

KILLING THE KILL CHAIN:

CHALLENGES & SOLUTIONS FOR MODERN ARMY BATTALION FIRE DIRECTION CENTERS

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The modern battlefield demands speed, precision, and seamless integration of fire support. digital fire control systems (DFCS), such as the Army's Advanced Field Artillery Tactical Data System (AFATDS), are the cornerstone of achieving this, yet many Army units struggle to fully realize its potential. This article outlines common challenges units face, such as building and maintaining a robust digital fires network, building a comprehensive database, conducting technical rehearsals, and ensuring there is a plan to execute the full sensor to shooter kill chain, sensor/shooter management, the role of the operations section in support of the battalion fire direction center (BNFDC), and crucially, the often-overlooked aspect of Class V (ammunition) tracking. These challenges are frequently observed during rotations at Joint Multinational Readiness Center (JMRC), where U.S. and multinational units are tested against a realistic and adaptive opposing force. It will propose solutions to mitigate these challenges and enhance fire support effectiveness, ultimately ensuring the fires kill chain is a reliable and responsive force multiplier.

THE DIGITAL DATABASE: Foundation of Responsive Fires

A functional DFCS database is the prerequisite for all subsequent fire support activities. However, building and maintaining this database presents significant hurdles. The most frequent issue is incomplete or inaccurate unit data within the master unit list (MUL) and unit workspace. Units often overlook the need to include all contributing elements – intelligence support elements (ISE), maneuver companies, and external supporting units – resulting in fire missions not being received at all echelons due to missing or inaccurate data. This flaw is exacerbated by limited participation in Digital Sustainment Training (DST) during the unit training cycle, where these interoperability issues are often revealed. JMRC rotations consistently highlight that units failing to populate the database with complete and accurate information struggle to establish effective fire support coordination, **hindering combined arms operations.**



The shortcoming is multiplied with the introduction of multinational partners and a lack of training using Artillery Systems Cooperation Activities (ASCA).

Ensuring the database is effectively built and distributed across an organization emphasizes the importance of technical rehearsals. These rehearsals are vital for verifying system functionality, communication links, and data transfer protocols. However, they often fall short due to inadequate planning and limited scope. Units frequently focus solely on the DFCS-to-shooter link, neglecting critical interfaces like sensor integration, airspace control requests, and coordination with higher echelons. Furthermore, **rehearsals are often conducted as “check-the-box” exercises**, lacking the realism and complexity of actual combat scenarios. Crucially, technical rehearsals often fail to adequately test the integration of Class V statuses, leaving commanders unaware of actual expendable levels during simulated engagements. Often, the battalion S4 is not involved in technical rehearsals, where they could accurately begin forecasting ammunition required over the next 24, 48, and 72 hours accordingly. The Fires Warfighting Function after-action reviews frequently cite this as a contributing factor to simulated ammunition shortages or prolonged mission processing times during critical phases of the rotation.

To translate successful technical validation into effective battlefield execution, comprehensive rehearsal plans are essential. Effective rehearsal plans are crucial for synchronizing fires with maneuver operations. However, units often struggle to develop plans that are both detailed enough to provide clear guidance and flexible enough to adapt to changing battlefield conditions. Plans often lack sufficient detail regarding communication procedures, contingency plans, and handover protocols, hindering the network's ability to react dynamically. This deficiency extends to Class V planning, often resulting in unrealistic expenditure rates and a lack of clear trigger points for resupply requests, potentially leading to critical shortages during execution. A major contributing factor to the lack of accurate Class V planning is the physical location of the battalion S4 relative to the battalion fire direction officer (FDO). If both are co-located at the Battalion Main Command Post (MCP), units can effectively track and request ammunition based on the crosstalk between the two sections with proximity. The battalion S4 is commonly located at the Combat Trains Command Post (CTCP), a terrain feature away, leading to communication issues between the two sections and the break in the Class V linkage.



JMRC's challenging terrain and prolonged operational tempo consistently expose units that have not fully rehearsed the full kill chain, conducted adequate Class V planning based out of different command nodes, and have not established an actionable digital PACE plan.

Underpinning these plans is the critical need for clear understanding of who is observing and who is shooting – the designation of sensors and shooters. Optimizing the sensor-to-shooter chain – often referred to as the “kill chain” – is paramount. Clearly defined roles and responsibilities for spotters, Forward Observers (FO), and shooters (artillery batteries) are essential. Ambiguity in designation can lead to confusion, delays, and fratricide. Units struggle to maintain situational awareness of available sensors and shooters, particularly in a dispersed operating environment. This situational awareness must extend to Class V levels at each shooter location, requiring a consistent and accurate reporting mechanism integrated into the DFCS network. Observations indicate that a lack of clear communication protocols regarding ammunition status contributes to inefficient allocation and unnecessary risk. Delays in this “kill chain” **result in missed opportunities** to neutralize enemy targets due to mission processing delays or engage targets with the adequate ammunition for the desired effect.

All these elements – database, rehearsals, plans, and designated assets – converge within the battalion fire direction center (FDC), making the role of the operations section's understanding of the Fire Direction requirements particularly vital. The battalion FDC serves as the brain of the central nervous system for fire support, coordinating all activities and ensuring seamless integration with the maneuver plan. However, operations sections are often overwhelmed with administrative tasks, **leaving insufficient time for proactive planning and analysis** in support of the fires architecture. They struggle to maintain a comprehensive common operational picture (COP) to anticipate future fire support requirements. A significant component of this COP must be a real-time, accurate depiction of Class V status across all firing platforms. The operations section should proactively manage ammunition expenditure and anticipate resupply needs to help inform the battalion S4 section. **Units often rely on manual tracking methods, creating a disconnect between DFCS data and actual on-hand quantities.** JMRC exercises demonstrate that units relying solely on manual tracking are significantly slower to respond to changing battlefield conditions and often experience critical ammunition shortfalls.



The Master Gunner is a **frequently underutilized** part of the operations section. As the most trained and proficient cannon crewmember (13B) in the field artillery battalion, he or she, is a vital asset to planning and alleviating frictions. Often, less experienced cannon crewmembers struggle to troubleshoot issues on their howitzer, such as loading GPS Keys or using the Enhanced Portable Inductive Artillery Fuse Setter, at critical moments. Rather than utilize the Master Gunner to conduct on the spot training and establish Precision Guided Munition (PGM) capability, he or she is left to conduct checks on TOC security, leading units sending a signal representative to the battery that is struggling, who has little to no experience using a Chief of Section Display (CSD). During the planning process the Master Gunner can provide insight into PAAs, occupations, and R3P (rearm, refuel, resupply) site selections. Often R3P sites are not established in a manner conducive to both security and expedient resupply, or not conducted at all. Master Gunners and the Land and Ammunition NCO should standardize R3P procedures and coach the Forward Support Company (FSC) on arranging Class V so the batteries receive their Class V quickly and accurately, ensuring the right shells, fuses, propellants, and primers are received to support the maneuver during the next phase of the operation.

The primary challenge in Class V tracking lies in maintaining accurate and timely data within the DFCS. Units frequently fail to update ammunition status after each firing mission, leading to discrepancies between the brigade, battalion, and battery. This is often compounded by a lack of standardized procedures for reporting ammunition consumption. An example of this lack of standardized procedures is the difference in tracking mechanisms between the S4 and FDC. Most unit S4 sections track the ammunition in Excel documents on Microsoft Teams while the FDC usually uses analog products, where the DODIC is not reflected. The translation between DODIC and nomenclature is a specific field artillery problem that exasperates resupply issues from the Field Trains Command Post (FTCP) to the batteries and is further complicated by lot management. If the S4 does not include nomenclature with each DODIC, the FSC often omits, resulting in miscommunication when the batteries receive the ammunition. Solutions include implementing mandatory post-mission ammunition verifications, integrating Class V reporting into the standard Capabilities (CAP) reports after each fire mission or displacement, and providing dedicated training on proper DFCS data entry for Class V to the lowest level operator.



Units preparing for JMRC rotations should prioritize training on rapid data entry under stress and rehearse procedures for updating Class V status during dynamic engagements. Streamlining the “kill chain” requires accurate and readily available Class V information at every node.

Ammunition lot management frequently causes delays in fire mission processing because the muzzle velocity variation must be accounted for, ensuring the five requirements of accurate fires are properly met. Each propellant has a different effect on the muzzle velocity of the projectile being fired and must be accounted for during the computational procedures; logisticians frequently account only for total increments of propellant, rather than each individual lot. By accounting for each lot and attempting to minimize how many lots are received by the firing batteries, less work is required by the fire direction centers. This is another area where artillerymen can assist in the logistics of the field artillery battalion. Everyone involved must report and track ammunition by the individual lot codes to alleviate these problems.

Building a robust digital fires network is a complex undertaking, requiring sustained effort and a commitment to continuous improvement. By addressing the challenges outlined in this article and implementing the proposed solutions, Army units can unlock the full potential of AFATDS and **deliver responsive, accurate, and devastating fire support** to the maneuver commander. The key lies in recognizing that technology is only an enabler; it is the people, their training, and their ability to streamline the kill chain that ultimately determine success on the modern battlefield.

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