

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Belcamp
4603B Compass Point Road
Belcamp, MD 21017

Client: Hardhead Veterans
Project No.: PH00008992
Test Date: 11/14/2023
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Test Panel Description: Ballistic helmet.

Manufacturer: Hard Head Veterans LLC

Sample No.: (17gr., V50) Sample 5

Size: Large
Avg. Thickness: 0.323 in
Thicknesses: 0.317 in, 0.322 in,
0.327 in, 0.324 in

Weight: 2.580 lbs
Plies/Laminates: N/A
Required BL(P): N/A

Date Received: 10/27/2023
Received Via: UPS Ground
Returned Via: UPS Ground

Setup

Shot Spacing: MIL-STD-662F
Witness Panel: 0.02 in 2024-T3 Al
Backing Material: N/A
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 5.333,
9.666, 10.000
Primary Vel. Location (ft): 7.500
Range to Target (ft): 15.000
Target to Witness (in): 3.000

Range No.: Range 4
Temp: 68 °F
BP: 30 inHg
RH: 38 %
Barrel/Gun: WC024521
Gunner: Matthew Settle
Recorder: Joshua Petty

Ammunition

Projectile	Lot No.	Manufacturer	Powder
(1) .22 cal, 17-grain FSP	1700621	Contra Threat Sciences	Bullseye

Applicable Standards or Procedures

- (1) MIL-STD-662F
(2) Customer Request

Shot No.	Ammo	Powder/Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	1	9.5	17	2015	2481	1747	2480	2481	2375	C	No	0	(a)
2	1	8.5	17	2162	2313	1871	2316	2314	2215	C	Yes	0	(b)
3	1	7.2	17	2443	2047	2115	2049	2048	1960	P	No	0	(c)
4	1	7.7	17	2303	2171	1996	2171	2171	2078	P	No	0	(d)
5	1	8.1	17	2228	2244	1927	2249	2246	2150	C	Yes	0	(e)
6	1	7.9	17	2259	2213	1957	2214	2214	2119	C	Yes	0	(a)
7	1	7.6	17	2311	2164	2001	2165	2164	2072	P	No	0	(b)
8	1	7.8	17	2323	2152	2010	2156	2154	2062	P	No	0	(c)
9	1	8.0	17	2284	2189	1976	2193	2191	2097	P	Yes	0	(d)
10	1	8.3	17	2208	2264	1913	2265	2265	2168	P	Yes	0	(e)
11	1	8.5	17	2208	2264	1916	2261	2263	2166	P	Yes	0	(d)

Remarks:
Requested Starting Velocity: 2400 ft/s
Projectile yaw check: 0° yaw on all shots

V₅₀ Summary:
No. of Points: 3 and 3
V₅₀: 2153 ft/s
High Partial: 2168 ft/s
Low Complete: 2119 ft/s
Range of Results (ROR): 118 ft/s
Range of Mix Results (RMR): 49 ft/s
Gap: N/A

Footnotes:

- (a) Crown
(b) Front
(c) Left
(d) Back
(e) Right

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Velocity vs. Shot Number

