IBCS GUNNERY:
Modernizing Training to Leverage IBCS

By LTC Joshua Urness

Intro

The Integrated Air and Missile Defense Battle Command System (IBCS) enables unparalleled integration of sensors and effectors to allow greater modularity and tactical efficiency than the Air Defense Artillery (ADA) has ever seen. ADA will soon realize this transformational materiel leap in Fiscal Year 2025 with the commencement of fielding the operational force. A critical element of this transformation is the modernization of ADA doctrine and gunnery. Leaders from across Fort Sill worked with 3-43 ADA and 11th ADA Brigade beginning in 2023, developing an initial IBCS gunnery draft titled Training Circular (TC) 3-01.9, "Army Integrated Air and Missile Defense (AIAMD) Gunnery." The draft TC 3-01.9 was disseminated across the ADA force in February 2024 for feedback, and 3-43 ADA is currently piloting the program's implementation at the battalion and battery echelon.

This article describes a vision of the IBCS-enabled force and the initial proposed structure for what and how that force trains. The gunnery structure leverages elements of the Integrated Weapons Training Strategy (IWTS) methodology to maximize commander flexibility in building and sustaining readiness. The draft AIAMD gunnery is a significant departure from how we have qualified our Patriot force in the past. Modular gunnery builds and sustains ready and reconfigurable Air Defense capability at appropriate echelons to operate as composite task forces tailored toward specific mission requirements. In this system, individuals and crews reconfigure, if necessary, to meet mission requirements. The Digital Training Management System (DTMS) tracks proficiency ratings to ensure individuals retain gunnery qualifications, like a driver's license, from one organization to the next. Commander flexibility for the above Crew Echelon gunnery creates opportunities to combine gunnery training with Mission Essential Task-focused training. Training is tailored to specific mission sets per FM 7-0, "Training." This change improves the forward-stationed operational unit's abilities to tailor training to their mission requirements. Air battle management (ABM) training emphasizes engagement types through vignettes, e.g., complex, multi-axis attacks, instead of current Patriot gunnery "Threat Focus Track (TFT)" lists to drive standardized skill development and training objectives that iteratively increase in difficulty and complexity, based on trainer/evaluator and commander guided conditions. The article finishes with a note about key gunnery terms, a description of measuring readiness, and a way ahead.

The vision of an IBCS-enabled Air Defense Force

Gunnery modernization aims to create an IBCS-enabled Air Defense Force capable of operating as composite task forces tailored to specific mission requirements, aligned with army resourcing and

standardization. Air Defense units achieve Battalion readiness through Mission Essential Task (MET) training and crew-focused gunnery qualification using the Army gunnery model (Integrated Weapons Training Strategy, TC 3-20.0). Qualified Crews or units combine to form composite Air and Missile Defense (AMD) Task Forces capable of training together or being distributed to conduct culminating training events in preparation for certification events. Force providers certify Task Forces to meet tailored mission requirements through home station culminating training events. Certified, forward-stationed operational units and force providers support competition in preparation for a crisis or armed conflict or prepare to deploy in support of contingency missions.

The Integrated Weapons Training Strategy (IWTS)

The Integrated Weapons Training Strategy (IWTS) is a structured format for training through proficiency that encompasses critical training along an echelon-synchronized critical training path to prepare units for operations across the Competition Continuum (discussed in Field Manual 3-0, Operations). IWTS gunnery methodology includes only those events conducted to ensure the maximum experience is achieved or gained by the trained Soldier or unit, supporting but not fully achieving unit METs. IWTS enables "Plug and Play" by providing Commanders, at the echelon, the capability to seamlessly integrate capabilities and external warfighter functions into collective, combined arms training events.
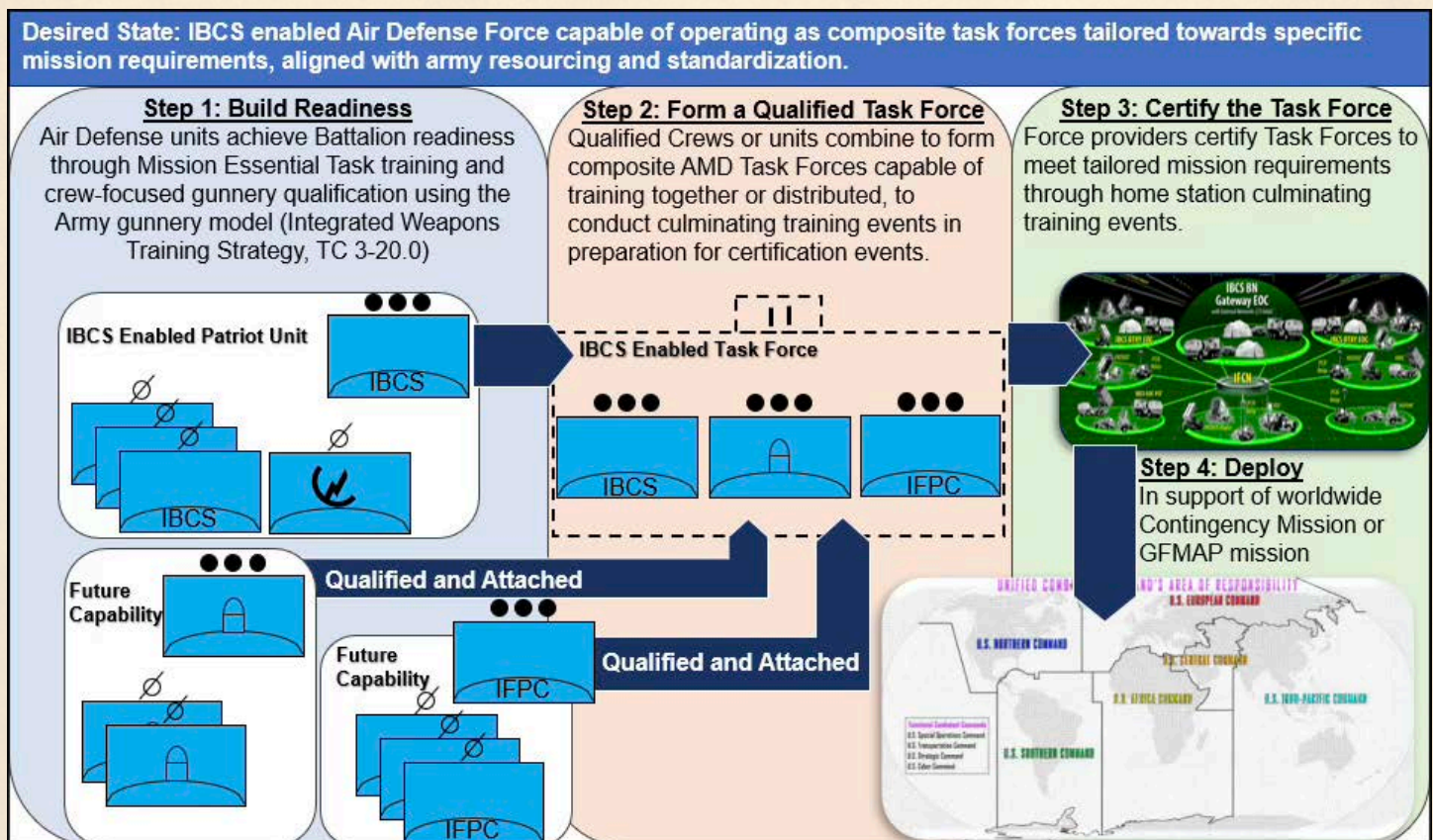
Training can be conducted simultaneously or separately, based on the commander's discretion or training objectives, such as crews, batteries, or composite task forces. Additionally, the qualification framework enables the modularity and task organization of separate qualified crews to meet directed mission or readiness requirements, i.e., Immediate or Contingency Response Force Requirements.

IWTS Implications to Organizing

IBCS-enabled Patriot gunnery assesses four "system groups," which support flexible qualification guidelines and facilitate mission-tailored task organization for multi-echelon training or operations. These four system groups include the Operations System Group (OPS), the Sensor System Group, the Launcher System Group, and the Relay System Group. The OPS System Group gunnery tables focus on the movement and emplacement of the C2 node equipment and the alert state assumption. The Sensor System Group gunnery focuses on the emplacement of sensors and integration of ADA systems into a task force's integrated fire control network (IFCN).

The Launcher System Group gunnery focuses on establishing launcher sites, including remote launcher

Figure 1: Vision of the IBCS enabled Air Defense force.

Table	Table I	Table II	Table III	Table IV **Collective Task Proficiency**	Table V	Table VI **Life Fire Proficiency Gate**
Function	Pre-req	Pre-req	Pre-req	Collective Proficiency Gate = EXEVAL	Rehearsal Practice	Crew Drills, Air Battle ISO virtual qualification event
Principle	Crawl	Crawl	Walk	Run	Run	Run

Applied at Echelon
- Synchronized: Can be conducted simultaneously or separately (See blue arrows in figure below) at echelon based on Commander discretion and readiness requirements i.e. Task Force
- Flexible: qualification framework enables modularity and task organization of separate qualified crews to meet direct mission or readiness i.e. IRF/CRF

BN Echelon	TEWT	STAFFEX	CPX		FCX	CALFEX
Company Echelon	TEWT	STX (Virtual)	STX with TADSS	FTX with TADSS		
Crew Echelon	Gunnery Skills Test				Practice (Live Fire)	Qualification (Live Fire)

(Supports arrows between Tables III/IV, IV/V, and V/VI)

Legend:
TEWT: Tactical Exercise without Troops
STX: Situational Training Exercise
TADSS: Training Aids, devices, simulators, and simulations
CPX: Command Post Exercise
FTX: Field Training Exercise
FCX: Fires Coordination Exercise
CALFEX: Combined Arms Live-Fire Exercise

Figure 2: Integrated Weapons Training Strategy 101

sites, and integrating launchers into the IFCN. IBCS gunnery also includes section echelon tables for reload qualifications, which qualified launcher crews and crewmembers must conduct. Both the Sensor and Launcher System Groups are scalable to integrate additional types of sensors or launchers to support composite or task force integration, meaning adding IBCS-enabled capabilities such as Sentinel or other effectors does not necessitate a new training circular.

The final group is the Relay System Group, which focuses on emplacing relay equipment to support higher echelon battle tasks to integrate and establish an integrated fire control network. Air Battle Management gunnery tables are an additional, separate set of gunnery tables somewhat aligned with the OPS system group gunnery but deliberately independent to facilitate gunnery proficiency development for non-OPS system group Soldiers.

IWTS Structure in ADA Gunnery

The initial draft of IBCS gunnery applies the core IWTS structure and methodology through the following attributes:

- Crew qualifications are the primary focus. The draft gunnery currently only includes section echelon qualifications for launcher reload. Unit METs measure battery echelon training readiness and do not require gunnery tables.

- Crew gunnery tables begin with individual tables and transition to crew collective tables. Individual tables follow the crawl and walk principles, while crew collective tables accelerate into run and crew qualification.

- The gunnery structure includes six tables, three individual and three crew collective tables. Table III is the gateway to collective gunnery, and Tables I—III must be completed before progressing to collective gunnery. Table VI is the qualification table.

- Individual gunnery includes a gunnery skills test, hands-on training, virtual training (such as air battle management and operator interface familiarization), and individual training on a crewmember's specific position in a collective crew drill. Individual tables can be conducted in any order, as they do not require a particular sequence. The gunnery skills test, which IWTS typically includes as a Table I task, is similar to the former Table IV evaluations and includes both hands-on and written assessments. Training Aids,
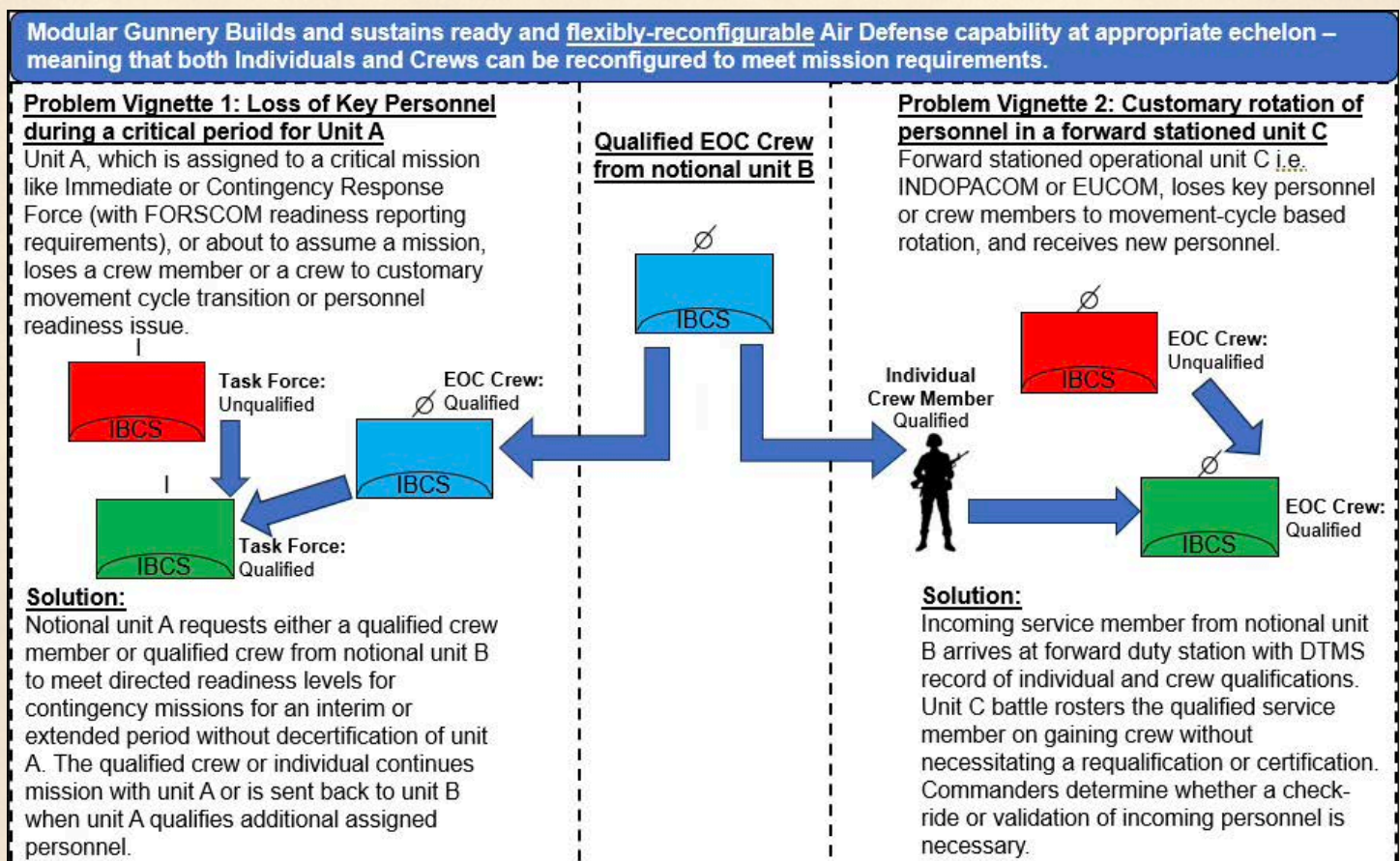
Devices, Simulators, and Simulations are not within the focus of this article but significantly enhance individual gunnery through the use of the AIAMD Air Defense Reconfigurable Trainer.

- Collective crew gunnery sets, develops, refines, and qualifies crews to employ their weapon system by performing crew tasks at varying speeds, emphasizing safety and at quicker and specified speeds with safety requirements.

- Qualifications are valid for one year. Certifications are valid for six months.

- The Army Digital Training Management System (DTMS) is the directed mechanism that tracks individual and crew qualifications and certifications. Like a driver's license, qualified and/or Certified service members retain their credentials if they depart their assigned unit. Credentials remain valid until condemnation (expiration) criteria are met (draft criteria is 12 months for qualifications, six months for certifications). Qualification mobility is essential for forward-stationed operational units with frequent personnel changeover because commanders could significantly reduce the frequency of major qualification events at the commander's discretion.

The gunnery also includes optional, functionally focused gunnery "tracks" that enable the modular and flexible attributes of IBCS. One such gunnery track is "Future Operations Gunnery," which primarily includes MET sub-tasks organized to evaluate a staff's ability to conduct current and future operations for an IBCS task force. IBCS task force staff operate an engagement operations center identical to those operated by battery fire units and battalion fire direction centers, which enables them to contribute and support engagement and force operations in a uniquely seamless manner. This gunnery track allows commanders to develop qualified, battle-rostered staff crews aligned with engagement crews.

Another optional gunnery track includes Reconnaissance, Selection, and Occupation of Position (RSOP) gunnery tables. This track is optional because the IBCS Modified Table of Organization and Equipment does not include personnel for either security or RSOP positions. Due to the disaggregated nature of future sensors and effector positioning to achieve survivability, the RSOP skillset benefits many crew members. RSOP teams organize based on mission requirements, and the gunnery tables enable the achievement of standardized proficiency gates in this skill set.

Figure 3: Qualification modularity vignette

Modular Gunnery Builds and sustains ready and <u>flexibly-reconfigurable</u> Air Defense capability at appropriate echelon – meaning that both Individuals and Crews can be reconfigured to meet mission requirements.

Problem Vignette 1: Loss of Key Personnel during a critical period for Unit A
Unit A, which is assigned to a critical mission like Immediate or Contingency Response Force (with FORSCOM readiness reporting requirements), or about to assume a mission, loses a crew member or a crew to customary movement cycle transition or personnel readiness issue.

Task Force: Unqualified
IBCS

Task Force: Qualified
IBCS

EOC Crew: Qualified
IBCS

Qualified EOC Crew from notional unit B
IBCS

Solution:
Notional unit A requests either a qualified crew member or qualified crew from notional unit B to meet directed readiness levels for contingency missions for an interim or extended period without decertification of unit A. The qualified crew or individual continues mission with unit A or is sent back to unit B when unit A qualifies additional assigned personnel.

Problem Vignette 2: Customary rotation of personnel in a forward stationed unit C
Forward stationed operational unit C i.e. INDOPACOM or EUCOM, loses key personnel or crew members to movement-cycle based rotation, and receives new personnel.

Individual Crew Member Qualified

EOC Crew: Unqualified
IBCS

EOC Crew: Qualified
IBCS

Solution:
Incoming service member from notional unit B arrives at forward duty station with DTMS record of individual and crew qualifications. Unit C battle rosters the qualified service member on gaining crew without necessitating a requalification or certification. Commanders determine whether a check-ride or validation of incoming personnel is necessary.

Air Battle Management

Air Defense modifies some elements of the core IWTS methodology to meet branch-specific requirements or equipment-specific needs. These modifications appear most evidently in air battle management training, a separate six-table sequence with nine alternate skill or advanced tables. Air battle management Table I-III consists of individual tables, and Table IV-VI transitions to crew tables and Table VI qualification. These tables develop crews to what would formerly be an Air Battle Management Level five in TC 3-01.86. Battle-rostered crews transition to the alternate skill and advanced air battle management certifications after Table VI qualification. These tables fall into three categories:

- "Any echelon" skills that are optional based on mission and commander's discretion, including tasks such as establishing remote site operations or establishing control of multiple sensors in a single command and control node.

- Battery echelon tables include advanced air battle management and fighting in a degraded state or from an alternate fighting position.

- Battalion or task force echelon advanced air battle management builds on battery echelon skills but includes staff tasks to develop defense plans and actively support air battle management during evaluations.

Air battle management (ABM) training emphasizes engagement types instead of current Patriot gunnery "Threat Focus Track" lists to drive standardized skill development and training objectives that iteratively increase difficulty and complexity based on trainer/evaluator and commander-guided conditions. Additionally, while Table VI qualification air battles last 45 minutes, certification air battle durations are two to three hours long. The transition from the list-defined air battle threats to types of engagements and extension of air battle durations build the "management" skills of air battle management.

Complex attacks are one type of engagement that crews must conduct during Table VI qualification and advanced ABM certification tables. Battle-rostered crews conducting advanced table certifications will perform at least two complex attack engagements. One of the complex attacks includes multiple off-axis targets factoring defended assets before a cruise missile or ballistic missile attack along a primary target line (PTL). Assessments evaluate operators' ability to quickly detect and engage off-axis and

Figure 4: IBCS Air Battle Management overview

Air battle management (ABM) training emphasizes engagement types instead of current Patriot gunnery Threat Focus Track lists to drive standardized skill development and training objectives that iteratively increase difficulty, and complexity based on trainer/evaluator and Commander guided conditions.

- ABM tables are distinct from other gunnery tables - complement training progression through major training events.
- ABM qualification and certification events use foundational threat scenarios: Baseline, Complex, Alternate.
- ABM Qualification and Certification event durations complement multi-echelon training objectives (45 mins and 2-3 hrs).

Crew Echelon Air Battle Management Training – Qualification (Annual)							
Table	Table I	Table II	Table III	Table IV	Table V	Table VI Crew Qual	
		Individual			*Crew Collective*		
Crew Echelon	Gunnery Skills Test	Ready for Action Drills	Basic Air Battle MGMT	Basic Integrated Defense Design – Defense Plan Dissemination	Alert State Assumption and Integration	Air Battle Management Qualification *EXEVAL*	

- Alternate tables are mission focused and tailored.
- Alternate table certification satisfies annual qualification requirement.
- "All Echelon" alternate tables are optional based on CDR discretion and mission requirements.

Foundational Threat Scenario Index
☐ Baseline (45 min) ☐ Complex (2-3 hr) ☐ Alternate (2-3 hr)

Alternate Air Battle Management Certification Tables in lieu of qualification ABM Table VI for experienced crews

Alternates, Capabilities, Skill, Techniques, or Complex Engagements – Certification (Semi-Annual)								
	All Echelons (Optional based on Mission)				**Battery EOC Crew**		**Battalion EOC Crew**	
Table	Table a	Table b	Table c	Table d	Table e	Table f	Table g	Table h	Table i
Condition	Sensor	Effector	Adversary Effects	Remote Site Operation	Degraded ABM	Netted with HEU and Adjacent EOC	Degraded ABM	Staff Supported	Netted TF with 2x or more EOC
Task	Integrate/ coordinate with non-organic Sensor (external to BN)	Integrate/ coordinate/ Reload with non-organic Effector (external to BN)	Operate in an environment with Adversary effects	Establish and manage a remote LS/RS/C2 Site	Transition to redundant systems – conduct ABM in S280	Battery Advanced Air Battle Management *EXEVAL*	Transition to redundant systems – conduct ABM in S280	Advanced Integrated Defense Design Supports Table VIi	Battalion Advanced Air Battle Management *EXEVAL*
Notes	TBL VIa-d can be conducted ICW TBL VIf and VIi if using the using the Complex Foundational Threat Scenario				TBL VIe and VIg can be conducted ICW TBL VIf and VIi if minimum duration threshold is met each table (total 4-6 hrs)			NA	

PTL targets while coordinating with other task force entities and tactical control authorities to execute engagements. In another complex attack engagement, the assessed crew's primary sensor experiences jamming before being attacked by multiple unmanned or remote threats attacking sensors or defended assets with anti-radiation missiles (ARM) or other munitions. Part of the training objective for this complex attack engagement is to train kinematics for an air-breathing threat fight with jamming that enables adversary ARM penetration/ leakers. However, this training objective becomes more salient in the context of the task force or composite operations when operators develop skills to use non-organic sensors to neutralize the effects of jamming by engaging threats with non-primary sensor measurement data, a capability unique to IBCS.

A Note about Key Terms

Gunnery modernization and IWTS structural implementation necessitate clarification of key gunnery terms to focus on future training strategy and planning development. "Gunnery," or "Gunnery Training," refers to the baseline training requirements designed to validate a Soldier or unit's ability to employ a weapon system. Gunnery training and MET training are different. While some gunnery tasks are individual or collective supporting tasks to METs, gunnery alone cannot achieve MET qualification.

Qualification and certification are used interchangeably throughout Air Defense gunnery manuals and doctrine. However, both terms are precisely defined and differentiated in the draft gunnery to clarify the purpose of achieving baseline training requirements (versus additional, advanced, or mission-focused requirements).

Qualification is the achievement of a standardized gunnery proficiency gate such as TC 3-01.86 Table IV or VIII. In the case of IBCS gunnery, Table VI is the gunnery proficiency gate.

Certification is training beyond the Army standard qualification that enables employment at an advanced level or in a specific manner. Certification tables include tasks developed in the training circular and available for implementation at the commander's discretion, based on mission, or required to achieve higher headquarters-directed readiness requirements. The term "certification" referenced in the context of gunnery is not the same as commander certifications for missions, such as those a force provider gives after a successful mission rehearsal exercise before deployment, which validates mission essential task achievement.

Measuring Readiness

The risk to enterprise-level readiness is incredibly high as the branch operates through the IBCS fielding and transition period. While IBCS-adapted Patriot battalions can continue to assess readiness as before, full operationalization of the modular, scalable IBCS Task Force concept requires changes in the Net-Unit Status Reporting (USR) policy or ADA reporting under that policy. Current Army policy measures readiness based on the current "Patriot Battalion" paradigm or "whole of battalion" approach. For instance:

Deploying less than half a battalion of capability: Task organization below the battalion echelon to create an AIAMD "Task Force" if less than 50% of the providing parent unit identification code ([UIC] referred to as the "AA UIC"; "AA" is the AR 220-1 designation code for a reporting parent unit), increases the providing unit's administratively non-deployable personnel number.

Deploying more than half a battalion of capability: Task organization below the BN Echelon to create a Task Force, if greater than 50% of the providing AA UIC, results in "Deployment" status application to the entire AA UIC; personnel remaining at the home station count as administratively non-deployable.

Administrative non-deployables impact training readiness assessments: Personnel readiness ratings also directly impact Training readiness as a component of training attendance, meaning increases in administratively non-deployable personnel limit AA UIC's ability to achieve training readiness.

AR 220-1 training readiness policies measure AA UIC training readiness or "T-Rating" (T1 as trained to T4 as untrained) based on MET achievement. ADA AA UICs are typically organizations at the Battalion echelon and above (THAAD batteries are an exception because they are AA UICs). Batteries or modular capabilities organized below the battalion echelon cannot be "training readiness" evaluated individually. Instead, AA UIC subordinate UICs (think the batteries within the battalion) are assessed collectively for an average "T-Rating" across the parent unit AA-UIC, resulting in one single score on the spectrum of trained (T1) to untrained (T4). Therefore, AR 220-1 does not account for sub-organization training readiness in a way that supports Army or joint-level planning and preparing to employ a fully operationalized modular and scalable ADA force. The ADA force can train to be modular and scalable and achieve compliance with readiness policies. Still, it incurs readiness rating costs to deploy that way, regardless of how the capabilities organize and fight in a theater.
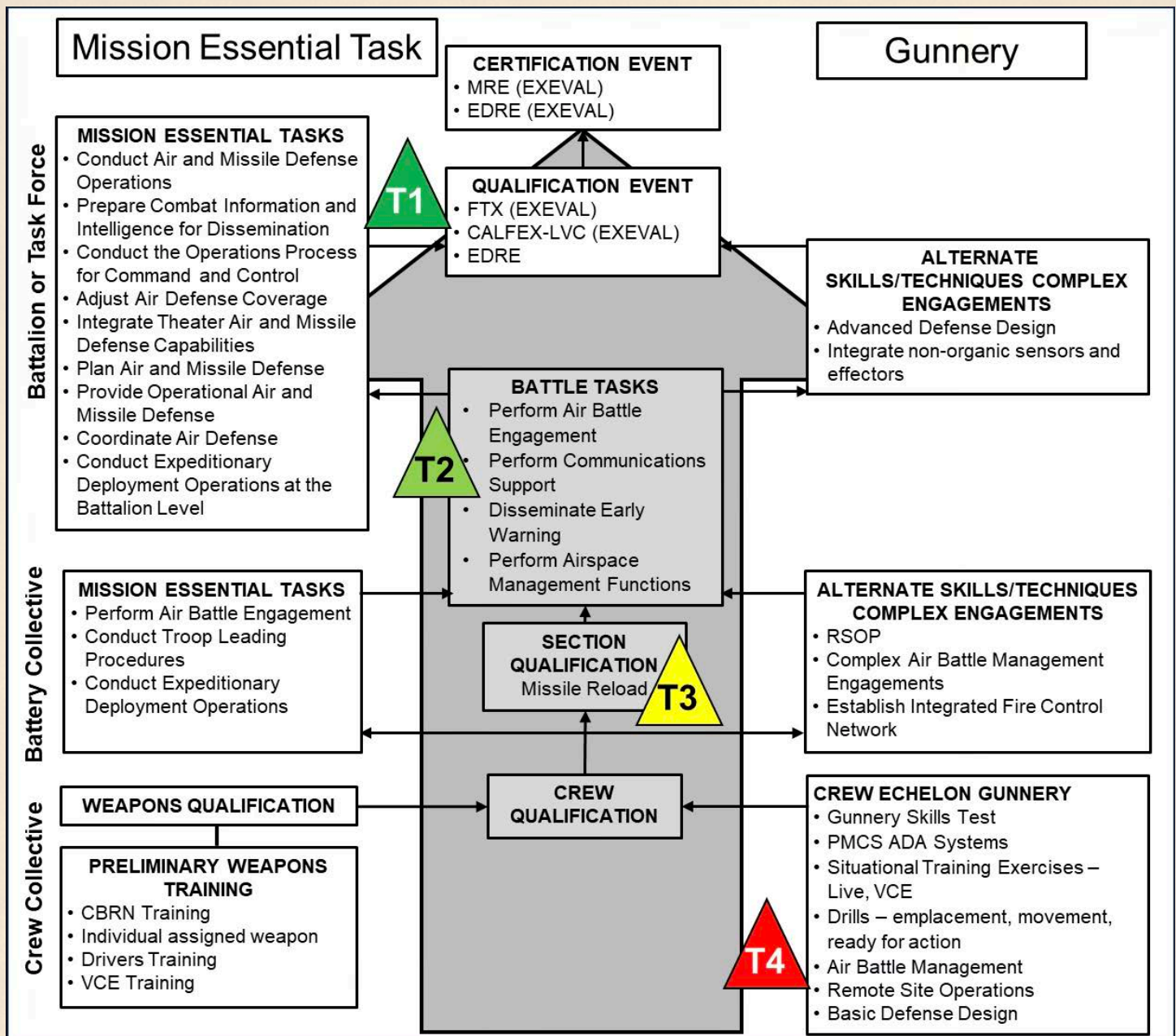
Figure 5: Training readiness visualization

Way Ahead

Developing a draft IBCS gunnery program is one of several steps toward realizing the transformational opportunity of the whole AIAMD system of systems. Efforts are underway to modify, refine, and modernize domains across the ADA portfolio to meet future battlefield requirements. Gunnery is a critical medium through which we can drive the accompanying culture and paradigm-shifting changes that must occur to fully leverage our new technology against modern, evolving threats. These efforts will continue well beyond the initial IBCS fielding, which will begin in 2025. Initial fielded units will likely use the draft gunnery program and assist in further refinement, leading to a final document in the next couple of years. Both the AIAMD gunnery programs and doctrine will continuously evolve as additional capabilities complete development and begin fielding. These programs include Indirect Fire Protection Capability (IFPC), Lower Tier Air and Missile Defense Sensor (LTAMDS), Remote Interceptor Guidance – 360 (RIG-360), Sentinel A4, and other programs.

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