

# Element U.S. Space & Defense Test Report for Ballistic Resistance and Ballistic Limit, V<sub>50</sub> BL(P) Testing

**Project No.:** PH00011512    **Tested:** 29 May 2024    **PO No.:** LOI OH19135

**Prepared For**

Delta Defense Technology Inc. | 563 Ebury Place | Delta, BC V3M 6M8 CAN

**Prepared By**

Element U.S. Space & Defense | 4603B Compass Point Road | Belcamp, MD 21017 | p: 410.297.8154 | www.nts.com

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Further dissemination only as directed by Delta Defense Technology Inc., 10 June 2024.

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**Revision History**

<b>Rev.</b>	<b>Description</b>	<b>Issue Date</b>
0	Initial Release	10 June 2024

# BALLISTIC RESISTANCE TEST

**Element U.S. Space & Defense**  
 4603B Compass Point Road  
 Belcamp, MD 21017

Client: Delta Defense Technology Inc  
 Project No.: PH00011512-1  
 Test Date: 05/29/2024  
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**Test Panel** Description: Ballistic helmet with pads and retention system.

**Manufacturer:** Delta Defense Technology Inc      **Sample No.:** (9mm, V0) Sample 1

Size: Large Avg. Thickness: 0.311 in Thicknesses: 0.308 in, 0.304 in, 0.319 in, 0.314 in	Weight: 3.020 lbs Plies/Laminates: N/A	Date Received: 05/06/2024 Received Via: UPS Ground Returned Via: UPS Ground
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## Setup

Shot Spacing: NIJ-STD-0106.01 Witness Panel: Clay Backing Material: Clay-filled NIJ- 0106.01 head form Condition: Ambient	Primary Vel. Screens (ft): 6.500, 9.500 Primary Vel. Location (ft): 8.000 Range to Target (ft): 16.400 Target to Witness (in): 0.000	Range No.: Range 3 Temp: 64.6 °F BP: 30 inHg RH: 46 % Barrel/Gun: WC020651 Gunner: Timothy Mackie Recorder: Keivin Guzman
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## Ammunition

Projectile	Lot No.	Manufacturer	Powder
(1) 9-mm, 124-grain FMJ	23558	Remington	Accurate No. 2

## Applicable Standards or Procedures

Clay Drop 1-Drop Time: 11:35 AM; Block No. WC074957; Temp: 97.1 °F, 96.5 °F; Drop Depths: 24.2 mm, 25.9 mm, 25.5 mm  
 (1) NIJ-STD-0106.01 (Modified)  
 (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)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	5.5	124.0	2189	1370	2186	1372	1371	None	14.8	0.0	(a)
2	1	5.5	124.0	2174	1380	2172	1381	1381	None	10.9	0.0	(b)
3	1	5.5	124.0	2176	1379	2172	1381	1380	None	6.1	0.0	(c)
4	1	5.5	124.0	2198	1365	2198	1365	1365	None	3.7	0.0	(d)

Remarks:  
 Required Velocity: 1350 - 1450 ft/s.  
 Projectile Yaw Check: 0° Yaw on all Impacts.  
 Head form: HB1-1, Temp: 96.4 °F.

Footnotes:  
 (a) Front  
 (b) Back  
 (c) Right  
 (d) Left

# PROTECTION BALLISTIC LIMIT TEST, V<sub>50</sub> BL(P)

**Element U.S. Space & Defense**  
 4603B Compass Point Road  
 Belcamp, MD 21017

Client: Delta Defense Technology Inc  
 Project No.: PH00011512-A  
 Test Date: 05/29/2024  
 Page 1 of 2

**Test Panel** Description: Ballistic helmet without pads and retention system.

**Manufacturer:** Delta Defense Technology Inc      **Sample No.:** (17gr., V50) Sample 2

Size: Large Avg. Thickness: 0.316 in Thicknesses: 0.318 in, 0.308 in, 0.318 in, 0.319 in	Weight: 2.700 lbs Plies/Laminates: N/A Required BL(P): 2200 ft/s	Date Received: 05/06/2024 Received Via: UPS Ground Returned Via: UPS Ground
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## Setup

Shot Spacing: STANAG 2920 Ed 3 AEP 2920 Edition A, Version 2 Witness Panel: 0.02 in 2024-T3 Aluminum 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 3 Temp: 64.6 °F BP: 30 inHg RH: 42 % Barrel/Gun: WC020651 Gunner: Timothy Mackie Recorder: Keivin Guzman
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## Ammunition

Projectile	Lot No.	Manufacturer	Powder
(1) .22-cal., 17-grain FSP	17062223	Contra Threat Sciences	Bullseye

## Applicable Standards or Procedures

- (1) STANAG 2920 Ed 3 AEP 2920 Edition A, Version 2 dated September 2016
- (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 <sub>50</sub>	Obliq. (°)	Footnotes
1	1	9.6	17.0	2047	2443	1774	2443	2443	2338	C	No	0.0	(a)
2	1	9.0	17.0	2106	2374	1827	2372	2373	2271	P	Yes	0.0	(b)
3	1	9.3	17.0	2074	2411	1798	2410	2410	2307	C	No	0.0	(c)
4	1	9.1	17.0	2093	2389	1815	2387	2388	2286	C	No	0.0	(d)
5	1	8.8	17.0	2140	2336	1857	2333	2335	2235	C	Yes	0.0	(e)
6	1	8.5	17.0	2186	2287	1896	2285	2286	2189	P	Yes	0.0	(a)
7	1	8.8	17.0	2140	2336	1854	2337	2337	2237	C	Yes	0.0	(b)
8	1	8.5	17.0	2220	2252	1923	2253	2253	2156	P	Yes	0.0	(c)
9	1	8.8	17.0	2203	2270	1910	2269	2269	2172	C	Yes	0.0	(d)

**Remarks:**  
 Requested starting Velocity: 2300 ft/s.  
 Projectile Yaw Check: 0° Yaw on all Impacts.

**V<sub>50</sub> Summary:**  
 No. of Points: 3 and 3  
                   V<sub>50</sub>: 2210 ft/s  
                   High Partial: 2271 ft/s  
                   Low Complete: 2172 ft/s  
 Range of Results (ROR): 115 ft/s  
 Range of Mix Results (RMR): 99 ft/s  
 Gap: N/A

**Footnotes:**  
 (a) Crown  
 (b) Front  
 (c) Left  
 (d) Back  
 (e) Right

# PROTECTION BALLISTIC LIMIT TEST, V<sub>50</sub> BL(P)

**Element U.S. Space & Defense**  
 4603B Compass Point Road  
 Belcamp, MD 21017

Client: Delta Defense Technology Inc  
 Project No.: PH00011512-A  
 Test Date: 05/29/2024  
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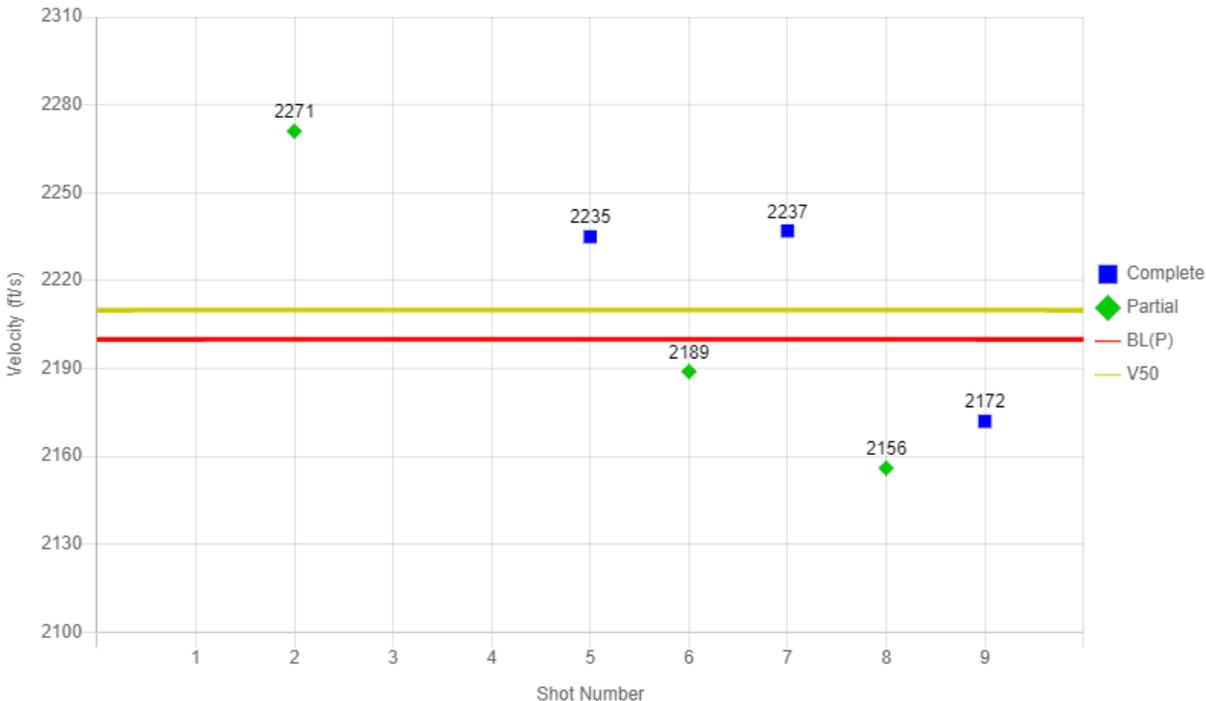
**Manufacturer:** Delta Defense Technology Inc

**Sample No.:** (17gr., V50) Sample 2

**V<sub>50</sub> Summary:**

No. of Points: 3 and 3  
 V<sub>50</sub>: 2210 ft/s  
 High Partial: 2271 ft/s  
 Low Complete: 2172 ft/s  
 Range of Results (ROR): 115 ft/s  
 Range of Mix Results (RMR): 99 ft/s  
 Gap: N/A

**Velocity vs. Shot Number**



## ATTACHMENT A CALIBRATION DATA

**NCR = No Calibration Required.**

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC020651	Barrel (gun)	Bill Wiseman & Company	N/A	NCR	NCR
WC060267	Meter (Chronograph)	YIS/Cowden Group, Inc	Chrono-USB	07/20/2023	07/20/2024
WC060370	Scale (Floor)	Sartorius	CISL-1N-U	02/21/2024	02/21/2025
WC060650	Measurement Tools (Angle Gauge)	SPI	91-316-0	11/13/2023	11/13/2025
WC060802	Range (shooting)	N/A	N/A	NCR	NCR
WC064243	Gauge (Depth)	Chesapeake Testing	Bridge Depth Gauge	05/24/2024	08/24/2024
WC067005	Meter (Chronograph)	YIS/Cowden Group, Inc	Chrono USB (17025)	07/20/2023	07/20/2024
WC067389	Monitor (Thermometer/Clock/Humidity)	Control Company	4040	09/08/2023	09/08/2024
WC074957	Block (Clay)	Chesapeake Testing	N/A	01/07/2019	NCR
WC074990	Measurement Tools (Tape Measure)	Dewalt Industrial Tool	DWHT36107	10/12/2023	10/12/2025
EL00004082	Meter (Thermometer)	Control Company	4378, 98768-49	09/21/2023	09/21/2025
WC079246	Scale (Digital)	RCBS	Charge Master 1500	01/03/2024	01/03/2025
WC079401	Gauge (Depth)	Starrett	3753A-6/150	NCR	NCR
WC079403	Gauge (Depth)	Starrett	3753A-6/150	NCR	NCR
EL00004012	Measurement Tools (Tape Measure)	Craftsman	CMHT37565	05/11/2023	05/11/2025
WC075089	Gauge (Depth)	Chesapeake Testing	Local Manufactured Depth Gauge W/ optional NIJ Tip	04/25/2024	07/25/2024

**END OF REPORT**