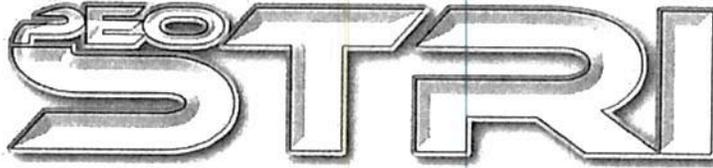


System Performance Specification

For

Serbia Small Arms Tactical Skills Trainer



U.S. Army Program Executive Office for
Simulation, Training, and Instrumentation (PEO STRI)

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REVISION LOG

Revision #	Description	Date	Signed
	Basic System Performance Specification	3/23/15	KN

**System Performance Specification
For the Serbia
Small Arms Tactical Trainer (SATT)**

1. SCOPE

This system specification defines the performance characteristics of the Small Arms Tactical Trainer (SATT) for Serbia's Peacekeeping and Pre-deployment Training Center (South Base). This SATT will include the following capabilities:

- a. Shall be based on simulation of real life environments
- b. Shall be an existing proven product currently available to domestic or foreign customers with the ability to be modified or expanded for inclusion of additional lanes as required
- c. Direct simulation of weapon qualification events – twelve (12) four foot (4') qualification lanes shall be included
- d. Individual marksmanship practice drills that shall include timed events and cognitive thinking drills that shall be able to adjust to an individual shooter's ability through escalating/deescalating drill parameters for both individual and crew served weapons
- e. A single collective gunnery and tactical training exercise shall be able to be performed with (Virtual Battlespace 3) VBS3 courseware along the entirety of the target engagement wall or separate tactical engagements at four engagement stations
- f. Shall provide four (4) individual training stations each capable of operating an isolated training event controlled from the Instructor Operator Station (IOS)
- g. Shall provide one (1) training station for long-range target engagement to include use of a rifle combat optic and a spotting scope in a VBS3 tactical environment
- h. Shall be interoperable and compatible with VBS3 and VBS3-Fires

The primary systems that comprise the SATT shall include:

- One (1) IOS
- One (1) laser hit detection system with a forty-eight foot (48') projected target engagement area inclusive of four (4) individual training stations
- Sixteen (16) each simulated laser training weapons systems with recoil and data sensing capability: CZ 9mm, M21, M21S, M70, MG84 (weapons Customer Furnished Equipment (CFE))
- One (1) station with magnified high-resolution optical displays for long range shooting and target identification

1.1 Background

Serbia's continued commitment/deployment of forces in support of United Nations (UN) Peacekeeping Operations since 2011 has led to the development of its Peacekeeping and Pre-Deployment Training Center (South Base). South Base is an all encompassing training facility, with a focus on progressive learning that starts in the classroom environment and is reinforced by practical application/exercises in the field.

The SATT will greatly enhance peacekeeping / pre-deployment training, providing initial and sustainment marksmanship training at the individual and squad levels. A key component is the judgmental use of force training mode, which reinforces rules of engagement training by providing realistic “shoot / don’t shoot scenarios” that are consistent with scenarios in the UN protection of civilians modules and UN Infantry Battalion Manual Capability Standards for weapons proficiency, understanding rules of engagement, and preventing excessive use of force. In line with progressive learning, individual and unit skills gained will be validated and certified in the field exercise portion of the peacekeeping / pre-deployment training.

2. APPLICABLE DOCUMENTS

2.1 General

The following documents of issue shown on the Document Summary List (DSL) form a part of this Performance Specification to the extent specified herein. In the event of a conflict between documents referenced herein and the contents of this Performance Specification, the contents of the Performance Specification shall be the governing requirement.

2.2. Government Documents

2.2.1. Specifications, Standards, and Handbooks

None

2.2.2. Other Government Documents, Drawings, and Publications

None

2.3 Non-Government Publications

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

29 CFR 1910	Occupational Safety and Health Standards
21 CFR 1040	Performance Standards for Light-Emitting products
ANSI Z136.1-1993	American National Standards Institute (ANSI) for Safe Use of Laser

2.4. Order of Precedence

In the event of conflict between the text of this document and the references cited, the text of this performance specification takes precedence. Nothing in this document, however, supersedes applicable laws and regulations. Applicable documents are listed in the main body of this document under section 2.

3. REQUIREMENTS

Hardware and software subsystem capabilities for the SATT shall include the following:

3.1 Hardware

3.1.1 System Diagram

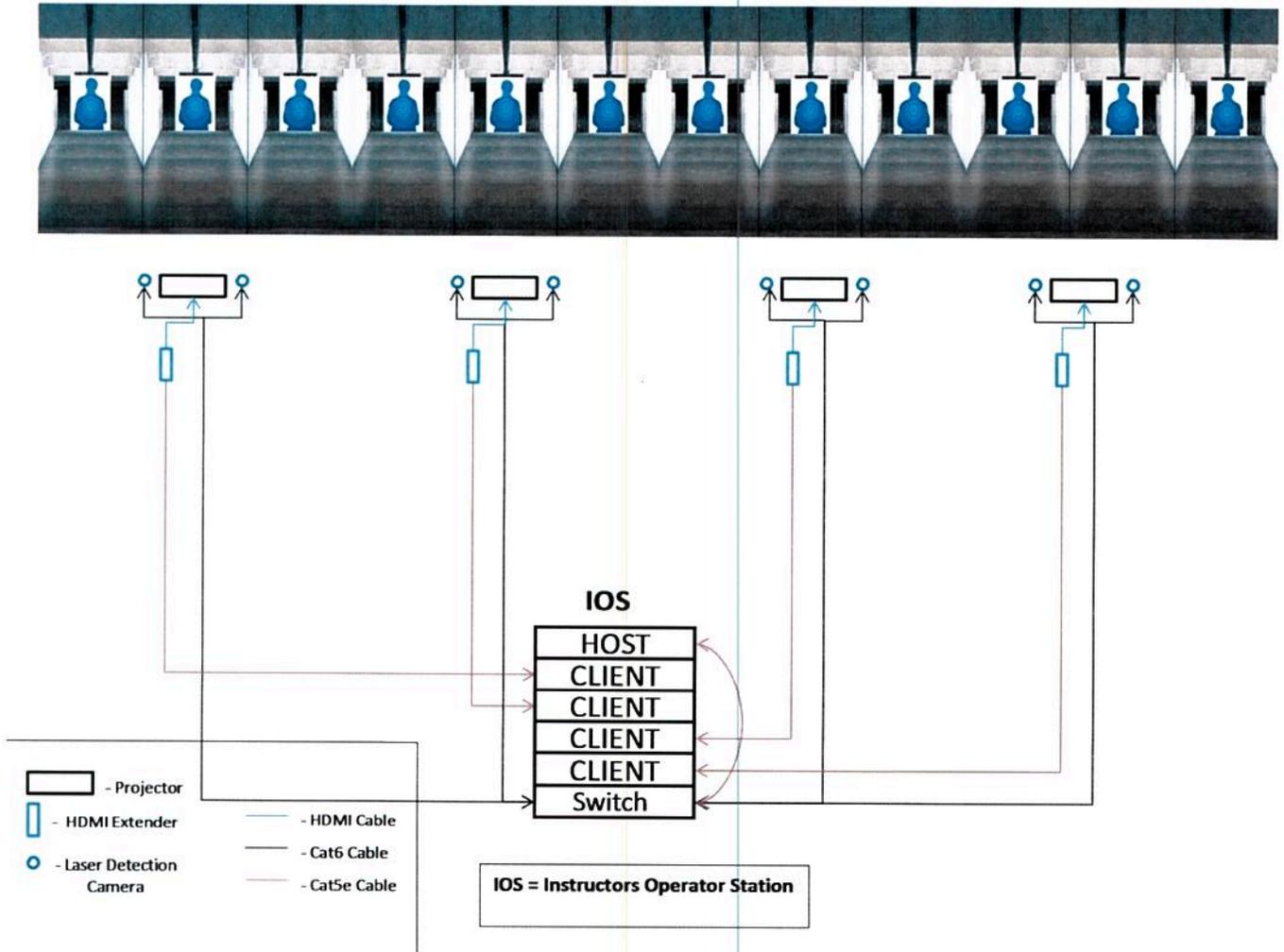


Figure 3.1.1.a

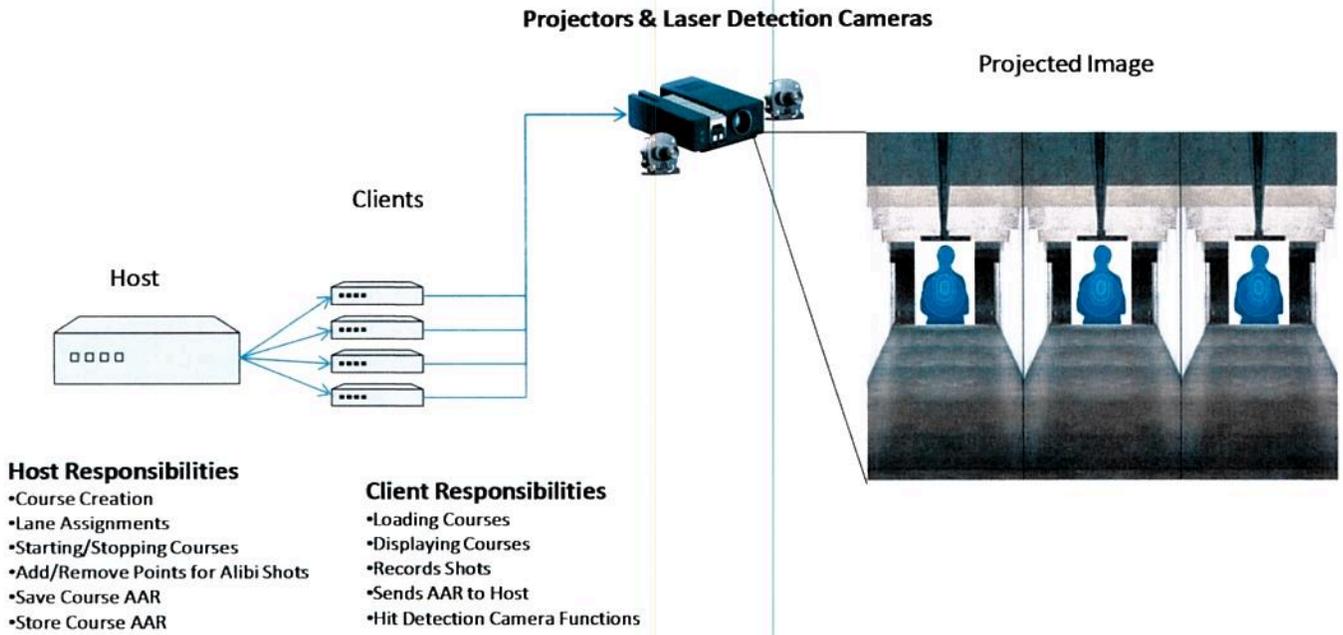


Figure 3.1.1.b

3.1.2 Architecture and Networking

Training system shall be comprised of four (4) hardware channels each consisting of one (1) high-definition visual system, one (1) audio output, two (2) laser hit detection cameras, and one (1) 2U rack mount computer with Uninterruptable Power Supply (UPS).

System networking shall include an independent network for both the laser hit detection cameras and system computers.

Training system shall have an open architecture design enabling additional weapons, additional weapon types, or related training components to be added without contractor support

3.1.3 Instructor Operator Station (IOS)

One (1) IOS station shall provide operation for the entire SATT

IOS Graphical User Interface (GUI) shall enable instructors from the IOS to:

- Register weapons and users
- Launch, pause, and stop training events and individual training lanes during qualification events
- Induce weapon malfunctions and reset weapon status
- Monitor weapon status at each training station – round count, rounds remaining, feed tray open/closed, magazine present/absent
- Review trainee performance data After Action Review (AAR)
- Save and print results for individual trainees weapon qualification
- Broadcast instructions to the shooting line via public address (PA) system

IOS shall include one (1) desk, two (2) chairs, one (1) 24" monitor, one (1) ink jet printer

3.1.4 Laser Hit Detection Subsystem

Visual system hardware and laser detection cameras shall be mounted overhead no more than 48" (121.92cm) forward of the target engagement screens.

System computers and network hardware shall be housed in a single computer rack at the IOS and include at a minimum: Intel I7 processor, minimum 4GB RAM, 500 GB HDD, and Nvidia 9th generation graphics card

SATT shall include eight (8) laser hit detection cameras that are capable of tracking up to twenty (20) individual weapon types.

Hit detection software shall have sub-pixel accuracy, enable weapon zeroing, have aim trace capability to monitor weapon aim point before, during, and after shot event, and automatically calibrate upon system startup.

Visual system shall include four (4) WXGA ultra-short throw projectors.

Each of the four (4) individual training stations shall include wall-mounted 70 Volt wide dispersion speakers.

3.1.5 Training Weapon Systems

The SATT shall include CFE to be modified into complete laser-based training weapons with recoil. Weapons mix to be furnished by the country of Serbia includes:

- CZ 9mm
- M21
- M21S
- M70
- MG84

Training weapons shall transmit weapon data back to the system and accept compressed air for the recoil system through a single umbilical into the weapon. Each recoil training weapon shall have the following data feedback capabilities:

CZ 9mm

1. Fire event
2. Magazine present/absent

M21, M21S, and M70

1. Fire Event
2. Magazine/ammo present/absent
3. Bolt Position
4. Cant angle

MG84

1. Fire Event / Trigger sensor
2. Ammo present/absent
3. Feed tray cover open/close
4. Bolt Position

3.1.6 Long Range Target Engagement System

SATT shall include:

- Ability to identify and engage virtual static or moving targets in VBS3 using rifle and spotting scopes at distances up to 2500m
- Instructor GUI to apply training aids, adjust wind and environmental settings, and set tracer count
- Ability to change between night vision and thermal imaging on rifle scope and spotting scope

- Ability to adjust rifle scope for windage and elevation
- Prepackaged scenarios with two (2) known distance scenarios and five (5) dynamic tactical engagement scenarios for the long range target engagement system

SATT shall include a rifle scope with integrated High Definition (HD) display that shows accurate reticle pattern and magnification power to include:

- Mildot 3.5-10x (US ARMY)
- Mildot 4.5-14x (US ARMY)
- Mildot 3.5-10x SFP (US ARMY, M110)
- Mildot 3.5-10x (US Marine Corps (USMC))
- Mildot 3-12x (USMC SSDS)
- Mildot 6.5-20x (USMC)
- Mildot 8.5-25x (USMC)
- Mildot 3.5-10x (TMR)
- Horus H-58 (3-12x)

SATT shall include a spotting scope with integrated HD display that shows accurate reticle pattern and magnification power to include:

- Horus Spotting Scope
- 12-40x Spotting Scope (USMC)

SATT shall also include the following reticle patterns pre-loaded for future expansion into:

- Advanced Combat Optical Gunsight (ACOG) - ACOG 4x TA31RCO
- Ernst Leitz Canada (ELCAN) Optical Sight- ELCAN 1-4x (M4 BDC)
- Ernst Leitz Canada (ELCAN) Optical Sight - ELCAN Spectre DR 1-4x (M4 BDC)
- Pritset Snaipensky Optichesky (PSO) Optical Snper Sight - PSO-1 4x (SVD BDC)
- M22 Binoculars
- Vectronix (Vector) Rangefinder Binoculars - Vector 21

Rifle scope shall mount to picatinny rail of M21S sniper rifle. Spotting scope shall include a mini-tripod mount.

3.2 Software

3.2.1 Basic Marksmanship/Qualification

Courseware shall have the ability to operate across the forty-eight foot (48') target engagement wall displaying with twelve (12) four foot (4') standard training lanes displaying a single overhead virtual target. In addition, the courseware shall also have the ability to operate at a single training station target engagement wall displaying with three (3) four foot (4') standard training lanes each, with a single overhead virtual target.

Courseware shall include a course editor, language editor, and the ability to load new qualification targets.

Courseware shall enable instructor to input date of training, student name, rank, and roster number.

Courseware shall provide instant visual feedback of shot placement to the shooter with virtual bullet-hole marks, numbered in sequence, where the shot hit the target. This bullet impact and hit-by-sequence numbering features shall have the ability to be turned off and on by the instructor.

Courseware shall enable each channel of the SATT to be shut down for testing and modification or changes needed by the instructor from their control station. From the IOS, an individual training lane shall have the ability to be paused and later continued without affecting other training lanes in the instance that such events as a weapon's malfunction occurs or that the instructor needs to interrupt the session.

Courseware Course Editor shall include the following capabilities:

- Adjust target distance at each stage between 1.5m and 50m
- Variable lighting conditions at each stage
- Ability to present stage instruction orally and visually simultaneously
- Adjustable target face timing and rounds per stage
- Set Pass/Fail parameters for each round
- Variable target selection at each stage with the option to use pre-packaged target options to include QIT-03, LTR-I-BLUE, CAT-I, LTR-IV BLUE, ICE-QT (2009), USFWS-KCF-1, FLETC Transitional II, Green US Treasury Transitional I, US Border Protection Target, Customs & Border Patrol Use of Force, US Border Protection Target (16"x48"), US Border Protection Target (24"x40"), LTR-III-Blue, Basic Pistol, Practical Pistol, Basic Rifle, Combat Rifle course, and Shotgun courses

Courseware AAR shall include:

- Display shots for all stages simultaneously and by each stage
- Scores based on the following: number of rounds fired, hits in scoring point values that can be set by the instructor, non-scoring hits on target, missed target hits, rounds not fired, and scoring ring values (including higher point value for a cut scoring ring)
- Instructor's ability to correct scores (add or deduct) for each target
- Capability to save, delete, and print results

3.2.2 Marksmanship Drills

SATT shall include marksmanship courseware enabling trainees to improve the basic Marksmanship/Qualification above for the speed, accuracy, target acquisition, target identification, and moving targets.

A minimum of 30 different drill types shall be included across the following categories:

- Timing drills
- Lateral moving engagement drills

- Target identification drills to incorporate identifying colors, shapes, human silhouettes, and numbers together or independently.
- Pistol challenge courses
- Challenge drills (trainee v. trainee)

Marksmanship drills shall have the capability to be controlled from the IOS or from each target station.

3.2.3 Tactical Training

Tactical exercises shall have the ability to operate across the forty-eight foot (48') target engagement wall and have the ability to operate at a single training station.

SATT shall be based on simulation of real life environments. SATT shall be interoperable and compatible with VBS3 and VBS3-Fires.

SATT shall include 10 pre-packaged VBS3 tactical scenarios. These VBS3 tactical scenarios shall provide tactical training exercises at the squad or smaller level.

3.3 Safety Requirements

The system shall be designed and constructed for safe operation and maintenance. The risk due to human error under routine, non-routine, and emergency conditions shall be minimized. A fail safe design shall be provided in those areas where failure can cause death, severe injury, severe occupational illness, or major system damage.

The weapon laser systems shall be eye safe and meet the 21 CFR 1040 requirements with usage in accordance with ANSI Z136.1-1993, American National Standards Institute for Safe Use of Lasers for the identified weapons.

For safety reasons, all trainer weapons shall allow the use of only dedicated "dummy" belts, rounds and/or simulated magazines in order to avoid the possibility of using real cartridges in these weapons. For safety reasons, all trainer weapons shall be incapable of chambering or firing any type of live round.

The trainer weapons shall not exceed a sound level of 104 dB steady-state and 140 dB peak behind the firing line.

3.4 Security and Privacy Requirements

The trainer system operations shall be password access controlled, including all training modes, scenario editing, diagnostics, and error log access.

3.5 System Environment Requirements

The Trainer system (including weapons) shall be capable of operation from 15°C to 35°C, 20% – 80% relative humidity, non-condensing.

The Trainer system (including weapons) shall be capable of storage from -15°C to 35°C, 20% – 80% relative humidity, non-condensing.

3.6 System Quality Factors

3.6.1 Availability

Each Trainer system shall have an operational availability A_o rate of 0.85 (for a 10 hour training day, five days

per week)

$$A_o = (\text{Total Time} - \text{Downtime}) / \text{Total Time}$$

The Trainer weapons shall have an operational availability A_o rate of 0.85 (for a 10 hour training day, five days per week)

$$A_o = (\text{Total Time} - \text{Downtime}) / \text{Total Time}$$

3.6.2 Maintainability

The Trainer system shall provide Operational Readiness Testing, Built In Test (BIT) Operator Maintenance.

An Operational Readiness Test shall be performed automatically upon power-up to identify system failures prior to beginning training routines. In addition, a BIT shall be automatically performed upon starting of any one of the training modes or diagnostics.

4. VERIFICATION

This section includes all verifications to be performed during acceptance testing to determine that the system offered for acceptance conforms to all requirements in section 3.0 of this specification.

Unless otherwise specified, all inspections shall be performed in prevailing environmental conditions that define normal range operations.

Methods of Verification include:

- a) Analysis. An element of verification that uses established technical or mathematical models or simulations, algorithms, charts, graphs, circuit diagrams, or other specific scientific principles and procedures to provide evidence that state requirements were met.
- b) Demonstration. An element of verification that generally denoted the actual operation, adjustment, or re- configuration of items to provide evidence that the designed functions were accomplished under specific scenarios. The items may be instrumented and quantitative limits of performance monitored.
- c) Test. An element of verification and inspection that generally denoted the determination, by technical means, of the properties or elements of items, including functional operation, and involves the application of established scientific principles and procedures.
- d) Examination. An element of verification and inspection consisting of investigation, without the use of special laboratory appliances or procedures, of items to determine conformance to those specified requirements which can be determined by such investigations. Examination is generally nondestructive and typically includes the use of sight, hearing, smell, touch, and taste; simple physical manipulation; mechanical and electrical gauging and measurement; and other forms of investigation. Examination may include Certificates of Compliance. Certification is an element of verification that generally denotes or documents the prior conduct of formal test verification, and relies on documented test results, performance data, analytical data, or vendor documentation. The items require that the contractor certify that the requirements have been met.

- e) Certification. An element of verification that that generally denotes or documents the prior conduct of formal test verification, and relies on documented test results, performance data, analytical data, or vendor documentation. The items require that the contractor certify that the requirements have been met.

4.1 Hardware.

4.1.1 Architecture and Networking

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
Training system shall be comprised of four (4) hardware channels each consisting of one (1) high-definition visual system, one (1) audio output, two (2) laser hit detection cameras, and one (1) 2U rack mount computer with Uninterruptible Power Supply (UPS).	√		√	√	
System networking shall include an independent gigabit network for both the hit detection cameras and system computers.				√	
Training system shall have an open architecture design enabling additional weapons, additional weapon types, or related training components to be added without contractor support	√				

4.1.2. Instructor Operation Station

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
IOS will include one (1) desk, two (2) chairs, one (1) 24" monitor, one (1) ink jet printer				√	
One (1) IOS station shall provide operation for the entire SATT		√		√	
IOS (Graphical User Interface) GUI shall enable instructors from the IOS to: <ul style="list-style-type: none"> • Register weapons and users • Launch, pause, and stop training events and individual training lanes during qualification events • Induce weapon malfunctions and reset weapon status 		√	√		

<ul style="list-style-type: none"> • Monitor weapon status at each training station – round count, rounds remaining, feed tray open/closed, magazine present/absent • Review trainee performance data (AAR) • Save and print results for individual trainees weapon qualification • Broadcast instructions to the shooting line via PA system 					
Training system shall have an open architecture design enabling additional weapons, additional weapon types, or related training components to be added without contractor support	√				

4.1.3. Laser Hit Detection Subsystem.

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
Visual system hardware and laser detection cameras shall be mounted overhead no more than 48” (121.92cm) forward of the target engagement screens				√	
System computers and network hardware shall be housed in a single computer rack at the IOS and include at a minimum: Intel I7 processor, minimum 4GB RAM, 500GB HDD, and Nvidia 9 th generation graphics card				√	
Each training system shall include eight (8) laser hit detection cameras that utilize Ethernet protocol capable of tracking up to twenty (20) individual weapon types per virtual range training system			√	√	
Hit detection software shall have sub-pixel accuracy, enable weapon zeroing, have aim trace capability to monitor weapon aim point before, during, and after shot event, and automatically calibrate upon system startup.			√	√	
Visual system shall include four (4) WXGA ultra-short throw projectors				√	
Each of the four (4) individual training stations shall include wall-mounted 70v wide dispersion speakers				√	

4.1.4 Training Weapon Systems

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
Training weapons shall transmit weapon data back to the system and accept compressed air for the recoil system through a single umbilical into the weapon. Each recoil training weapon shall have the following data feedback capabilities:					
CZ 9mm					
1. Fire event					
2. Magazine present/absent					
M21					
1. Fire Event					
2. Magazine/ammo					
3. Bolt Position					
4. Cant angle					
M21S					
1. Fire Event			√	√	
2. Magazine/ammo					
3. Bolt Position					
4. Cant angle					
M70					
1. Fire Event					
2. Magazine/ammo					
3. Bolt Position					
6. Cant angle					
MG84					
1. Fire Event / Trigger sensor					
2. Ammo present/absent					
3. Feed tray cover open/close					
4. Bolt Position					

4.1.5 Long Range Target Engagement System

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
SATT shall include:					
• Ability to identify and engage virtual static or moving targets in VBS3 using rifle and spotting scopes at distances up to 2500m		√		√	
• Instructor GUI to apply training aids, adjust wind and environmental settings, and set tracer count					

<ul style="list-style-type: none"> • Ability to change between night vision and thermal imaging on rifle scope and spotting scope • Ability to adjust rifle scope for windage and elevation • Prepackaged scenarios with two (2) known distance scenarios and five (5) dynamic tactical engagement scenarios for the long range target engagement system 					
<p>SATT shall include a Rifle Scope with integrated HD display that shows accurate reticle pattern and magnification power to include:</p> <ul style="list-style-type: none"> • Mildot 3.5-10x (US ARMY) • Mildot 4.5-14x (US ARMY) • Mildot 3.5-10x SFP (US ARMY, M110) • Mildot 3.5-10x (USMC) • Mildot 3-12x (USMC SSDS) • Mildot 6.5-20x (USMC) • Mildot 8.5-25x (USMC) • Mildot 3.5-10x (TMR) • Horus H-58 (3-12x) 		√	√		
<p>SATT shall include a Spotting Scope with integrated HD display that shows accurate reticle pattern and magnification power to include:</p> <ul style="list-style-type: none"> • Horus Spotting Scope • 12-40x Spotting Scope (USMC) 		√	√		
<p>SATT shall also include the following reticle patterns pre-loaded for future expansion into:</p> <ul style="list-style-type: none"> • ACOG 4x TA31RCO • ELCAN 1-4x (M4 BDC) • ELCAN Spectre DR 1-4x (M4 BDC) • PSO-1 4x (SVD BDC) • M22 Binoculars • Vector 21 		√			
<p>Rifle Scope shall mount to picatinny rail of M21S Sniper Rifle.</p>				√	
<p>Spotting scope shall include a mini-tripod mount.</p>				√	

4.2 Software

4.2.1 Basic Marksmanship/Qualification

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
Courseware shall have the ability to operate across the forty-eight foot (48') target engagement wall displaying with twelve (12) four foot (4') standard training lanes displaying a single overhead virtual target. In addition, the courseware shall also have the ability to operate at a single training station target engagement wall displaying with three (3) four foot (4') standard training lanes each, with a single overhead virtual target.		√		√	
Courseware shall include a course editor, language editor, and the ability to load new qualification targets.		√			
Courseware shall enable instructor to input date of training, student name, rank, and roster number.		√	√		
Courseware shall provide instant visual feedback of shot placement to the shooter with virtual bullet-hole marks, numbered in sequence, where the shot hit the target. This bullet impact and hit-by-sequence numbering features shall have the ability to be turned off and on by the instructor.		√	√		
Courseware shall enable each channel of the SATT to be able to be shut down for testing and modification or changes needed by the instructor from their control station. From the IOS, an individual training lane shall have the ability to be paused and later continued without affecting other training lanes in the instance that such events as a weapon's malfunction occurs or that the instructor needs to interrupt the session.		√	√		
Courseware Course Editor shall include the following capabilities: <ul style="list-style-type: none"> • Provide unlimited stages per round • Adjust target distance at each stage between 1.5m and 50m • Variable lighting conditions at each stage • Ability to present stage instruction orally and visually simultaneously • Adjustable target face timing and rounds per stage • Set Pass/Fail parameters for each round • Variable target selection at each stage with the option to use pre-packaged target options to include QIT-03, LTR-I-BLUE, CAT-I, LTR-IV BLUE, ICE-QT (2009), USFWS-KCF-1, FLETC Transitional II, Green US Treasury Transitional I, US Border Protection Target, Customs & Border Patrol Use of Force, US Border Protection Target (16"x48"), US Border Protection Target (24"x40"), LTR-III-Blue, Basic Pistol, Practical Pistol, Basic Rifle, Combat Rifle course, and Shotgun courses 		√	√		
Courseware AAR shall include: <ul style="list-style-type: none"> • Display shots for all stages simultaneously and by each stage • Scores based on the following: number of rounds fired, hits in scoring point values that can be set by the instructor, non-scoring hits on target, 		√	√		

missed target hits, rounds not fired, and scoring ring values (including higher point value for a cut scoring ring) <ul style="list-style-type: none"> • Instructor’s ability to correct scores (add or deduct) for each target. • Capability to save, delete, and print results 					
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4.2.2 Marksmanship Drills

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
SATT shall include marksmanship courseware enabling trainees to improve speed, accuracy, target acquisition, target identification, and moving targets.		√	√		
A minimum of 30 different drill types shall be included across the following categories: <ul style="list-style-type: none"> • Timing Drills • Lateral Moving Engagement Drills • Target Identification Drills to incorporate identifying colors, shapes, human silhouettes, and numbers together or independently. • Pistol Challenge Courses • Challenge drills (trainee v. trainee) 		√	√		
Marksmanship drills shall have the capability to be controlled from the IOS or from each target station.		√	√		

4.2.3 Tactical Training

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
VBS3 shall provide tactical training exercises at the squad or smaller level.	√	√			
Tactical exercises shall have the ability to operate across the forty-eight (48’) target engagement wall and have the ability to operate at a single training station.		√		√	
SATT shall provide 10 pre-packaged VBS3 tactical scenarios.		√			

4.3 Safety Requirements

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
The weapon laser systems shall be eye safe and meet the 21 CFR 1040 requirements with usage in accordance with ANSI Z136.1-1993, American National Standards Institute for Safe Use of Lasers for the identified weapons.	√				√
For safety reasons, all Trainer weapons shall allow the use of only dedicated "dummy" belts, rounds and/or simulated magazines in order to avoid the possibility of using real cartridges in these weapons. For safety reasons, all Trainer weapons shall be incapable of chambering or firing any type of live round.		√		√	
The Trainer weapons shall not exceed a sound level of 104 dB steady-state and 140 dB peak behind the firing line.			√		

4.4 Security and Privacy Requirements

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
The Trainer system operations shall be password access controlled, including all training modes, scenario editing, diagnostics, and error log access.		√			

4.5 System Environment Requirements

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>T</u>	<u>E</u>	<u>C</u>
The Trainer system (including weapons) shall be capable of operation from 15°C to 35°C, 20 – 80% relative humidity, non-condensing.			√	√	
The Trainer system (including weapons) shall be capable of storage from -15°C to 35°C, 20 – 80% relative humidity, non-condensing.			√	√	

4.6 System Quality Factors

4.6.1 Availability

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>I</u>	<u>E</u>	<u>C</u>
Each Trainer system shall have an operational availability rate of 0.85 for a 10 hour training day, five days per week.	√	√			
The Trainer weapons shall have an operational availability rate of 0.85 for a 10 hour training day, five days per week.	√	√			

4.6.2 Maintainability

These requirements shall be verified through qualification and conformance inspection of the fielded system or individual components to ensure compliance to the requirements.

<u>Requirements</u>	<u>Verification Method</u>				
	<u>A</u>	<u>D</u>	<u>I</u>	<u>E</u>	<u>C</u>
The Trainer system shall provide Operational Readiness Testing, BIT Operator Maintenance.				√	
An Operational Readiness Test shall be performed automatically upon power-up to identify system failures prior to beginning training routines. In addition, a BIT shall be automatically performed upon starting of any one of the training modes or diagnostics. If failures are noted during the Operational Readiness Test or BIT, or during normal training, the Instructor/Operator should refer to the troubleshooting procedures in the Trainer System Operator's Manual.		√		√	
The Operator's Manual shall contain troubleshooting procedures, corrective actions, and remove and replace procedures that can be performed by the Operator. Operator Maintenance shall be limited to remove and replace of items not requiring special tools and equipment, and shall be to the system component level.				√	
Operator Maintenance shall also include the Preventive Maintenance Checks and Services (PMCS) of items listed in PMCS table in the Operator's Manual.				√	