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Standard Guide for Body Armor for Non-Law Enforcement First Responders¹

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INTRODUCTION

Non-law enforcement first responders, such as fire fighters, emergency medical service providers, and non-law enforcement fire investigators are facing increased exposure to scenes of violence, and, since the early 2000s, many departments have required that ballistic-resistant body armor be worn on emergency calls. Since 2018, the wearing and use of body armor has been required for fire and emergency medical personnel when operating in a warm zone. For the past 40 years, law enforcement officers have been wearing body armor and guidance has been provided to them by the National Institute of Justice. The concern for other responders is that the use and wear conditions are different than for law enforcement: different limitations of body armor, levels of protection, threat assessment, use and care, compatibility with other required protective gear, and training. This guide provides necessary information developed by a multi-discipline group of experts within a consensus process. Those benefiting from this guide include all non-law enforcement responders and their agency/department leadership.

1. Scope

1.1 This guide provides information to non-law enforcement first responders for the selection and use of body armor.

1.2 Non-law enforcement first responders, including but not limited to fire fighters, emergency medical service providers, fire investigators, and civilian/community response teams, require specialized guidance on types of body armor and their limitations, levels of protection, threat assessment, use and care, compatibility with other required protective gear, and training.

1.3 This guide is directed to authorities having jurisdiction (AHJs) and all non-law enforcement first responders and their agency or department leadership.

1.4 This guide is not intended for law enforcement and corrections personnel.

NOTE 1—See NIJ SAG 0101.06.

¹ This guide is under the jurisdiction of ASTM Committee E54 on Homeland Security Applications and is the direct responsibility of Subcommittee E54.04 on Public Safety Equipment.

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1.5 This guide is divided into the following sections:

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4	Significance and Use
5	Managing a Body Armor Program
6	Understanding Protection Levels
7	Selecting the Appropriate Body Armor
8	Sizing Body Armor to the End User(s)
9	Guidance on Purchasing
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11	Fit, Coverage, and Wear Guidance
12	Fire Fighter Guidance for Body Armor Use with Turnout Gear
13	Inspection, Care, and Maintenance
14	Keywords
Annex A1	Risk Assessment Guidance
Appendix X1	Body Armor Program Management Guidance
Appendix X2	Comparison of NIJ Ballistic Protection Levels
Appendix X3	General Federal Government Grant Programs

1.6 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.6.1 The user of this standard will identify the system of units to be used, and it is critical to ensure that any cross-referenced standards maintain consistency of units between standards.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

[E3003 Practice for Body Armor Wearer Measurement and Fitting of Armor](#)

[E3005 Terminology for Body Armor](#)

[E3195 Guide for Body Armor Program Management](#)

2.2 NFPA Standards:³

[NFPA 3000 Standard for an Active Shooter/Hostile Event Response \(ASHER\) Program](#)

2.3 NIJ Standards:⁴

[NIJ Standard 0101.06 Ballistic Resistance of Body Armor](#)

[NIJ Standard 0115.00 Stab Resistance of Body Armor](#)

[NIJ SAG 0101.06 Selection and Application Guide to Ballistic-Resistant Body Armor for Law Enforcement, Corrections and Public Safety](#)

3. Terminology

3.1 Definitions from Terminology E3005:

3.1.1 *accessory, n*—a body armor component that is detachable or removable from the body armor and is intended to provide extended area of coverage protection against threats that may include ballistic threats, stabbing, fragmentation, blunt impact, or a combination of threats.

3.1.1.1 *Discussion*—Accessories are typically attachments to tactical body armor providing protection to areas not covered by the vest, such as the shoulders, upper arms, neck, sides, pelvis, and groin. See *tactical body armor*. See *vest*.

3.1.2 *armor panel, n*—a component of soft body armor consisting of protective materials, typically enclosed in a panel cover.

3.1.3 *body armor, n*—an item of personal protective equipment intended to protect the wearer from threats that may include ballistic threats, stabbing, fragmentation, or blunt impact.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

⁴ Available from National Institute of Justice (NIJ), 810 7th St., NW, Washington, DC 20531, <http://nij.gov>.

3.1.3.1 *Discussion*—Law enforcement and corrections officers typically refer to body armor as a vest.

3.1.4 *carrier, n*—a garment whose primary purpose is to retain the armor panel(s) or plate(s) and provide a means of supporting and securing the armor panel(s) or plate(s) to the wearer.

3.1.5 *hard armor, n*—an item of personal protective equipment that is constructed of rigid materials and is intended to protect the wearer from threats that may include ballistic threats, stabbing, fragmentation, or blunt impact, or combinations thereof; synonymous with hard armor plate and plate.

3.1.6 *in conjunction with armor, n*—soft or hard armor that is designed to provide a specific level of ballistic protection only when layered with a specified model(s) of body armor.

3.1.7 *soft armor, n*—an item of personal protective equipment constructed of pliable/flexible materials intended to protect the wearer from threats that may include ballistic threats, stabbing, fragmentation, or blunt impact.

3.1.8 *strike face, n*—the surface of an armor panel or plate intended to face the oncoming threat.

3.1.9 *vest, n*—type of body armor intended to protect the wearer's torso.

3.1.10 *wear face, n*—the surface of an armor panel or plate that is intended to be placed against or proximal to the wearer's body.

4. Significance and Use

4.1 This guide is intended for non-law enforcement first responders facing increased exposure to scenes of violence where firearms or stabbing weapons may be used.

4.2 The use and wear conditions are different than for law enforcement, requiring specialized guidance on types of body armor and their limitations, levels of protection, threat assessment, use and care, compatibility with other required protective gear, and training.

5. Managing a Body Armor Program

5.1 To assist public safety agencies or departments with managing a body armor program, Guide E3195 was developed which includes recommendations for policies, program roles and responsibilities, program planning, and inventory management.

5.2 Body armor program management guidance from Guide E3195, tailored specifically for non-law enforcement applications requiring use of body armor, is provided in [Appendix X1](#).

6. Understanding Protection Levels

6.1 NIJ is the U.S. government agency responsible for developing and maintaining performance standards for body armor worn by U.S. law enforcement, corrections officers, and other public safety personnel.

6.2 There are three types of body armor addressed by NIJ standards:

6.2.1 Ballistic-resistant armor to protect against handgun and rifle threats;

6.2.2 Stab-resistant armor to protect against edged or pointed weapons; and

6.2.3 Combination or multi-threat armor to protect against ballistic and stab threats.

6.3 For ballistic protection against handguns and rifles, it is recommended that any body armor purchased be verified to contain ballistic-resistant panels or plates certified by the NIJ compliance testing program (CTP)⁵ to NIJ Standard 0101.06,⁶ or the latest version of that standard,⁷ when available.

6.3.1 NIJ defines ballistic protection levels for handgun and rifle protective body armor. **Table 1** provides a listing of NIJ ballistic protection levels from the current standard and the associated ammunition against which the protection is tested.

6.3.2 Handgun protective body armor typically contains soft armor panels, while rifle protective body armor typically contains hard armor plates. It is intended to be used for extended daily wear while responders perform their daily duties. It can be worn under a uniform in a concealable carrier or worn over a uniform in an external carrier. If it is worn under a uniform, it is called concealable armor.

6.3.3 Rifle protective body armor typically contains rigid panels, or plates, of ballistic materials. Rifle plates may be worn in a plate carrier over the uniform, but rifle plates are often used in conjunction with (ICW) soft armor panels, making it thicker and heavier than soft armor alone. Rifle protection is not typically worn for extended periods but is donned for wear by responders entering high-risk situations.

6.3.3.1 Plates that are part of an ICW armor must be used only with the designated soft armor panel. If not, the desired level of ballistic protection may not be achieved. Consequently, the hard armor plate component of the ICW armor is labeled to identify the corresponding model of soft armor panel with which it is to be used: “WARNING! This armor provides the rated protection stated above ONLY when used in conjunction with soft armor model XYZ123.”

6.3.4 Both panels and plates are secured to the wearer’s torso by a carrier that has fitting adjustments and other features.

6.3.5 Ballistic-resistant body armor is not designed or tested to protect against edged or stabbing weapons and will not provide stab protection (unless it is combination armor; see 6.5).

6.4 For stab protection against edged or pointed weapons, it is recommended that body armor purchased be verified to contain stab-resistant panels certified by the NIJ Compliance Testing Program (CTP)⁵ to NIJ Standard 0115.00,⁸ or the latest version of that standard, when available.

6.4.1 Stab protective body armor typically contains soft armor panels. The panels are secured to the wearer’s torso by a carrier that has fitting adjustments and other features.

6.4.2 An armor designed to protect only against edged or stabbing weapons will not protect the wearer against firearms.

NOTE 2—Stab armor is not tested to protect against needle sticks.

6.5 Combination armors are designed to protect against both firearms and edged or stabbing weapons. In these armors, the panels contain layers of materials that are stab resistant as well as layers of materials that are ballistic resistant. Such armors may also be called dual threat or multiple threat armors. NIJ

⁵ NIJ CTP Compliant Product Lists (CPL) <https://cjtec.org/compliance-testing-program/compliant-product-lists/>.

⁶ NIJ Standard 0101.06, Ballistic Resistance of Body Armor, <https://www.ojp.gov/pdffiles1/nij/223054.pdf>.

⁷ NIJ Standard 0101.07 is expected to be published in 2022. See **Appendix X2** for a comparison between the protection levels of NIJ Standard 0101.06 and NIJ Standard 0101.07.

⁸ NIJ Standard 0115.00, Stab Resistance of Body Armor, <https://www.ojp.gov/pdffiles1/nij/183652.pdf>.

TABLE 1 Current NIJ Ballistic Protection Levels and Associated Test Ammunition

	
<p>Handgun Protection Levels:</p> <ul style="list-style-type: none"> • Level IIA: Tested against 9 mm and .40 S&W ammunition • Level II: Tested against 9 mm and .357 Magnum ammunition • Level IIIA: Tested against .357 SIG and .44 Magnum ammunition 	<p>Rifle Protection Levels:</p> <ul style="list-style-type: none"> • Level III: Tested against 7.62 mm FMJ, steel jacket with lead core rifle ammunition • Level IV: Tested against .30 caliber steel core armor-piercing rifle ammunition

provides a list of those combination armors⁵ that have been tested and found to be compliant with both NIJ Standard 0101.06 and NIJ Standard 0115.00. Combination armors are also listed on both the NIJ ballistic- and stab-resistant armor compliant product lists.

6.5.1 Because combination armors provide two types of protection, they will likely be heavier, thicker, and less comfortable for the wearer. These operational considerations must be evaluated as part of the purchasing and wear decision by the agency.

7. Selecting the Appropriate Body Armor

7.1 Responders requiring body armor may be those likely to respond to the following types of situations where firearms or stabbing weapons are expected or likely to be present, such as those listed below:

7.1.1 Active violence events;

7.1.2 Mass casualty events with potential for ballistic injury;

7.1.3 Civil disturbances, riots, or events with large crowds;

7.1.4 Incidents involving domestic violence, family dispute, or an address that has been flagged for known violence against public safety personnel;

7.1.5 Suicide where firearms or bladed weapons are known or suspected to have been used;

7.1.6 Assisting law enforcement with welfare checks or violent crime scenes;

7.1.7 Arson investigation; and

7.1.8 Warm zone operations, both active and pre-staged (including rescue task force response).

7.2 Department leadership should consider and identify threats of concern expected using a risk assessment for their agency and identify which personnel require ballistic protection.

7.2.1 It may be necessary for some personnel to be issued individual body armor that is to be worn on a regular basis as part of the duty uniform.

7.2.2 For other personnel, it may be acceptable to make available shared body armor that is stored until needed and worn by multiple people. Shared body armor should be stored in designated locations that have controlled environmental conditions.

NOTE 3—Shared body armor is sometimes referred to as a “pool vest.”

7.3 A critical first step in determining the type and level of protection needed for responders is to perform a risk assessment.

7.3.1 For active shooter events, risk assessment guidance is provided in NFPA 3000.

7.3.2 For other types of events, general risk assessment guidance is provided in **Annex A1**.

7.4 *Understanding the Environment of Use:*

7.4.1 If required to wear body armor with turnout gear, it is important to understand that the high-temperature fire environment will likely damage body armor. If body armor will be used in a high-temperature fire environment, it should be tested for performance in that environment.

8. Sizing Body Armor to the End User(s)

8.1 Individual body armor should be sized and fitted for the wearer. Practice **E3003** provides detailed guidance for measuring a body armor wearer and ensuring that the body armor is properly adjusted and fitted.

NOTE 4—Practice **E3003** includes details for measuring and fitting both male and female personnel.

8.2 Shared body armor should be made available to personnel in a range of sizes so that the user can select the best fitting body armor from the available sizes in storage.

8.2.1 When purchasing shared body armor, the measurements (at minimum, height, weight, and waist size) of the department personnel who will wear the armor should be considered, and a range of sizes should be purchased.

8.2.2 Some suppliers sell one-size-fits-most (or universal) carriers. These carriers are made to hold soft body armor panels or plates on the wearer’s torso front and back, and have expandable cummerbunds into which smaller protective accessories can be inserted to provide protection on the sides of the torso. The carriers also have adjustable shoulder straps for positioning the panels or plates correctly on the wearer’s torso.

8.2.2.1 The manufacturer should be contacted to ask the size ranges for particular armor models and the corresponding wearer sizes that can be accommodated. See **Table 2** for an example.

TABLE 2 Example Armor Sizes and Corresponding Wearer Sizes

Armor Size (Body Length)	Panel/Plate Size	Cummerbund Size	Wearer Weight and Height Range
Small to Medium, Regular	10 × 12 in. [25 × 30 mm]	22 to 30 in. [56 to 76 cm] (SM-MD)	<150 lb, ≤6 ft [<68 kg, ≤1.8 m]
Large, Regular	10 × 12 in. [25 × 30 mm]	22 to 52 in. [56 to 132 cm] (LG-XL)	150 lb to 275 lb, ≤6 ft [68 kg to 125 kg, ≤1.8 m]
Large, Long	11 × 14 in. [28 × 35 mm]	32 to 52 in. [81 to 132 cm] (LG-XL)	150 lb to 275 lb, >6 ft [68 kg to 125 kg, >1.8 m]
Extra Large	11 × 14 in. [28 × 35 mm]	54 to 68 in. [137 to 173 cm] (2XL+)	>275 lb, >6 ft [>125 kg, >1.8 m]

9. Guidance on Purchasing

9.1 Purchasers should follow the department policies for procurement, which should identify the required level(s) of protection, department-approved types of carriers, and other department requirements.

9.2 Generally, body armor purchases for a department fall into one of three categories:

9.2.1 Small quantity departmental purchases;

9.2.2 Large quantity departmental purchases (that is, several hundred units or more); or

9.2.3 As-needed purchases procured through an open-ended agreement (also called a term contract).

9.3 Departments are encouraged to take advantage of cooperative purchasing programs that allow them to share procurement contracts, which may save significant time and money in contract production and result in lower contract prices through the power of aggregation. One such program in the U.S. is the National Association of State Procurement Officials (NASPO) ValuePoint program which offers the opportunity for agencies to take advantage of public cooperative contracting for the purchase of body armor.⁹

9.3.1 Should a department or end user not wish to take advantage of cooperative purchasing programs, sample procurement language may be found in NIJ SAG 0101.06.

9.4 Purchases made through a competitive process involving several bids from different suppliers tend to provide the best value. This is particularly the case in large-quantity purchases.

9.5 Obtaining objective information on body armor on which to base purchasing decisions can be challenging. Suppliers will naturally tend to present their products in the best possible light, which makes comparison between competing products difficult. Once suppliers have presented their products, the next step is to verify that any products being considered are listed on the National Institute of Justice Compliant Products List (NIJ CPL). Any products not listed should not be considered for purchase.

9.6 Procurement specifications should be clear and not ambiguous in any way. At the same time, over-specification should be avoided (for example, identifying a specific product instead of a level of protection) because that may tend to eliminate competition and drive cost up. Rather, departments should request bids for body armor that contains ballistic panel or plate models listed on the NIJ CPL.

9.7 A typical purchase specification for soft armor vests might include the following wording to ensure that bids comprise only NIJ-certified ballistic panels:

“The ballistic panels of the body armor shall have an NIJ-CTP model designation listed on the NIJ Ballistic Armor Compliant Products List. The model designation shall have a handgun protection level (Level II, Level IIIA) as defined in NIJ Standard 0101.06.”

⁹ Details may be found at: <https://www.naspovaluepoint.org/portfolio/body-armor2016-2021/>.

9.8 A typical purchase specification for rifle protective body armor might include the following wording to ensure that bids comprise only NIJ-certified ballistic plates:

“The ballistic plates of the body armor shall have an NIJ-CTP model designation listed on the NIJ Ballistic Armor Compliant Products List. The model designation shall have a rifle protection level (Level III, Level IV) as defined in NIJ Standard 0101.06.”

9.9 Statements by a vendor or manufacturer that a model is “just like” or “identical to” a model from the NIJ Ballistic Armor CPL or “meets the NIJ Standard” should not be accepted. Only body armor with NIJ-certified ballistic panels or plates (listed on the current NIJ Ballistic Armor CPL) should be purchased.

9.10 It is important to note that NIJ only certifies protective panels and plates; NIJ does not certify carriers or accessories.

9.10.1 Purchase agreements should specify carrier requirements and any additional features:

9.10.1.1 Covert carrier (under the duty uniform) vs. overt carrier (over their duty uniform);

9.10.1.2 External carrier label to identify the type of responder (such as, fire, EMS);

9.10.1.3 Fastener type (for example, zipper or hook and loop closures); or

9.10.1.4 Other features, such as pockets, cargo loops, and similar features that may assist a responder in the execution of his/her duties.

9.11 Grant funding for purchasing personal protective equipment (PPE) may be available, and some government resources are provided in [Appendix X3](#). Use of federal grant funds requires that the body armor be NIJ certified.

10. Verifying that Your Body Armor is NIJ Certified

10.1 *NIJ Compliant Products Lists:*

10.1.1 See the listings of body armor certified by NIJ.⁵

10.2 *Checking your Body Armor Label:*

10.2.1 Prior to using body armor, it is recommended that the user open the carrier and examine the label on each protective panel or plate. The label should have the NIJ Certification Mark shown in [Fig. 1](#).



FIG. 1 NIJ Certification Mark

10.3 *NIJ Advisory and Safety Notices:*

10.3.1 You should periodically check for NIJ advisory notices or safety notices related to your body armor model. These notices are posted by the CTP: <https://cjtec.org/active-nij-advisory/>.

10.3.2 NIJ advisory notices are issued when the NIJ has concerns with the body armor model(s) being reviewed and evaluated. Until the issues are resolved, the model(s) in question will be suspended from the Compliant Products List, pending completion of the review and evaluation process. The CTP will promptly communicate all resolutions of advisory notices.

10.3.3 NIJ safety notices identify body armor models that have been removed from the CPL due to safety concerns. If your body armor model has been removed from the CPL, it should be replaced as soon as possible.

11. Fit, Coverage, and Wear Guidance

11.1 With proper fit, body armor should ensure maximum coverage without hindering your mobility or ability to perform normal duties. Although comfort is a subjective term, increased comfort through proper fit is an important goal.

11.2 *Soft Body Armor for Handgun Protection (often referred to as a “vest”):*

11.2.1 The following guidelines may help you determine if a vest fits properly and provides appropriate coverage. These guidelines apply to vests that are worn over or under the duty uniform.

11.2.1.1 Prior to putting on the vest, open the carrier and examine the label on each ballistic panel. The label may say “Wear face,” “Strike face,” “This side toward body,” or something similar. Verify the panel faces the correct direction in accordance with the label. Many armor panels are designed to work in one direction only. Inserting the panels in the incorrect direction can result in the armor failing to perform as intended. If necessary, remove the panel and re-insert it into the carrier in the correct direction. Close the carrier.

11.2.1.2 Put on the vest so that the front panel is over the front of your body and the back panel is over your back. The front panel can generally be identified by a neck scoop.

11.2.1.3 After your armor is on, adjust the shoulder straps (if possible) to position the vest comfortably on the torso and adjust the side straps for a snug fit. Do not over tighten the side straps. It is natural to want to cinch the straps down as tightly as possible. The vest should fit snugly, but not so tightly that it affects breathing, including deep breathing during vigorous activities. The vest should slide slightly on the body as the torso is rotated side to side. If the vest moves with the body, it is probably too tight.

11.2.1.4 To ensure appropriate coverage on the side, for both over-the-uniform and under-the-uniform vests, the sides of the vest should always overlap by approximately two inches front over back (that is, the front panel should be on top of the back panel). This may prevent a bullet from the front from entering between the panels and entering the torso. This also provides additional protection against shots under the arm.

11.2.1.5 Protective coverage under the arms should be as high as possible without compromising the ability to obtain a shooting position or causing discomfort when your arms are lowered.

11.2.1.6 The length of the panels relative to the body is very important. For concealable (under-the-uniform) vests, the front panel should extend from just below the suprasternal notch

(base of the neck) to two to three finger-widths above the top of the duty belt when standing. For over-the-uniform vests, the vest can be slightly longer without impeding movement or comfort. A gap above the duty belt is normal and necessary to prevent the vest from being pushed up into your throat when you are sitting. You should check the fit of your vest by sitting down with the vest on. When seated, the front of the vest should ride just on top of the duty belt but should not shift up into the throat. If it does shift up, follow your agency procedures for reporting issues with your body armor.

11.2.2 You should perform a self-assessment to check the fit of your vest when you receive it and periodically throughout the lifetime of the armor. If your vest does not fit properly, follow your agency procedures for reporting issues with your body armor.

11.3 *Hard Armor for Rifle Protection:*

11.3.1 Hard armor plates may be worn alone in a plate carrier, may be inserted into vest carrier pockets (front and back) and worn outside of soft armor, or may be worn as a matched set of plates and soft armor (in other words, in conjunction with armor). Regardless, it is important that the plates be correctly sized for your torso to provide as much coverage as possible while not interfering with your range of motion.

11.3.2 To check the fit and coverage of your hard armor plates, follow the guidelines below:

11.3.2.1 Examine the label on each plate. The label may say “Wear face,” “Strike face,” “This side toward body,” or something similar.

11.3.2.2 When using plates with soft armor, the vest should be fitted and adjusted per the above guidelines. Then, insert the front and back plates into the carrier, making sure that the front plate is inserted in the front of the carrier and the back plate is inserted in the back of the carrier, and making sure that the plates are in the correct orientation (right side up) and correct direction (wear face toward torso, strike face away from torso).

(1) The positioning of the hard plate depends on the location of the pockets on the soft armor carrier. Ideally, the front and rear plates will be positioned to provide protection primarily to the vital organs in the chest, especially the heart.

(2) For plates worn on top of soft armor, the coverage will not be as extensive as that of the underlying soft armor vest.

(3) For plates worn in a plate carrier, there will be no protection on the sides of the torso as the plates only protect front and back.

11.3.2.3 When using plate carriers, insert the front and back plates into the carrier, making sure that the front plate is inserted in the front of the carrier and the back plate is inserted in the back of the carrier, and making sure that the plates are in the correct orientation (right side up) and correct direction (wear face toward torso, strike face away from torso). Put the carrier on your torso. If you have not yet done so, adjust the shoulder straps to position the carrier comfortably on the torso and adjust the side straps for a snug fit. Do not over tighten the side straps. It is natural to want to cinch the straps down as tightly as possible. The carrier should fit snugly but not so tightly that it affects breathing. Ideally, the front and rear plates

should be positioned to provide protection primarily to the vital organs in the chest, especially the heart.

11.4 Body armor carriers worn externally should be marked and labeled to distinguish the wearer from law enforcement.

12. Fire Fighter Guidance for Body Armor Use with Turnout Gear

12.1 Over exertion and heat stress have been the leading cause of death of fire fighters for decades. Adding body armor to turnout gear is expected to significantly increase the heat stress level of the fire fighter.

12.2 It is recommended that body armor not be worn with turnout gear.

12.2.1 If a department chooses to use body armor with turnout gear, then studies should be conducted to understand whether the additional ballistic protection causes more harm than good in terms of heat stress.

12.2.2 Another option might be that if a ballistic vest is required, then fire fighters should not wear turnout gear but perhaps some other flame-resistant clothing that is less stressful in terms of heat.

12.3 If body armor is worn with turnout gear, it must be worn under the turnout gear to prevent damage or melting of components.

12.3.1 Body armor may include polyester or other materials that are flammable and melt, which could cause significant injury to the wearer.

13. Inspection, Care, and Maintenance

13.1 The individuals wearing body armor (whether it is individual or shared body armor) are responsible for inspecting and caring for their body armor. Any issue, such as damage or unusual wear, should be reported to the person's immediate supervisor.

13.1.1 When an individual removes a shared body armor from storage, that person should be responsible for logging in/out their use of the body armor. The user should return the body armor to storage in mission-ready condition.

13.2 Inspecting Body Armor:

13.2.1 Body armor needs to be inspected and cared for properly in order to maintain its protective capability.

13.2.2 You should visually inspect soft armor panel covers frequently to check for cuts, tears, problems with the seals, and wear (for example, holes). If your armor has any of these issues, the protective material could be exposed to moisture and other potential degrading factors. If the integrity of the panel cover is compromised in any way, follow your department procedures for reporting issues with body armor immediately. You should not open the armor panel covers for any reason. These panel covers are sealed by the manufacturer to protect the material against degradation.

13.2.3 You should visually inspect hard armor plates frequently for signs of damage that could degrade protective performance. Visible damage is a clear indicator that the armor plate should be replaced.

13.2.4 Periodically, you should inspect the label. If the label becomes illegible, shows signs of excessive wear, or becomes

detached, you should follow your department procedures for reporting issues with body armor. Having a legible, intact label allows you to identify the model and protection level of an armor. This is especially important if an NIJ safety or advisory notice is issued.

13.2.5 When checking the label, note the issue date and compare it to the supplier's protective material warranty (also found on the label). If your armor has been in service beyond its declared warranty period, follow your department procedures for reporting issues with body armor. Serviceable armor should continue to be worn until a replacement armor is available. Wearing armor that may have reduced effectiveness is better than not wearing any armor.

13.3 Handling your Body Armor Panels and Plates:

13.3.1 Armor panels must fit into the carrier in the way they were designed. Ensure the armor panels fit into the carrier with the strike face and wear face correctly oriented. You can determine the correct orientation by referring to the panel label. The panel label will indicate whether the labeled side is the strike face or wear face.

13.3.2 You should avoid needlessly flexing, bending, compressing, or creasing soft armor panels when handling them. Armor panels will flex and bend as they are worn, but excessive wear of the panel may contribute to degradation of the protective materials over time.

13.3.3 You should handle hard armor plates carefully, particularly those incorporating ceramic materials, because they may be fragile. Ceramic plates should not be dropped on hard surfaces as this can cause breaks or cracks that can have an adverse effect on performance.

13.4 Cleaning Your Body Armor:

13.4.1 Your armor should be cleaned on a regular basis. You should always follow the cleaning and care instructions provided with your armor for proper cleaning. Generally, the industry procedure for cleaning soft armor panels is:

13.4.1.1 Remove the panels from the carrier;

13.4.1.2 Wipe each panel cover using a damp sponge or soft cloth and cold water;

(1) Improper cleaning can damage an armor panel or a carrier. Damaged panels can cause the body armor to fail when struck by a bullet. Armor panels are not to be dry cleaned, machine-washed or machine dried, either in the home or commercially. Detergents, dry-cleaning solvents, disinfectants, and laundry equipment can damage or degrade panels. Bleach, even when highly diluted, may degrade the panel cover and can cause severe degradation of the protective material.

(2) You should avoid rinsing, soaking, submerging, or spraying the armor panels. Any superficial smudges, marks or soiling remaining on the panel cover should not harm the armor panel integrity.

13.4.1.3 Air-dry the panels flat. Avoid folding or creasing the panels while drying. Never dry armor panels outside, even in the shade, as exposure to ultraviolet light may degrade the panel cover;

13.4.1.4 Clean the carrier per supplier instruction or by the general industry procedures of 13.5; and

13.4.1.5 Insert the dry panels back into the carrier with each panel strike face or wear face correctly oriented.