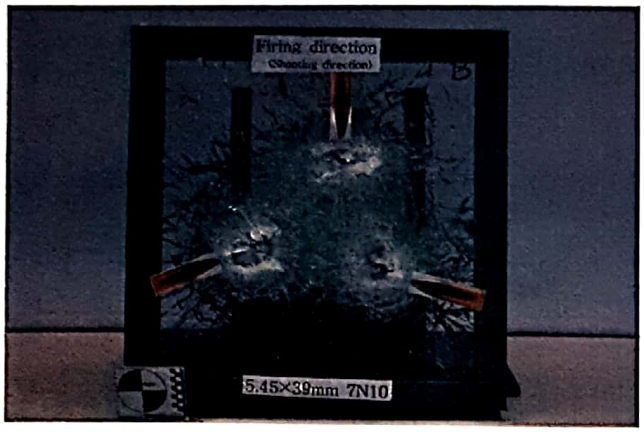

Figure 1 : Strike face of 12MB03373 after experiment

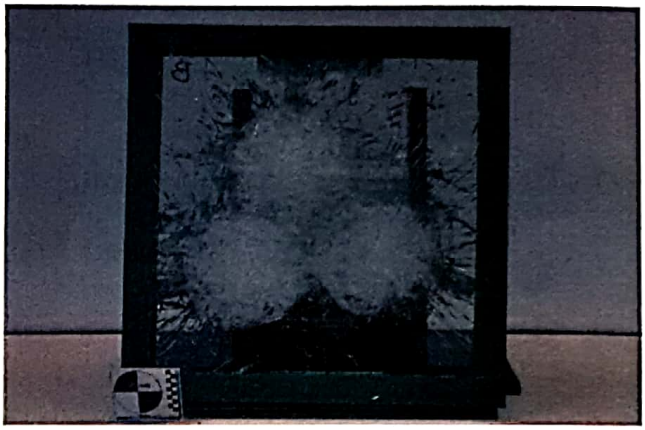

Figure 2 : Back face of 12MB03373 after experiment

Figure 3 : Strike face of 12MB03374 after experiment

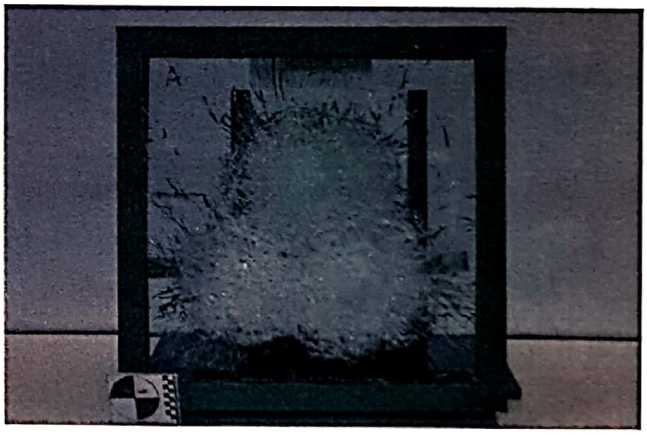

Figure 4 : Back face of 12MB03374 after experiment

H.P. WHITE LABORATORY, INC.
3114 Scarboro Road
Street, Maryland 21154-1822
Telephone: (410) 838-6550
Facsimile: (410) 838-2802
Email: info@hpwhite.com
www.hpwhite.com

5 October 2012
(HPWLI 12171-02C)

Haebichim
202 B East Giant Plaza1
1120-3 Buogok-dong Gung-si
Gyeonggi-do Korea
435-020

In accordance with your instructions, H.P. White Laboratory, Inc. conducted ballistic resistance testing of one laminated transparent armor sample received 28 September 2012 via DHL.

Testing was conducted in accordance with the modified provisions of NIJ-STD-0108.01, BALLISTIC RESISTANT PROTECTIVE MATERIALS, dated September 1985, Level IIIA using caliber .44 Magnum, 240 grain, SWCGC ammunition. The test sample was rigidly fixtured on an indoor range 16.5 feet from the muzzle of a test barrel to produce zero degree obliquity impacts. Velocity screens were positioned at 6.5 and 9.5 feet which, in conjunction with elapsed time counters (chronographs), were used to compute projectile velocities 8.0 feet forward of the muzzle. Penetrations were determined by visual examination of a 0.020 inch thickness alloy 2024T3 aluminum witness panel positioned 6.0 inches behind, and parallel to, the test sample. Table I presents a summary of the attached data record.

TABLE I. SUMMARY OF RESULTS

Test Sample				Ballistic Threat				Results
Number	Weight (lb)	Thickness (in) (a)	Obliquity (degrees)	Caliber	Shots	Velocity (fps)		Penetrations
						Max.	Min.	
HPW-3	12.70	0.701	0	.44 Magnum	4	1418	1352	0
(a) Average of four corner thicknesses.								

This conclusion is based on data obtained from having tested only the sample submitted, and should NOT be interpreted as an endorsement by H.P. White Laboratory, Inc. of the continuing quality, or performance, of any other items of the same, or similar, design.

The test sample will be returned via DHL. Should you have any questions regarding this matter, or if we may be of any further service, please do not hesitate to contact us.

Very truly yours,

H. P. WHITE LABORATORY, INC

Kevin M. Black

KMB/tc
Enclosure