

## **Staff Position for Licensees' Use of Firearms Training Simulators**

- (1) The staff of the U.S. Nuclear Regulatory Commission (NRC) finds it acceptable for commercial power reactor licensees to use firearms training simulators<sup>1</sup> (FATS) as a method for satisfying the following:
- some of the firearms and weapons familiarization requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 73, “Physical Protection of Plants and Materials,” Appendix B, “General Criteria for Security Personnel,” paragraphs (VI)(E)(1)(c) and (VI)(E)(1)(d)(11); additional information on those requirements appears in Section 8.1.11 of Regulatory Guide (RG) 5.75, “Training and Qualification of Security Personnel at Nuclear Power Reactor Facilities,” issued July 2009;
  - some of the other firearms and weapons training requirements in 10 CFR Part 73, Appendix B(VI)(E)(1)(d), which are described in Sections 8.1.1 through 8.1.10 of RG 5.75; and
  - the use of deadly force training requirement in 10 CFR Part 73, Appendix B(VI)(E)(1)(e).

The References section below summarizes the many applicable NRC firearms and weapons familiarization requirements. The staff anticipates that licensees will be most successful at demonstrating compliance with the greatest number of these requirements with FATS that use actual firearms that: (1) are the same as those the licensees use to implement their protective strategies; (2) are modified so they function safely with the simulators; and (3) remain capable of being readily restored to their original live-fire configurations. The staff refers to such systems as “firearms-based FATS.” Licensees using FATS that function only with inert, replica, or simulated firearms (i.e., not legally considered to be firearms) will likely be able to satisfy fewer requirements; the staff refers to these systems as “non-firearms-based FATS.”

The staff expects licensees to document the intended FATS function(s) in their training and qualification plans. Licensee site procedures and lesson plans should outline details on the implementation of FATS to formalize the FATS training standards and ensure their consistent use across the security organization. Additionally, licensees should test, maintain, and operate FATS considering vendor or manufacturer recommendations and the method(s) outlined in site procedures. Manufacturer recommendations and specifications for equipment maintenance, testing, and calibration are important elements for ensuring FATS perform as designed and maintain the capability to perform their intended function(s).

- (2) The staff's position is that commercial power reactor licensees may use firearms-based FATS to satisfy one of the three annual range activities required by 10 CFR Part 73, Appendix B(VI)(E)(1)(f).
- (3) The staff is not aware of any FATS course of fire that meets the qualification requirements in 10 CFR Part 73, Appendix B(VI)(F)(4)(a)–(d), because current law

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<sup>1</sup> The term “firearms training simulator” encompasses the entire system needed to create, control, or operate in the simulated environment, including the personnel, facility, components, equipment, and software.

enforcement and nationally recognized courses of fire require completion with live ammunition. Additionally, the staff considers firearms skills and proficiency to be critical elements of licensees' protective strategies, and although FATS may be able to reproduce the content of qualification courses, FATS do not accurately replicate the recoil or other important tactical, physical, and psychological factors that shooters experience when firing live ammunition or completing live-fire qualification courses. Examples of such factors include mechanical offset at close ranges, distractions from contact with fired casings, physical activity and loud noise stressors, and concussive effects. Inspectors encountering licensee use of FATS to satisfy firearms or weapons qualification requirements in 10 CFR Part 73, Appendix B(VI)(F), should contact Office of Nuclear Security and Incident Response (NSIR) staff at NRC Headquarters as soon as practical. Table 1 summarizes the staff position on FATS.

**Table 1. Comparison of the Staff Positions on FATS and Firearms**

<b><u>Requirement</u></b>	<b><u>Non-Firearms-Based FATS</u></b>	<b><u>Firearms-Based FATS</u></b>	<b><u>Firearms</u></b>
Familiarization	Acceptable (to the extent demonstrated)	Acceptable (to the extent demonstrated)	Acceptable
Other firearms & weapons training	Acceptable (to the extent demonstrated)	Acceptable (to the extent demonstrated)	Acceptable
Use of force	Acceptable (to the extent demonstrated)	Acceptable (to the extent demonstrated)	Acceptable
Range activity	Not acceptable	Acceptable (once per year)	Acceptable
Qualification	Not acceptable	Not acceptable	Acceptable

**References**

*Firearms Familiarization*

- (1) Part 73 of 10 CFR, Appendix B(VI)(E)(1)(c), states, "Annual firearms familiarization. The licensee shall conduct annual firearms familiarization training in accordance with the Commission-approved training and qualification plan."
- (2) Part 73 of 10 CFR, Appendix B(VI)(E)(1)(d), states, "The Commission-approved training and qualification plan shall include, but is not limited to, the following areas:
  - (1) Mechanical assembly, disassembly, weapons capabilities and fundamentals of marksmanship.
  - (2) Weapons cleaning and storage.
  - (3) Combat firing, day and night.
  - (4) Safe weapons handling.
  - (5) Clearing, loading, unloading, and reloading.
  - (6) Firing under stress.
  - (7) Zeroing duty weapon(s) and weapons sighting adjustments.
  - (8) Target identification and engagement.
  - (9) Weapon malfunctions.
  - (10) Cover and concealment.
  - (11) Weapon familiarization."

- (3) Title 18 of the *United States Code* (U.S.C.), Section 921(a)(3)(A), defines a firearm, in part, as “any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive; ...”
- (4) Regulatory Guide 5.75, Section 8.1.11, states, “In accordance with Section VI, paragraph E, of Appendix B to 10 CFR Part 73, the objective of firearms familiarization training is to conduct initial and annual firearms drills and courses of fire to improve the skill and ability of armed security personnel. Firearms familiarization, at a minimum, must include the following:
  - (1) firearms handling drills,
  - (2) clearing, loading, unloading, and reloading procedures for each firearm,
  - (3) training for engaging potential targets when obstacles such as smoke, fencing, doors, and walls are encountered during a contingency event,
  - (4) drills that demonstrate the ability to transition from one firearm type to another,
  - (5) drills that demonstrate the ability to recover from simulated weapon malfunctions (e.g., dummy rounds),
  - (6) cover and concealment drills,
  - (7) nonlethal weapons training and drills, and
  - (8) cleaning and maintenance procedures for each firearm.”

#### *Use of Force*

- (1) Part 73 of 10 CFR, Appendix B(VI)(E)(1)(e), states, “The licensee shall ensure that each armed member of the security organization is instructed on the use of deadly force as authorized by applicable state law.”
- (2) Regulatory Guide 5.75, Section 8.2, states, “In accordance with to [sic] satisfy Section VI, paragraph E.1.e, of Appendix B to 10 CFR Part 73, each licensee must ensure that all armed members of the security organization are instructed on the use of force continuum, including the use of deadly force as authorized by applicable State law. Each member of the security organization, commensurate with his or her assigned duties, must thoroughly understand the proper use of force within the force continuum.”

#### *Range Activities*

- (1) Part 73 of 10 CFR, Appendix B(VI)(E)(1)(f), states, “Armed members of the security organization shall participate in weapons range activities on a nominal four (4) month periodicity. Performance may be conducted up to five (5) weeks before, to five (5) weeks after, the scheduled date. The next scheduled date must be four (4) months from the originally scheduled date.”
- (2) Title 10 of U.S.C. 101(e)(1)(A) states, “The term ‘range,’ when used in a geographic sense, means a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. Such term includes the following: Firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas.”
- (3) Title 10 of U.S.C. 101(e)(2)(B) states, “The term ‘range activities’ means the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems.”

- (4) Regulatory Guide 5.75, Section 8.3, states, “In accordance with Section VI, paragraph E.1.f, of Appendix B to 10 CFR Part 73, armed security officers must participate in range activities on a nominal 4-month periodicity. The activities may be conducted up to 5 weeks before or 5 weeks after the scheduled date, but the next scheduled date must be 4 months from the original scheduled date. This provision is intended to account for unexpected site-specific circumstances that may delay an individual’s ability to participate in range activities on a specified date.”

## **Background**

On June 11, 2019, NRC Region I notified the NSIR staff that beginning in July 2019, a licensee planned to use FATS as the method for satisfying firearms familiarization training requirements for security personnel assigned to one of its commercial power reactor sites. Region I also related that the licensee was considering the possibility of characterizing the FATS as a “range activity” to meet range periodicity requirements. Region I asked the NSIR staff to establish staff positions for both issues before the security baseline inspection scheduled at the site for the week of August 5, 2019.

Headquarters staff developed preliminary recommendations in June and presented them to management in July; management agreed with the staff’s recommendations. To further inform the recommendations, NSIR management directed the staff to observe the August baseline inspection activities at the site to better understand: (1) the capabilities of the licensee’s FATS and (2) the specific requirements the licensee planned to satisfy with its FATS-based firearms familiarization training.

During August 6–7, 2019, the NSIR staff observed three of the licensee’s courses of fire: live-fire firearms familiarization, live-fire tactical rifle qualification, and FATS firearms familiarization. The staff’s observations confirmed the soundness of its preliminary recommendations and substantiated the staff’s anticipated limitations with the use of FATS. The staff was also able to compare the licensee’s FATS-based training to its live-fire weapons familiarization methodology.

## **Discussion**

### *Firearms and Weapons Familiarization Using Firearms-Based FATS*

To determine whether a licensee can use FATS to satisfy the annual firearms and weapons familiarization training requirements in 10 CFR Part 73, Appendix B(VI)(E)(1)(c) and B(VI)(E)(1)(d), the staff considered two elements: (1) whether FATS weapons meet the definition of a firearm in 18 U.S.C. 921(a)(3)(A) and (2) whether FATS are capable of performing the functions required by NRC regulations for firearms familiarization.

The staff concluded that FATS employing actual firearms that are modified so that they function safely with the system while remaining capable of being readily restored to their original configurations meet the definition of a firearm in 18 U.S.C. 921(a)(3)(A). Examples of that type of system are the VirTra V-Series Training Simulators and THE GUNFIGHTER™ Shooting Simulator System. Firearms-based FATS enable a licensee to start with an actual firearm such as the AR-15 semiautomatic rifle, which is standard equipment for many licensee security forces. To use the rifle with one of these systems, a licensee would remove the original bolt carrier group and replace it with an electronic bolt carrier group. The only other modification to

the rifle would be to the magazine. In lieu of standard ammunition magazines, the systems use magazines containing carbon dioxide cartridges and microcomputers that can simulate ammunition depletion and stoppages. A licensee should need less than a minute to reinstall the original bolt carrier group and return the rifle to a fully functioning firearm.

A licensee using a firearms-based FATS may be able to perform at least some degree of weapons familiarization required by 10 CFR Part 73, Appendix B(VI)(E)(1)(d)(11). Regulatory Guide 5.75, Section 8.1.11, sets forth eight elements of weapons familiarization. For example, the staff anticipates a licensee will be able to fully satisfy the firearms handling drills requirement using FATS firearms, because the modifications necessary to make the firearms function safely with the FATS do not change the firearms' handling characteristics or operations. The licensee may also be able to demonstrate target engagement with obstacles present, cover and concealment, and nonlethal weapons training. Some FATS can simulate a range of weapons (including less-lethal weapons like chemical irritants and TASERS®) and limited-visibility environments, including reduced- and no-light situations, obscurants (e.g., smoke), and weather conditions (e.g., fog, heavy rain, lightning). Additionally, some FATS may permit a licensee to use its normal firearms sighting systems and other equipment (e.g., flashlights that have been modified to function with the FATS). Finally, a licensee may select FATS that can use uploaded photographs or video of actual plant areas to create a three-dimensional environment for a scenario, permitting the licensee to add layers to control lines of sight, cover and concealment (e.g., fighting positions, vehicles, trees, foliage), destructible elements in the environment (e.g., glass), and other elements that improve realism. The staff will establish acceptable standards for determining whether an element can be fully satisfied by firearms-based FATS and include them in revised versions of RG 5.75 and Inspection Procedure 71130.07, "Security Training."

A licensee may need to maintain some portion of its non-FATS lesson plan(s) to fully satisfy the weapons familiarization requirements. For example, it will likely not be possible to demonstrate how to load ammunition into a FATS magazine or how to properly clear a firearm using only a FATS magazine, both of which are elements of the clearing, loading, unloading, and reloading training requirement. A licensee would likely need to use other methods (e.g., standard-issue magazines and live or inert (i.e., dummy) ammunition) to ensure its security personnel are familiar with the complete firearms loading and unloading process and how to identify and properly respond to stoppages.

Considering the capabilities of some firearms-based FATS, a licensee may be able to fulfill additional firearms-related elements of its Commission-approved training and qualification plan listed in 10 CFR Part 73, Appendix B(VI)(E)(1)(d), including mechanical assembly, disassembly, weapons capabilities, and fundamentals of marksmanship; day and night combat firing; firing under stress; sight adjustments; and target identification and engagement. Regulatory Guide 5.75 already identifies acceptable methods for meeting some weapons training requirements without the use of actual firearms or live ammunition. Several sections in RG 5.75 indicate that dry fire, multiple integrated laser engagement system equipment, simulated weapons systems, paintball systems, or other techniques (e.g., dummy rounds) are acceptable methods for meeting firearms-related training requirements related to combat firing and night training (Section 8.1.3), firing under stress (Section 8.1.6), and weapons malfunctions (Sections 8.1.9 and 8.1.11). Similarly, firearms-based FATS can provide the same kind of training without the use of live ammunition. Although not a requirement, FATS may also provide licensees with opportunities to expand the scope of their firearms training. For example, FATS can minimize the risk of training security personnel to shoot while moving, something which licensees may consider too hazardous with live ammunition.

### *Firearms and Weapons Familiarization Using Non-Firearms-Based FATS*

Licensees that opt to use non-firearms-based FATS may be able to satisfy a limited number of weapons or firearms familiarization requirements. Such FATS weapons are referred to by several names, including inert, replica, or simulated firearms, and they exist in a variety of forms. One end of the spectrum is represented by molded weapons with no functioning components other than triggers that control the FATS lasers. Licensees may be able to satisfy familiarization requirements, such as firearms handling drills or cover and concealment, and other firearms-related training requirements, like target identification, using these non-firearm-based FATS. The other end of the spectrum includes advanced FATS weapons that may look and perform exactly as actual firearms, but at least one internal component (e.g., firing pin, gas system, chamber) has been modified to render them permanently incapable of firing live ammunition. These advanced FATS weapons have functioning components like charging handles, bolt carriers, slides, and magazine wells, which may enable licensees to fulfill additional requirements such as sight adjustments; mechanical assembly and disassembly; and weapons loading, unloading, and reloading. Licensees may be able to satisfy a more complete set of familiarization requirements using these more advanced non-firearms-based FATS. However, the staff has determined that these non-firearms-based FATS will not allow licensees to complete the range of familiarization requirements that can typically be accomplished using a firearms-based FATS.

### *Use-of-Force Training Using Firearms-Based and Non-Firearms-Based FATS*

Use-of-force training is designed to help licensee security personnel learn how to identify and react appropriately to situations along the use-of-force continuum, from security officer presence to deadly force. The staff considers firearms and weapons characteristics to be less important for use-of-force training than for other firearms- and weapons-related training, because use-of-force training focuses on the mental skills necessary to recognize verbal cues, facial expressions, body language, and other indicators of potential threats (e.g., presence of a firearm or edged weapon) and then respond with the appropriate level of force.

Both firearms-based and non-firearms-based FATS can provide realistic training on the use of force, including deadly force. FATS can create realistic scenarios simulating environments with dynamic targets that replicate human behavior and ingenuity requiring split-second decisions. FATS are also good for standardizing training, something that is difficult to achieve when training with human role players. Role players sometimes get bored or tired, or at times can react differently from one iteration of a scenario to the next. With FATS, security personnel can be exposed to scenarios with exactly the same environments, choices, and outcomes. Through repeated simulations, licensee security personnel can learn to cope with a variety of stressful situations and gain a better understanding of their own reactions and tendencies. For example, FATS can enable licensee security personnel to experience tunnel vision. Tunnel vision is difficult to achieve on a live-fire shooting range, but a simulation scenario can demonstrate it to great effect, enabling instructors to explain how security personnel can identify the phenomenon and how they can adjust their responses when it happens.

### *Range Activities Using Firearms-Based FATS*

The NRC does not define the term “range activities”; however, 10 U.S.C. 101(e)(2)(B) defines range activities, in part, as “the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems.” Applying this definition to the NRC’s regulatory framework, it is reasonable to conclude that the term “range activities” means

training a licensee's security force to use and handle assigned firearms, ammunition, and associated equipment (e.g., weapons sighting systems, nonlethal weapons, obscurants, flares) required by 10 CFR Part 73, Appendix B(VI)(G)(1), VI(G)(2)(b)(3), VI(G)(2)(c)(2), VI(G)(2)(c)(5), and VI(G)(2)(c)(6). The staff considers a FATS that uses actual, modified firearms as meeting the definition of a range activity, since the system is designed to train personnel on the use and handling of assigned firearms and at least some associated equipment.

Similarly, the NRC does not define the term "range"; however, 10 U.S.C. 101(e)(1)(A) defines a range as "a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. Such term includes the following: Firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas." Consistent with this definition, the staff has determined that it is reasonable for a licensee to consider a range to be a room or area that houses a firearms-based FATS, since the room or area would be designated for that system and a firearms-based FATS is a range activity.

Live-fire proficiency is critical for the effective implementation of licensee protective strategies. Given the perishable nature of live-fire proficiency, 10 CFR Part 73, Appendix B(VI)(E)(1)(f), requires licensee security personnel to participate in a weapons range activity approximately every 4 months (i.e., three times per year). The use of firearms-based FATS can result in some tactical advantages over live-fire training, such as more realistic decisionmaking and target identification or reduced risk when firing while moving. However, a firearms-based FATS does not adequately replicate the physical or the psychological aspects of a firearm loaded with live ammunition. In addition, use of a firearms-based FATS results in significant negative training, including no muzzle rise during target engagement and the absence of live firearms and ammunition effects, such as mechanical offset at close distances, noise, stress, and concussive effects. The staff concludes that the artificialities associated with a firearms-based FATS are substantial enough that using firearms-based FATS to satisfy more than one range activity during a year would likely result in decreased firearms proficiency by licensee security personnel responsible for implementing the protective strategy during a design basis threat attack.

#### *Range Activities Using Non-Firearms-Based FATS*

Non-firearms-based FATS do not use actual firearms and, therefore, can have inherent limitations that prevent licensees from familiarizing their security personnel with assigned weapons, including the firearms used to implement licensee protective strategies. Consequently, the training accomplished with non-firearms-based FATS typically will not comply with the range and range activity definitions in 10 U.S.C. 101(e)(1)(A) and 101(e)(2)(B). Unless otherwise demonstrated by a licensee, non-firearms-based FATS will not be able to conform to the staff's application of the U.S.C. range and range activity definitions. Therefore, the staff has determined that non-firearms-based FATS do not serve as an acceptable method for licensees to meet the range activity requirement in Appendix B to 10 CFR Part 73. The staff acknowledges that licensees would use other methods to satisfy unfulfilled weapons familiarization requirements; however, licensees would be free to complete that training at any time throughout the year, not necessarily on the same day as the non-firearms-based FATS activities. The range activity requirement in 10 CFR Part 73, Appendix B(VI)(E)(1)(f), and guidance in RG 5.75, Section 8.3, place significant value on firearms and weapons training periodicity, which helps to ensure that licensee security personnel have the necessary skills and abilities and maintain proficiency with their assigned weapons. Scheduling only limited weapons familiarization training in one range activity session and shifting the unfulfilled

weapons familiarization training to the other two sessions each year could disrupt the required training consistency and could lead to reduced protective strategy effectiveness. Therefore, it is reasonable to conclude that the use of non-firearms-based FATS does not constitute a range activity and does not meet the requirement in 10 CFR Part 73, Appendix B(VI)(E)(1)(f).