

Body Armor Manufacturer's Workshop

February 15, 2024



**Criminal Justice Testing
and Evaluation Consortium**

A Program of the National Institute of Justice

NIJ | *National Institute
of Justice*
COMPLIANCE TESTING PROGRAM

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Frequently Asked Questions

Responses to pre-submitted questions

Question 1:

What is the basis for the design of the 2 soft armor female clay appliques?
e.g., are they based on a given anthropometric survey (e.g. ANSUR 2)
and representing the extreme female torso sizes and curvatures (e.g. 5% and 95%)?

Response:

They are based on data collected related to public safety staff and uniform clothing manufacturers size data, but not the general public's 5th and 95th percentile.

Question 2:

Are electronic drawing files (.dwg or .dxf) available for the C1-C5 patterns and the female clay molds?

Response:

The molds are available on CJTEC.org; the C1-C5 shapes are not, but we will endeavor to include them soon.



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Responses to pre-submitted questions

Question 3:

If someone wishes to submit a rifle-armor design for testing for RF1-RF3, based on a strike face of imbricated ceramic tiles with soft ballistic fabric on the wear face, it will not know in advance the revision of the testing protocol which will be applied to evaluate perceived weaknesses of the submitted imbricated armor design?

Response:

Angled tests are included within NIJ 0101.07, it is the responsibility of the manufacturer to ensure that the armor is able to meet the all the applicable requirements of the standard.

Question 4:

We want to ensure that shot order is correct. On page 26, Figure 2. NIJ HG1 and NIJ HG2: Allocation and Utilization of Planar Soft Armor Test Items, Shots are listed “1, 2, 3, 4, 5, 6, 7”. Then on section 9.3.6 it states to take shots in the following order “1, 2, 3, 7, 4, 5, 6”. Can you please confirm shot order.

Response:

The order stated in 9.3.6 is correct. It is incorporated in this manner to facilitate the labs handling of armors.



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Question 5:

For the addition of a Shot 7 on the front panel of a test article, for the smaller sample sent can we attempt to put all 7 shots on the panel or are we forced to use 2 separate panels on the smaller size. I mainly ask if the smaller size submitted is a C2 it should easily fit. This would help overall cost by reducing the amount of panels sent for certification?

Response:

There will no option for C2-C5 testing in 07, the scheme document will detail this ITT requirement. If at a manufacturers risk (i.e., if it fails, it cannot be re-submitted) someone wants to put all 7 on a C1 and forgo the shot-to-shot requirements, this would be permissible.

Question 6:

Do you have data from the NIJ approved Labs showing consistent results with shot #7?

Response:

The performance/results of shot 7 are very much material and design dependent. Testing with federal partners yielded positive results.



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Question 7:

Will shot 7 have to be shot at the minimum or will there be a .75" margin?

Response:

There is a +/- associated with the shot location, but the point of aim should be at the intended point of impact, i.e., +/-0.00. The tolerance is there to facilitate testing, not to adjust the intended point of aim/impact.

Question 8:

During hard armor conditioning to E3078 section 13 and 14, is there any time requirement between performing sections 13 and 14? There may be cases where the chamber has cooled but the test items are still hot and may be more affected by the impact procedure.

Response:

This is addressed in ASTM E3078-23 Section 13.2.5: *“Upon completion of the 240h exposure, bring the test items back to controlled ambient and ensure the change in condition does not exceed 3 °C [5 °F] per minute and 5 % per minute.”*



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Question 9:

For the neck scoop on soft armor, ASTM E3107 states that shot 7 is tested at the center of the neck scoop. Is it the intent to protect only in this location or to protect against the entire neckline? Different methods of manufacture may be used depending on the intent.

Response:

There is a defined circle of impact area associated with all shot location and the intent is to protect the whole neck area.

Question 10:

For hard armor, are the 0° and 30° BFD measurements combined together for the UTL calculation? Are the 30° BFD requirements just to remain under 44 or 50mm?

Response:

Dan Longhurst spoke to this during his presentation, There is a clarification of the BFD on hard armor plates. Two 0° shots will be used.



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Question 11:

Section 12.2.2.1(Figure 8) – Is Shot 2 above the center line or below? The text in the figure indicates above, the image indicates below.

Response:

This is an error; Figure 8 should state “below the line” as in Fig 7.

Question 12:

A complete penetration can now be defined by these criteria:

- i. “the test threat is visible from the wear face of the test item”
- ii. “for hard armor, any portion of a test threat, a fragment of a test threat, or a fragment of the test item is embedded in or passes into the backing material directly behind the test item.” Based on this criteria, we have seen cases where ceramic debris, foam, nylon, etc. can be seen behind the test item that typically would not be considered a “complete”. Is there a criteria for “embedded”?

Response:

As addressed in Dan’s presentation, a Fragment is considered a shard or fragment of the test item embedding in the backing material. It is not intended to include the nylon wrap or spall/dust/debris ejected to the sides of the plate.



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Question 13:

There have been times when the backing material has pulled back due to the ballistic impact where portions of projectile debris can be seen from the back but no fragments of the projectile have passed through the test item. What would be the result in this case

Response:

This would be a complete penetration as defined in section 3.2.3 complete penetration (CP), n. – the result of a test threat impact if one or more of the following conditions are met: (1) any portion of a test threat or a fragment of a test threat passes through the wear face of the test item. (2) **the test threat is visible from the wear face of the test item.** (3) a hole is created through the test item by the test threat. (4) for soft armor, any portion of a test threat or a fragment of a test threat is embedded in or passes into the backing material directly behind the test item. (5) for hard armor, any portion of a test threat, a fragment of a test threat, or a fragment of the test item is embedded in or passes into the backing material directly behind the test item.



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Responses to pre-submitted questions

Question 14:

Can any data be shared that shows correlation between each of the certified labs?

Response:

All labs will all be NVLAP accredited and NIJ approved, we will not share specific data pertaining to any of the labs.

Question 15:

When will the NVLAP approval be completed at all of the NIJ labs? This is a critical component to know that our development testing is being completed in accordance with the new specifications.

Response: NVLAP are actively working with the labs to complete required approvals. We are not privy to their precise schedule for completion.

Question 16: Limited coverage, it is not addressed in the NIJ 07 Standard, will the NIJ address this in the Standard or will the previous NIJ 06 and clarification (Administrative Clarification CTP 2018:03) still be in effect?

Response: This was covered in Lance's presentation and will be specifically addressed in the forthcoming scheme documents which will supersede the NIJ 0101.06 Scheme documents.



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Responses to pre-submitted questions

Question 17:

We understand the NIJ is planning to have multiple certs from multiple manufacturers before uploading to CPL. Do you have in mind how many companies and how many certs before the first batch is uploaded to the CPL? Also, if the first 10 that hit the NIJ for review are from one manufacturer, will they all be first on the list?

Response:

The lists will go “live” as they become populated with sufficient numbers to allow for competitive procurements. This will include multiple manufacturers, not just models.

Question 18:

Initially, if a manufacturer is planning to utilize a male back for submission of a female model, can they both be sent in at the same time. Obviously, the manufacturer would wait until the ballistic testing is complete before starting the shooting portion of the protocol for the female.

Response:

Correct. But will be remain a separate test and will depend upon availability and your contract with your chosen lab.



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Responses to pre-submitted questions

Question 19:

Will there be any preference given on the first batch of certifications to US based manufacturers?

Response:

No. All applicants will be afforded the same opportunity to test armors.

Question 20:

Is it still a requirement that on all certified products that the Manufacturing Location Address is placed that clearly shows the actual location that the product is manufactured?

Response:

Yes, the requirement for stating the precise/specific manufacturing location remains.

Question 21:

What are the rules associated with changing a supplier or a material on a certified product?

Response:

It is not permitted for ballistic materials. There have been instances of permitting changes to cover materials (.06 Administrative Clarification); there is a procedure for that in the .07 scheme documents.



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Responses to pre-submitted questions

Question 22:

How does the ICW with 06 soft armor and 07 hard armor and vice versa?

Response:

It doesn't, both armors will need to be 07 certified.

Question 23:

Section 10.2.4 – Are Medium SAPI (~9.5"x~12.5") sizes acceptable? Some ceramic suppliers do not make 10"x12" tile sizes.

Response:

No. The standard states a max of 10x12.

Question 24:

What document or specification defines inferior workmanship? Where can a vendor find this information to ensure compliance?

Response:

This is addressed within the scheme document. Typically, this would manifest as inconsistencies in construction or materials.



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Responses to pre-submitted questions

Question 25:

What consideration has there been related to projectile LOT hardness between certification and surveillance tests? Is there an assumption that MSC projectiles in the 79 and 92 HRB ranges perform similar against armor?

Response:

We are acutely aware of the challenges encountered when testing against legacy ammunition, however officer safety is paramount, and we want the armors to perform against the range of challenges that each ammunition may present.

Question 26:

At a previous workshop in Annapolis, MD. A question was raised about ASTM standards and their being free of charge to CPL holders. Can participants receive free copies of the ASTM standards that are associated with NIJ 0101.07 and NIJ 0123.00 Standards? If so, how do we go about downloading these copies?

Response:

As covered in Dan's presentation. ASTM standards were never free to CPL holders.



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Question 27:

Does NIJ testing now provide a certification rather than conformance acknowledgement?

Response:

Yes.

Question 28:

Why is NIJ not X-raying the clay to verify that there are no voids present in the box. In order to bring NIJ standard into better alignment with U.S. Army testing of hard armor plates shouldn't NIJ x-ray all initial test and subsequent FIT plates for any anomalies that can have an adverse impact on a test outcome?

Response:

There has been no data to suggest that introducing this additional step is required. You could, if you wish, negotiate this (at your expense) with your chosen lab.



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NIJ and the NIJ CTP team would like to thank today's attendees for your support and participation in the NIJ Compliance Testing Program.

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