



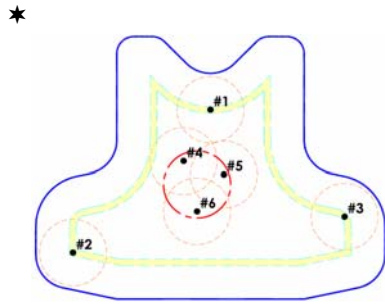
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## MSA White Paper on Proposed NIJ Standard 0101.06

The National Institute of Justice has released a draft of the next revision of NIJ Standard 0101.06—Ballistic Resistance of Personal Body Armor. MSA believes that this represents a significant step toward improved safety for Law Enforcement Officers. In this paper, we highlight key elements of this draft standard, which is expected to be released in the 2<sup>nd</sup> quarter 2008, with first certifications to be issued in the 3<sup>rd</sup> quarter of 2008.

### **Key Provisions of the New Standard**

To ensure a higher level of protection for police officers, the new standard proposes a more challenging and expanded level of testing for initial certification for threat levels IIA, II, and IIIA. This is achieved through changes to the testing protocol, which are summarized below:

- Armor Classifications – Level I has been removed from the standard; it is not used in current practice.
- Revised Threats and Velocities – Testing of **new** armor will be based on **elevated velocities**. Specifically, the test velocities for new armor have been increased on **Level IIA** for both .40 caliber (from 1055 feet per second [fps] to 1155 fps) and 9mm (from 1120 to 1224 fps). For **Level II**, the 9mm velocity has been increased from 1205 to 1306 fps. For **Level IIIA**, the 9mm threat round has been replaced with the .357 Sig threat round that will have a test reference velocity of 1470 fps. These provisions are intended to expose the armor to velocities and rounds that are increasingly likely to be encountered on the street or in the line of duty.
- Revised Shot Pattern – The shot pattern has been adjusted to modify the location of **edge shots** so that the edge shot distance for lighter threats has been reduced from 3" to 2". In addition, a 3-round **group shot** has been included for shots 4, 5, & 6, with these shots required to fall within a 3.9" circle. In the past, all shots were evenly spaced. 
- Environmental conditioning – This process is designed to subject test armors to simulated conditions of **heat, moisture, and mechanical damage** that are reasonably expected with respect to the service environment of body armor. Also, **reference velocities** have been specified for testing environmentally conditioned armor. Earlier standard revisions contained no provisions for environmental conditioning.
- Water Submersion – Armor will be required to pass ballistic requirements following a 30-minute **submersion in water**. Currently, armor is tested following a shower spray exposure to water.
- Sizing templates – The new standard calls for vests to be certified to specific size ranges. To do this, the standard calls out 5 **sizing templates** from which armor manufacturers can choose to be included in a single armor model certification. By choosing a size range for certification, manufacturers identify **maximum and/or minimum areas of coverage** (in square inches) for which their armors can be certified. Currently, a single template is used, and it certifies armors for all production sizes.
- Number of samples tested – The number of armor samples to be submitted for certification will increase from **6 to 28 sets of armor**. This increase allows for a greater number of shots to be taken for each threat round, accommodates multiple size parameters, and allows for testing of conditioned armor. This provides a total of 144 total shots to be taken on a specific armor model. The current standard requires a total of 48 total shots to be taken for certification. This increased number of shots increases the confidence levels with regard to the stated performance of the armor.

The following table summarizes the test variables, rounds, and velocities as identified in the latest draft of the proposed standard. Besides establishing a minimal level of performance, compliance to this sequence provides another safety margin against threats that are increasingly likely to be encountered in the line of duty.

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Armor Type	TEST VARIABLES				PERFORMANCE REQUIREMENTS				SHOT REQUIREMENTS				Total Shots Required
	Test Round	Test Bullet	Bullet Mass	Environmental Conditioned Armor Test Velocity	New Armor Test Velocity	Hits Per Panel at 0° Angle	Maximum BFS Depth	Hits Per Panel at 30° or 45° Angle*	Shots Per Panel	Panel Size	Panel Condition	Panels Required	
IIA	1	9mm FMJ RN	8.0 g (124 gr)	355 m/s (1165 ft/s)	373 m/s (1225 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12
	2	.40 S&W FMJ	11.7 g (180 gr)	325 m/s (1066 ft/s)	352 m/s (1155 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12
II	1	9mm FMJ RN	8.0 g (124 gr)	379 m/s (1245 ft/s)	398 m/s (1306 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12
	2	.357 Magnum JSP	10.2 g (158 gr)	408 m/s (1340 ft/s)	436 m/s (1430 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12
IIIA	1	.357 SIG FMJ FN	8.1 g (125 gr)	430 m/s (1410 ft/s)	448 m/s (1470 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12
	2	.44 Magnum SJP	15.6 g (240 gr)	408 m/s (1340 ft/s)	436 m/s (1430 ft/s)	4	44 mm (1.73 in)	2	6	Large	New	4	24
										Small	Conditioned	2	12

Table 2. P-BFS Performance Test Summary

**Summary**

MSA fully supports this proposed new standard, because we believe it will result in vests that better protect police officers' lives. We applaud the work of many scientists, law enforcement personnel, and government officials who brought about this new revision. As a manufacturer of Personal Protective Equipment, MSA is acutely aware of the need for well defined and enforced standards of product performance and compliance.

MSA is also aware that this new standard is likely to cause a level of concern among some armor manufacturers, as it is likely to lead to increased costs of testing, development, and certification. Also, many marginal armor models may not be compliant with this new protocol. However, the safety of police officers who wear the body armor must always be paramount.

We believe the NIJ 0101.06 draft standard represents a **major step forward** by demanding increased performance from ballistic vests certified to this standard. Vests certified to this standard will increase protection for officers against higher-level threats they encounter on the street; bear up against everyday environmental assaults; and, we believe, offer the comfort and wear-ability demanded by officers.

**Call to action**

Police officers need your help. Supporting this draft standard is the right thing to do, no matter how difficult it may seem for ballistic vest manufacturers. Please take the time to review the NIJ draft standard at the following FTP site.

[ftp://ftp.nist.gov/pub/bfrl/riley/NIJ\\_010106/Release%20Draft%200101.06%20Rev%20260.pdf](ftp://ftp.nist.gov/pub/bfrl/riley/NIJ_010106/Release%20Draft%200101.06%20Rev%20260.pdf)

After reviewing the standard, and in consideration of the increased threats that your officers face every day, please take action by writing to the NIJ at:

Mr. Lance Miller, Director, National Institute of Justice  
 National Law Enforcement and Corrections Technology Center  
 2277 Research Boulevard M/S 8J  
 Rockville, MD 20850

Finally, tell your elected representatives that you support this important new standard.



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