

// FY19

MISSION COMMAND TRAINING IN **LARGE-SCALE COMBAT OPERATIONS**

MISSION COMMAND TRAINING PROGRAM (MCTP)

KEY OBSERVATIONS

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Mission Command Training in Large-Scale Combat Operations: Mission Command Training Program Fiscal Year 2019 Key Observations

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Foreword

Since 1986, the Mission Command Training Program (MCTP) has facilitated the training objectives and captured observations at the echelons above brigade (EAB)-level for the operating force. For the past several years, the Army has focused its training on large-scale combat operations (LSCO). In accordance with the Chief of Staff of the Army's training guidance, MCTP conducted five multi-echelon warfighter exercises (WFXs), six brigade-level WFXs, and three Army Service component command (ASCC) exercises during fiscal year 2019 (FY19). Together, these exercises met the training objectives of more than 60 units and provided unique training opportunities to more than 200 EAB headquarters.

The information in this bulletin comprises recent observations from WFXs in a LSCO environment. Our authors are a collaborative group of experienced leaders, noncommissioned officers (NCOs), chief warrant officers, and officer observer-coach/trainers (OC/Ts), working in conjunction with our highly qualified expert/senior mentors.

We'd like to thank the 21 retired general officers who contributed their unique insights and wealth of experience: GEN (R) David McKiernan, GEN (R) Daniel Allyn, LTG (R) David Hogg, LTG (R) Michael Tucker, LTG (R) David Fridovich, LTG (R) David Valcourt, LTG (R) Jeffrey Buchanan, MG (R) Walter Golden, MG (R) Richard Longo, MG (R) Bryan Watson, MG (R) Tom Richardson, MG (R) Gregory Couch, MG (R) Edward Dorman, MG (R) Scott Zobrist, BG (R) William 'Bill' Wolf, BG (R) Louis Weber, BG (R) Robin Akin, BG (R) John Seward, BG (R) Paul Laughlin II, BG (R) John Novalis II, and BG (R) William Turner.

This publication provides an overview of the top seven collective trends organized by echelon of command and warfighting function, with additional emphasis on the integration of U.S. Air Force assets, special operations forces (SOF), and cyberspace electromagnetic activities (CEMA). NCO utilization observations are also included to help facilitate the integration of NCOs into our command posts. Our goal is to increase the readiness of units to plan, prepare, fight, and win in any environment. Winning matters!

Warfighters!

Shane P. Morgan
COL, FA
Commanding

The FY19 key observations were recorded, analyzed, and refined by a collaborative group of more than 60 field grade OC/Ts spread among eight MCTP operations groups, and the 505th Command and Control Wing Detachment 1. The primary authors of this bulletin led this collection and analysis effort, co-authored their individual sections by echelon and warfighting function or area of emphasis, and organized the chapters within this bulletin. The primary authors of FY19 Key Observations are —

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Unless otherwise stated, whenever the masculine or feminine gender is used, both are intended.

Note: Any publications (other than CALL publications) referenced in this product, such as JPs, ARs, ADRPs, ADPs, ATPs, ATTPs, FMs, TMs, etc., must be obtained through your pinpoint distribution system. The ADRPs listed under the “Doctrinal References” section for each key observation were superseded by their appropriate ADPs. The ADRPs were valid during the FY19 WFXs until replaced. Additionally, each key observation is backed by doctrinal references; however, not all doctrinal references are listed due to restricted distribution.

Cross-Reference Guide to Observations by Unit Type

Note: See cross reference guide acronym legend on page xiv.

Chapter 1. Recurring Trends											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 1.1. Current Operations	X	X	X	X							
Section 1.2. Information Collection with Operations and Targeting	X	X		X		X					
Section 1.3. Enforcement of Planning Horizons	X	X		X		X					
Section 1.4. Enforcement of Planning Horizons	X	X			X	X				X	

Chapter 2. Fiscal Year 2019 Trends by Echelon											
Section 2.1. Corps Trends											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 2.1.1. Missed Opportunities Created by Corps' Reconnaissance	X										
Section 2.1.2. Corps Integration of Lethal and Nonlethal Fires	X										
Section 2.1.3. G-2 Battle Tracking and Assessments	X										
Section 2.1.4. Information Collection with Operations and Targeting	X										
Section 2.1.5. Risk Management Incorporation into Decision Making	X										
Section 2.1.6. Fires Planning Horizon	X										

Cross-Reference Guide to Observations by Unit Type (continued)

Section 2.2. Division Trends											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 2.2.1. Division Deep Maneuver		X									
Section 2.2.2. Use of CAB as a Maneuver Force		X									
Section 2.2.3. Protection and Survivability of Division Reconnaissance		X									
Section 2.2.4. Defensive Cyberspace Operations Knowledge		X									
Section 2.2.5. MCIS Leveraging		X									
Section 2.2.6. Network Redundancy		X									
Section 2.2.7. Division Information Architecture		X									
Section 2.2.8. Staff’s Holistic Assessment		X									
Section 2.2.9. Comprehensive Information-Related Capabilities		X									
Section 2.2.10. SOF Integration in Division Plans		X									
Section 2.2.11. Contested Simultaneous Command Post Operations		X									
Section 2.2.12. Knowledge Management		X									
Section 2.2.13. Inefficiencies in Collection		X									
Section 2.2.14. TSA and TVA		X									
Section 2.2.15. Protection Working Groups		X									
Section 2.2.16. Engineer Planning and Inputs		X									
Section 2.2.17. Wet Gap Crossing Synchronization		X									

Cross-Reference Guide to Observations by Unit Type (continued)

Chapter 3. Brigade-Level Trends											
Section 3.1. Military Police Trends											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 3.1.1. Synchronized Detainee Operations											X
Section 3.2. Maneuver Enhancement Brigade Trends											
Section 3.2.1. MEB Role in Support Area											X
Section 3.3. Engineer Brigade Trends											
Section 3.3.1. Engineer Roles in the Support Area								X			
Section 3.3.2. Knowledge Management								X			
Section 3.3.3. Wet Gap Crossing Planning								X			
Section 3.4. Combat Aviation Brigade and Tactical Aviation Brigade Trends											
Section 3.4.1. Knowing the Operational Environment					X						
Section 3.4.2. Knowledge Management					X						
Section 3.4.3. Protection Cell					X						
Section 3.4.4. Deliberate Targeting					X						
Section 3.4.5. Sustaining the CAB					X						
Section 3.4.6. Running Estimates					X						
Section 3.4.7. Airspace Management					X						
Section 3.5. Field Artillery Brigade and Division Artillery Trends											
Section 3.5.1. IPB Integration with Higher Headquarters						X					
Section 3.5.2. Intelligence Systems Architecture Management						X					
Section 3.5.3. Counterfire Analysis						X					
Section 3.5.4. Counterfire						X					
Section 3.5.5. Targeting Working Group						X					
Section 3.5.6. Cross Boundary Fires						X					
Section 3.5.7. Standard Fires Orders and AFATDS Standardization						X					
Section 3.5.8. BDA Inputs into Targeting						X					

Cross-Reference Guide to Observations by Unit Type (continued)

Section 3.5.9. Force Field Artillery Headquarters Responsibilities						X								
Section 3.5.10. Integration of Ground Moving Target Indicators into Counterfire Battle Drill						X								
Section 3.5.11. Airspace Management						X								
Section 3.5.12. DIVARTY and FAB Protection Cell						X								
Section 3.5.13. DIVARTY and FAB Sustainment LNO Team in the SACP						X								
Section 3.5.14. Artillery Communication Architecture and MCIS						X								
Section 3.5.15. Transition of Command and Control from Force Field Artillery Headquarters to Another Headquarters						X								
Section 3.6. National Guard Brigade Combat Teams Trends														
Section 3.6.1. Planning Horizons and Timelines														X
Section 3.6.2. Mission Rehearsals														X
Section 3.6.3. COP														X
Section 3.6.4. Transition of C2 Between the Main and Tactical Command Posts														X
Section 3.6.5. Movement and Maneuver: Integration of Army Aviation and Airspace Management into the Planning Process														X
Section 3.6.6. Battle Tracking and BDA														X
Section 3.6.7. Intelligence Personnel Roles and Responsibilities														X
Section 3.6.8. Split BISE Operations														X
Section 3.6.9. Staff Integrated IPB														X
Section 3.6.10. Massing Fires at the Decisive Point														X
Section 3.6.11. Ineffective Sustainment Battle Tracking														X
Section 3.6.12. Incomplete Logistics Estimates Result in Inability to Provide Anticipatory Sustainment Support														X
Section 3.6.13. Protection Cell Integration														X

Cross-Reference Guide to Observations by Unit Type (continued)

Chapter 4. Sustainment											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 4.1. Underutilization of Operational Contract Support to Mitigate Shortfalls									X		
Section 4.2. Lack of Mortuary Affairs Planning, Synchronization, and Mitigation in Large-Scale Combat Operations									X		
Section 4.3. HROB Struggles with the Scale of Replacement Operations									X		
Section 4.4. Inefficient Critical Path of Battle Rhythm Events Limits Anticipatory Sustainment and Timely Orders Production									X		
Section 4.5. Coordinating and Synchronizing Protection and Intelligence with Distribution Operations									X		
Section 4.6. Inadequate Staff Running Estimates, Forecasting, and Logistics Status Reporting									X		
Section 4.7. Lack of a Sufficient Logistics COP									X		
Section 4.8. Lack of a Written Tactical SOP									X		
Section 4.9. Medical Considerations									X		

Cross-Reference Guide to Observations by Unit Type (continued)

Chapter 5. Special Operations and Specialty Functions											
Section 5.1. Special Forces Integration at Division and Corps											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 5.1.1. SOF Organization	X	X		X							
Section 5.1.2. Integrated Fires				X	X	X					
Section 5.1.3. C4I Interoperability	X	X		X							
Section 5.1.4. SOF LNO Teams	X	X		X							
Section 5.1.5. Understanding SOF Capabilities	X	X		X						X	
Section 5.1.6. IWfF and SOF Requirements	X	X		X						X	X
Section 5.2. Cyberspace Electromagnetic Activities											
Section 5.2.1. Integration of Offensive Cyberspace Operations into Large-Scale Combat Operations	X	X	X	X	X	X	X	X	X	X	X
Section 5.2.2. Integration of CEMA and C4I	X	X	X	X	X	X	X	X	X	X	X
Chapter 6. Noncommissioned Officer Utilization											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 6.1. Roles and Responsibilities	X	X	X		X	X	X	X	X	X	X
Section 6.2. Load Plans and Displacement Operations	X	X	X		X	X	X	X	X	X	X
Section 6.3. Digital Master Gunners and Battle Staff	X	X								X	
Section 6.4. Knowledge Management	X	X	X		X	X				X	

Cross-Reference Guide to Observations by Unit Type (continued)

Chapter 7. Air Component: Airspace Control											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 7.1. Preplanned Target Awareness and ALO Input	X	X									
Section 7.2. ISRLO and IDO Integration into Staff Planning Processes	X	X									

Chapter 8. Army Service Component Command Trends											
Section 8.1. VIBRANT RESPONSE 2019											
Observations	Corps	Division	ESC and TSC	SOF	CAB and TAB	FAB and DIVARTY	MP BDE	EN BDE	SB	BCT	MEB
Section 8.1.1. VIBRANT RESPONSE 2019: CCIR											
Section 8.1.2. VIBRANT RESPONSE 2019: RFI Management											
Section 8.1.3. VIBRANT RESPONSE 2019: MATO Integration into Warfighting functions											
Section 8.1.4. VIBRANT RESPONSE 2019: JTF to EOC Communication											
Section 8.1.5. VIBRANT RESPONSE 2019: Risk Management											

Cross-Reference Guide to Observations by Unit Type (continued)

Section 8.2. ALLIANCE 2019										
Section 8.2.1. ALLIANCE 2019: Contingency Action SOP										
Section 8.2.2. ALLIANCE 2019: CFC Nesting										
Section 8.3. YAMA SAKURA 75										
Section 8.3.1. YAMA SAKURA 75: Engineer Roles in the Support Area										
Section 8.3.2. YAMA SAKURA 75: Knowledge Management										
Section 8.3.3. YAMA SAKURA 75: Wet Gap Crossing Planning										
Section 8.3.4. YAMA SAKURA 75: AMD C2 Structure										

Cross Reference Guide Acronym Legend	
AFATDS: Advanced Field Artillery Tactical Data System	IDO: intelligence duty officer
ALO: air liaison officer	IPB: intelligence preparation of the battlefield
AMD: Air and Missile Defense	ISRLO: intelligence, surveillance, and reconnaissance liaison officer
BCT: brigade combat team	IWF: intelligence warfighting function
BDA: battle damage assessment	JTF: joint task force
BISE: brigade intelligence support element	LNO: liaison officer
C2: command and control	MATO: mission assignment tasking order
C4I: command, control, communications, computers, and intelligence interoperability	MCIS: mission command information system
CAB: combat aviation brigade	MEB: maneuver enhancement brigade
CCIR: commander’s critical information requirements	MP BDE: military police brigade
CEMA: cyberspace electromagnetic activities	RFI: request for information
CFC: Combined Forces Command	SACP: support area command post
COP: common operational picture	SB: sustainment brigade
DIVARTY: division artillery	SOF: special operations forces
EN BDE: engineer brigade	SOP: standard operating procedure
EOC: emergency operations center	TAB: theater aviation brigade
ESC: expeditionary sustainment command	TSA: target system analysis
FAB: field artillery brigade	TSC: theater sustainment command
HROB: human resources operations branch	TVA: target value analysis

EXECUTIVE SUMMARY

Mission Command Training Program Fiscal Year 2019 Key Observations

During fiscal year 2019 (FY19), the Mission Command Training Program (MCTP) conducted five warfighter exercises (WFXs) supporting the training readiness for one corps and eight division-level headquarters (two of which were National Guard divisions) and their associated functional and multifunctional brigades. All five WFXs conducted in FY19 involved the operation plan scenario. FY19 continued FY18's U.S. Army Forces Command (FORSCOM)-directed actions requiring the displacement of division-level command and control nodes and the integration of chemical, biological, radiological, and nuclear capability. It was apparent that the experiences of each division and corps coming out of every WFX were being shared with their peer divisions/corps, especially those that were soon conducting their own WFX, with training outcomes trending in a positive direction for most staff processes and procedures. The trends listed in this executive summary are a distillation of observations compiled from all five FY19 warfighters.

Before delving into the trends identified during FY19 WFXs, it is important to focus on keys to success that enabled divisions to perform at a higher level in their respective WFXs. From a whole-of-staff perspective, divisions that take advantage of a world-class opposing force (OPFOR) ride-along or participate in a preceding WFX as a higher command (HICOM), tend to perform as a higher functioning staff. Furthermore, divisions that seek additional MCTP support during their pre-WFX command post exercise (CPX) 3 entered the actual WFX better poised to engage the scenario. During FY19, one division took advantage of HICOM opportunities in lieu of CPX 3. That division commented favorably on the value of that experience as it carried over into its participation as a primary training audience during its own WFX. These points cannot be overemphasized.

Similar to FY18's key observations, this publication starts with a brief synopsis of common trends that were identified throughout FY19's WFX program and frame the specific observations found later in this bulletin. The following are trends for FY19:

- Command, control, communications, computers, and intelligence integration and network design and management.
- Intelligence assessment.
- Defining the fight at echelon over space and time.
- Targeting process.
- Airspace planning.
- Air defense integration.
- Roles and function of the support area command post (SACP) within a support area.

Command, control, communications, computers, intelligence integration, and network design and maintenance. It was noted repeatedly in FY19 that numerous training audiences were challenged to effectively achieve distributed mission command across three command posts (CPs) using their organic and supporting information architectures and systems. Additionally, effective network management was stressed when a middle enclave was introduced into the exercise. As a result, the sharing of information ensuring battlefield awareness and visualization across the CPs was not equally understood, adversely impacting planning, execution of operations, and commander decision making. Further compounding these network and architecture issues was the integration of the command post computing environment (CPCE) common operational picture (COP). CPCE was introduced to training audiences starting in WFX 19-3 and was used again during WFX 19-4. Leveraging emerging mission command information systems such as CPCE requires a significant investment in individual user training. The last-minute CPCE user training was not sufficient in both instances for staffs to fully leverage this new COP program. Additionally, systems such as CPCE also depend on a well-developed plan to best integrate the software across staffs to effectively support planning. These same issues were also noted with the configuration of Army Battle Command Systems. All of these concerns impacted the effectiveness of distributed mission command. This will be further complicated in a contested information environment against a peer or near-peer threat in a real-world contingency.

Intelligence assessment. In FY19, it was noted that intelligence preparation of the battlefield intelligence staff estimates and enemy situational templates were a common trend among G-2 sections. While many of these issues did improve, a continuing trend remains concerning intelligence assessments. A greater understanding of the value of a situational template as it applies to large-scale combat operations (LSCO) has been observed. However, intelligence support to targeting remains largely fixated on enemy icons and not on enemy critical capabilities by warfighting function (WfF). While not a doctrinal term, the phrase “systems targeting” has been suggested to focus collection efforts on enemy systems that have the greatest adverse impact on friendly courses of action. In FY19, intelligence preparation tended to myopically focus almost exclusively on the division area of operations (AOs), largely ignoring the area of interest of adjacent boundaries. This continues to result in poorly integrated cross-boundary targeting options. Lastly, defining the fight by echelon also continues to be a recurring issue. As the intensity of the close fight increases, there is a natural tendency for intelligence assessments to become parochial, not visualizing the enemy fight out to 72 to 96 hours. This has led to poor intelligence support to targeting, and as a result, poor echelons above brigade-level shaping, leveraging supporting joint fires capabilities.

Defining the fight at echelon over space and time. Closely related to the comments listed earlier in this executive summary regarding intelligence assessments, division and corps staffs are experiencing planning horizon challenges, impacting their ability to effectively visualize future operations (FUOPS) out to 72 to 96 hours. Maintaining a disciplined focus on the deep fight using a futures approach is difficult when the exigencies of an intense close fight divert staff attention and energy; however, it is necessary. The corps, as the highest tactical echelon in LSCO, has a clear role in shaping, counterfire, and operational tempo. At the division level, planning efforts need to simultaneously shape the deep fight for the next operation, manage current fights in the security and main defensive zones, set conditions in the support area that eventually contract the rear boundary, and manage key operational transitions—all while maintaining tempo, enabling operational reach, and preserving options for the commander. Congested battle rhythms are part of the problem. While focusing the staff on WfF's equities, battle rhythms have typically not been effective at preserving a staff's focus on shaping FUOPS

and managing current division operations. Additionally, operational assessments programs, leveraging current planning products, threat updates, and staff estimates, are not focusing staffs on opportunities and risks over time as effectively as commanders require. Improvements have been noticed in the division of efforts across the three command nodes; however, manning challenges remain an issue. Early indications in FY20 WFXs continue to point to these areas of concern.

Targeting process and airspace planning. In FY18, the preponderance of targeting process observations were related to staff processes and individual actions within the targeting enterprise. While many of those observations (see Center for Army Lessons Learned Bulletin 19-13, *Mission Command Training in Unified Land Operations: FY18 Key Observations*) are trending positive, staffs need to continue to focus attention on those FY18 trends during preparations for a WFX. FY19 revealed issues of a higher order that impact the targeting process. Similar to comments earlier in this executive summary, the targeting process has also fallen victim to encroaching on the close fight—focusing within 48 hours. A disciplined approach toward focusing targeting efforts almost entirely on the 72- to 96-hour fight will ensure division and corps shaping efforts are more effective. Also, as mentioned earlier in this executive summary, the fires enterprise too often does not focus on clearly defined and specific enemy capabilities—the science of targeting. Similarly, the targeting enterprise is often slow to identify and anticipate shifts in operational tempo, which require adjustments to the fires plan—the art of targeting. It has been noted that the misapplication of fire support coordination measures (including the fire support coordination line) have caused units to treat these coordination measures more as restrictive boundaries and not as the permissive coordination measures that they are in doctrine. This has resulted in the loss of momentum and missed shaping opportunities. Lastly, airspace coordination measures are not routinely being built proactively, nor executed in a cold and hot status to facilitate the timely prosecution of fleeting enemy targets.

The following passage was stated directly in the FY18 key observations bulletin regarding the joint air-ground integration center and remains a trend.

“Cross-boundary fires are not timely nor responsive. Part of this problem is similar to shortfalls in intelligence preparation of the battlespace; are we looking at what can influence our fight from areas outside our assigned AOs, which are found in the area of interest? The tendency to focus only on threats within the division AOs exposes a seam in the fires process. Adding complexity to cross-boundary fires is the lack of well-rehearsed processes between adjacent units that address deconfliction of maneuver formations, clearance of air, and approval of fires; all within a short timeframe. This process is part automation and part human. These processes need to be clearly understood and rehearsed before the WFX begins.”

In FY19, adjacent coordination of counterfire radar coverage was discussed between division artillery and field artillery brigade headquarters.

Air defense integration. During WFX 19-2, an anonymous staff officer said air defense is a dying art, which was in reference to the state of short-range air defense (SHORAD) planning and execution at the division level. Although there are currently materiel challenges within the SHORAD community, many of which have identified solutions in the not-too-distant future, there are doctrinal and training solutions that can and need to be implemented as soon as possible. Too frequently, enemy air capabilities are able to preserve engagement overmatch against division forces in the close fight, resulting in significant losses to the maneuver brigade combat teams. Often, radar capabilities are not located deep enough to protect the force due to a

misunderstanding of enemy air corridors and how the threat may attempt to exploit these avenues of approach. Air defense protection from a sensor perspective is often discussed within the protection WfF stovepipe. However, when air defense radars are paired with ground air defense missiles, they form a potent offensive weapons system. Counterfire radars and rocket artillery are treated in this fashion via the targeting working group. The air defense enterprise at the division level needs to act in similar fashion by developing an active and integrated plan to kill enemy aviation threats.

Roles and functions of the support area command post within the support area.

During FY18, divisions made concerted efforts to establish an SACP from their modified table of organization and equipment and employ that CP within the WFX per FORSCOM directive. These efforts continued for FY19. The roles and functions of the SACP, as listed in current doctrine, have ably served as a reference from which to experiment. SACPs primarily focus on sustainment to maintain operational momentum for the division. Division SACPs recognize the prime importance of integrating division sustainment and maneuver enhancement brigade (MEB) staff capabilities, leveraging expertise to mitigate division manning and expertise challenges. Integration of the three was met with varying degrees of success; with leadership personalities being the single most influential ingredient to forge teamwork. Security within the division support area (DSA) and consolidation area is vital to division sustainment. Unsurprisingly, the depth of the DSA rapidly increases with success within the division close fight. Often, conditions leading to adjusting the division rear boundary with corps are not proactively planned as effectively as those division actions taking place in the close and deep fights. As a result, MEB troop-to-task is quickly exceeded in the support area. It is vital for the SACP to facilitate the necessary conditions to adjust the rear boundary with corps and enable division operational reach.

During the FY19 series of WFXs, a trend emerged where divisions had the tendency to group the support area and consolidation area into one area; known as the division consolidation and support area. This is an improper understanding of the doctrinal differences between the two areas. Initially, the division does not have a consolidation area; however, as operations progress over time, the DSA and division consolidation area (DCA) grow. As demand for maneuver forces forward in the close fight grows (as the division enters the enemy main battle area), there are no maneuver brigades to accept control of the consolidation area, often resulting in the merger of the DSA and DCA, with both assigned to the MEB. This has resulted in significant risk to sustainment as bypassed enemy formations aggregate to present a significant threat to friendly forces. The SACP, while not controlling these two spaces, does have a significant voice to advocate for the MEB to the division G-3. Although this is an issue involving a misapplication of doctrine, it is also illustrative of the need for a division of efforts and for authorities between the division main and SACP.

This bulletin includes two new sections consisting of observations collected by MCTP from three Army Service component command exercises and noncommissioned officer utilization within division and corps-level staff.

The following chapters have been categorized to more effectively organize the key observations from FY19. Many of these observations serve as data points reinforcing what has been described earlier in this publication. Units that include a review of these observations prior to starting the preparations for participation in a warfighter tend to perform better in the exercise. MCTP has already noted significant improvement from early indications in the FY20 WFXs.

CHAPTER 1

Recurring Trends

SECTION 1.1. CURRENT OPERATIONS SYNCHRONIZATION

(Relates to Center for Army Lessons Learned Bulletin 19-13, *Mission Command Training in Unified Land Operations: FY18 Key Observations, Chapter 2.1.2*)

Observation. Corps staff sections did not effectively communicate current information to the commander and staff.

Discussion. Current operations integration cell (COIC) personnel, to include liaison officers (LNOs), struggled to understand how their running estimates impacted the commander and staff's visualization of operations across the battlefield. Significant events such as chemical strikes and cyber attacks were not disseminated across the staff, resulting in second- and third-order effects because the events were not appropriately analyzed.

Recommendation. The sharing of information coming into the COIC should be triaged, quickly analyzed, and then disseminated appropriately through multiple mediums to all command posts. Units that call "attention in the tactical operations center," conduct synchronization drills (seven-minute drills, see Figure 1-1), a knowledge management plan, standard operating procedure (SOP), and a plan for dissemination of information are the most effective at achieving a shared understanding. It is also recommended that LNOs and other COIC personnel are trained collectively and provided with an SOP prior to beginning operations.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training and leadership issue.

Doctrinal references. Army Doctrine Publication (ADP) 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 1.2.

INFORMATION COLLECTION WITH OPERATIONS AND TARGETING

(Relates to Center for Army Lessons Learned Bulletin 19-13, *Mission Command Training in Unified Land Operations: FY18 Key Observations, Chapter 2.1.4*)

Observation. Divisions, corps, and special operations forces (SOF) units do not effectively synchronize information collection with operations and targeting.

Discussion. Collection management and targeting sections conduct planning in relative isolation. The collection manager, with minimal input from targeting or the G-2 analysis control element, develops named areas of interest (NAIs) and target areas of interest (TAIs). The targeting teams do not have a clear understanding of duration of target decay, and the collection plan is generally not approved by the G-3 nor promulgated through operation orders (OPORDs) or fragmentary orders (FRAGORDs). Doctrine notes that the information collection plan is an execution order, emphasizing the vital role of tasking and directing information collection to control limited collection assets. The intelligence staff identifies requirements appropriate to task to unit collection assets and recommends tasking those assets. The G-3 includes these recommendations in the "tasks to subordinate units" subparagraph from an OPORD, FRAGORD, or Annex L (information collection).

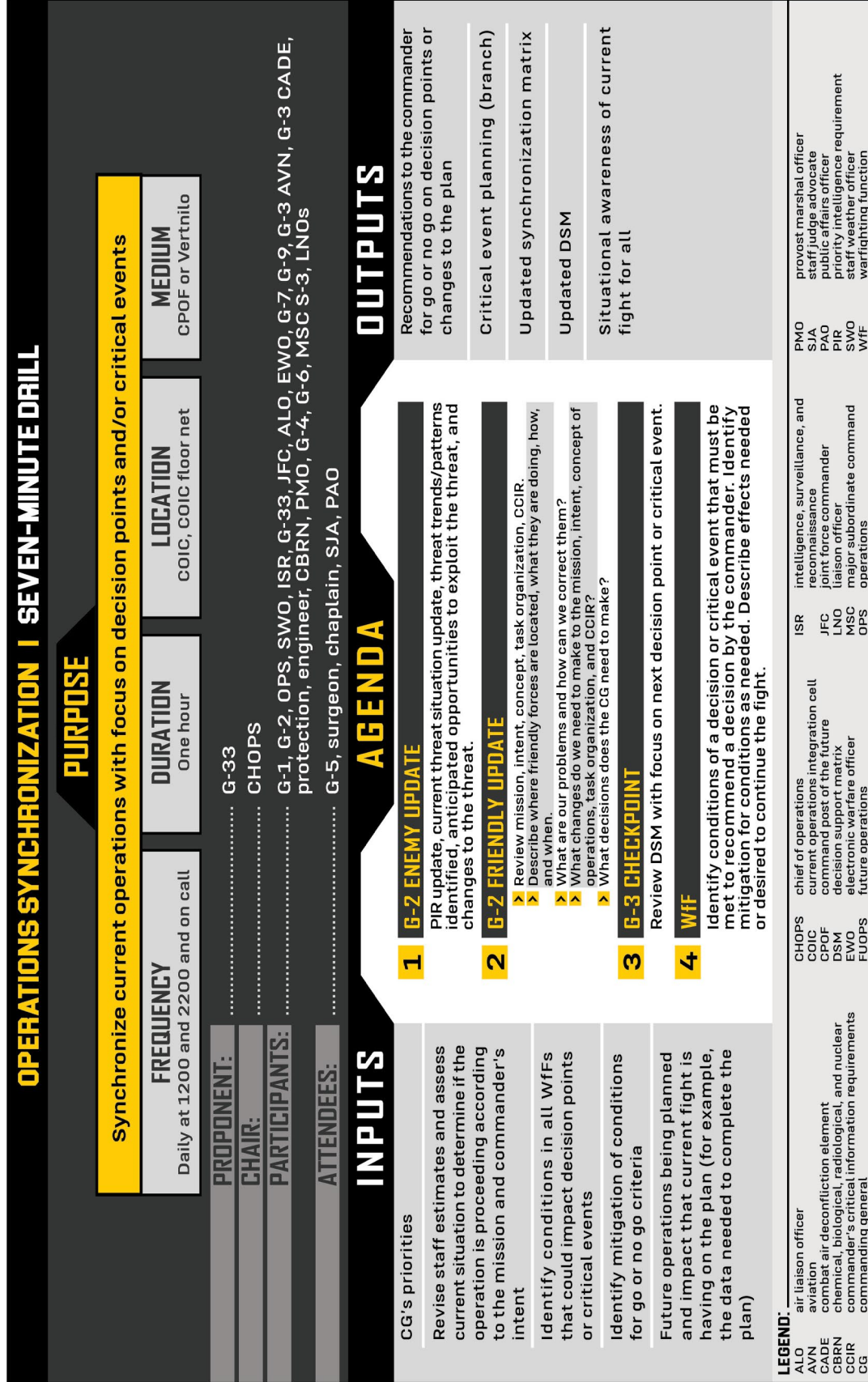


Figure 1-1. Operations synchronization seven-minute drill.

Recommendation. Develop an information collection annex to direct division collection efforts determined between the G-2 and G-3. The G-2 analysis control element develops NAIs and identifies enemy displacement technics and tactics, while the targeting team uses this intelligence to identify target decay times, and development of TAIs. These products should be filtered down to subordinate organizations and SOF elements through the SOF LNO team.

Doctrinal references. Army Techniques Publication (ATP) 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019; Field Manual (FM) 3-55, *Information Collection*, 03 MAY 2013; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADRP 2-0, *Intelligence*, August 2012; ADP 2-0, *Intelligence*, 31 JUL 2019; ADP 5-0, *The Operations Process*, 31 JUL 2019; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 1.3. ENFORCEMENT OF PLANNING HORIZONS

(Relates to Center for Army Lessons Learned Bulletin 19-13, *Mission Command Training in Unified Land Operations: FY18 Key Observations, Chapter 2.1.7*)

Observation. Failure to enforce planning horizons and efforts leads to desynchronization among staffs.

Discussion. The transition of responsibilities and efforts between integrating cells (plans, future operations [FUOPS], and current operations [CUOPS]) is essential to focus the organization's planning efforts and shape future events. Due to a lack of planners in CUOPS, FUOPS and plans are often charged with planning operations within 24 hours of execution. This leads to a lack of planning focus and effort on the mid- and long-term planning horizons; desynchronizing staff efforts to effectively conduct predictive analysis, support the targeting process, and assess operations against the operational framework. Transition briefs are also rarely conducted, preventing the handover of critical information and responsibility to the appropriate staff section. The transition brief enables the integrating cell staff members to understand the future operation and identify friction points prior to execution.

Recommendation. Manage planning horizons through a disciplined process codified in the unit SOP, battle rhythm, and transition briefs, and enforced by senior leaders to set the conditions for an effective handover between integrating staff cells. Augment the COIC with additional planners to prevent FUOPS and plans from planning short-term horizon events. Establish on-call operational planning teams for anticipated events, opportunities, or threats that require additional short-term planning. Transition briefs between integrating cells should be an established battle rhythm event which follows deliberate transition points and the five-paragraph operation order format.

DOTMLPF-P. Organization of the integrating cells should account for work requirements to maintain established planning horizons. Training for each integrating cell on rapid planning adjustments will prepare planners for rapid adjustments within each horizon.

Doctrinal references. ADRP 5-0, *The Operations Process*, 17 MAY 2012; ADRP 6-0, *Mission Command*, 17 MAY 2012; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADP 5-0, *The Operations Process*, 31 JUL 2019; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 1.4. KNOWING THE OPERATIONAL ENVIRONMENT

(Relates to Center for Army Lessons Learned Bulletin 19-13, *Mission Command Training in Unified Land Operations: FY18 Key Observations, Chapter 3.3.2*)

Observation. Combat aviation brigades (CABs) struggle to understand the operational environment.

Discussion. The integration of all warfighting functions (WfFs) does not occur during the intelligence preparation of the battlefield (IPB) process, which results in a lack of common situational understanding across staffs concerning the effects of terrain and weather in addition to the enemy threat. This adversely affects the latter steps of the military decisionmaking process as well as decisions during execution. Additionally, there is little to no refinement of higher headquarters' IPB products to the CAB's mission sets.

Recommendation. IPB sets the groundwork for the staff to conduct mission analysis and should include the entire staff. IPB products produced by higher headquarters should be refined and tailored to the CAB's mission to provide the commander and staff a more accurate visualization of the battlefield as it applies to their mission sets.

- CABs should conduct a thorough and complete staff-integrated IPB process that includes analysis of the impacts of natural and man-made terrain, weather, and enemy enablers.
- CABs should develop and publish all of their IPB products, to include their modified combined obstacle overlay, to enable friendly ground movement and enemy targeting.
- CABs should update and publish analysis and products throughout the fight as the situation changes and new information is learned.

DOTMLPF-P. Leadership training during mission command training should be focused on the importance of integrating all WfFs into the IPB process. Staff section IPB requirements should be codified in SOPs.

Doctrinal references. ADRP 5-0, *The Operations Process*, 17 MAY 2012; ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019; ATP 2-33.4, *Intelligence Analysis*, 10 JAN 2020; ATP 3-34.80, *Geospatial Engineering*, 22 FEB 2017; Army Doctrine Publication (ADP) 5-0, *The Operations Process*, 31 JUL 2019.

CHAPTER 2

Fiscal Year 2019 Trends by Echelon

SECTION 2.1. CORPS TRENDS

Section 2.1.1. Missed Opportunities Created by Corps' Reconnaissance

Observation. Corps staff was unable to capitalize on opportunities created by the corps' reconnaissance force.

Discussion. The corps reconnaissance regiment created multiple opportunities that the corps staff was unable to seize, resulting in a loss of momentum. The corps' decision support tools lacked the clarity and depth to direct the reconnaissance regiment's operations, creating a gap between the reconnaissance regiment's staff and the corps' staff. This gap in understanding resulted in the reconnaissance regiment's operations not fully supporting the corps' concept of the operation. The commander's critical information requirements (CCIRs) and priority intelligence requirements (PIRs) were not synchronized with the intelligence collection plan (ICP). Furthermore, the corps' reconnaissance guidance did not articulate key points of guidance such as engagement, disengagement, and bypass criteria; reconnaissance handover lines (RHLs); and how corps reconnaissance was going to synchronize reconnaissance and security operations with the division's reconnaissance squadrons. Due to the lack of synchronization amongst the corps decisions support tools, ICP, and reconnaissance guidance, the corps did not capitalize on several opportunities against the enemy.

Recommendation. If a corps chooses to employ a corps-level reconnaissance and security formation, the corps staff has to synchronize the ICP, reconnaissance guidance, and other decision support tools. Decision points should be supported by PIR and a complete ICP, which includes ground collection assets, named areas of interest, indicators, and the latest time information of value. Reconnaissance guidance should include engagement, disengagement, and bypass criteria and direct the use of RHLs to synchronize reconnaissance and security operations across all echelons.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training issue. Mission Command Training Program (MCTP) can help by sharing best tactics, techniques, and procedures (TTP) if a division or corps chooses to employ a reconnaissance force.

Doctrinal references. Field Manual (FM) 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process*, 17 MAY 2012; Army Doctrine Publication (ADP) 5-0, *The Operations Process*, 31 JUL 2019.

Section 2.1.2. Corps Integration of Lethal and Nonlethal Fires

Observation. Corps struggled to integrate and synchronize lethal and nonlethal effects during the targeting process.

Discussion. Nonlethal effects cells struggled to fully integrate into the targeting process, lacked a voice in the targeting working group (TWG) and targeting decision board (TDB), and did not effectively coordinate for supporting lethal effects and collection assets.

Recommendation. Information-related capability (IRC) and nonlethal effects cells should be fully integrated into the corps' targeting process. The information operations working group should have a complete understanding of the commander's planning priorities, high-payoff target list, information collection plan, and planning efforts two levels down. Furthermore, information operations assessments should be fed into operational and intelligence assessments. Therefore, the IRC cells require approved collection requests to meet these information requirements. IRC and nonlethal effects representatives require a voice in the targeting meeting to ensure their capabilities are synchronized with the corps scheme of fires.

DOTMLPF-P. This trend is a training issue. MCTP can assist with TTP on how to employ a division/corps reconnaissance force with limited assets to achieve lethal and nonlethal effects.

Doctrinal references. Army Techniques Publication (ATP) 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017; FM 3-13, *Information Operations*, 06 DEC 2016; FM 3-94, *Theater Army, Corps, and Division Operations*, 21 APR 2014; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014.

Section 2.1.3. G-2 Battle Tracking and Assessments

Observation. The G-2 struggled to maintain an accurate understanding of the enemy situation, directly affecting corps operations.

Discussion. The G-2 analysis and control element (ACE) did not maintain a common intelligence picture (CIP) or a comprehensive understanding of the enemy situation that visualized the operational environment and battlefield. The commander consistently requested fidelity and clarity on the enemy composition and disposition during battle update briefs throughout the duration of the operation. Additionally, the ACE did not maintain an analog map, operational graphics, or overlays to track the enemy situation, display the collection plan, or visualize the unit's targeting and shaping efforts.

Recommendation. The G-2 enterprise should implement TTP to ensure key leaders are apprised of the current enemy situation and are effectively describing the situation to the commander. Effectively displaying the enemy situation; active intelligence, surveillance, and reconnaissance (ISR) assets; and battle damage assessments (BDAs) will provide an accurate picture to support decision points, the maneuver plan, and shaping efforts. Additionally, all critical products should have an analog back-up to ensure that planning continues if digital systems are unavailable.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. ADP 2-0, *Intelligence*, 31 JUL 2019; ATP 6-01.1, *Techniques for Effective Knowledge Management*, 06 MAR 2015

Section 2.1.4. Information Collection with Operations and Targeting

Observation. The corps' information collection plan was not synchronized with operational planning and targeting.

Discussion. The G-2 collection management and targeting sections conducted planning in isolation. The collection plan received minimal input from the corps staff and subordinate units, and it was not informed by the G-2's intelligence assessment. This resulted in collection requests to higher headquarters and briefing products not being updated and missing several high-payoff targets whose removal from the battlefield would have directly contributed toward mission success.

Recommendation. The information collection plan should be developed holistically, representing a prioritized list of the entire corps staff's collection requirements, to include subordinate units' requirements. At a minimum, the information collection plan requires input from the G-2 ACE chief, the field artillery intelligence officer, targeting officer, fire support coordinator, and a planner from the G-5 to ensure that the collection plan supports maneuver and fires, while updating the CIP for the G-2.

DOTMLPF-P. This trend is a training and leadership issue. MCTP can help by coaching corps staffs to integrate the staff and liaison officers (LNOs) to provide current and concise information to the commander. Coaching on how to best integrate the staff into collection and targeting would increase synergy.

Doctrinal references. ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019; FM 3-55, *Information Collection*, 03 MAY 2013; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADP 2-0, *Intelligence*, 31 JUL 2019.

Section 2.1.5. Risk Management Incorporation into Decision Making

Observation. Corps did not integrate risk management into the commander's decision-making process.

Discussion. Corps effectively developed risk management strategies during the protection working group (PWG) with subordinate echelons. However, most corps do not effectively integrate these strategies into the larger plan, nor do they disseminate the strategies to the larger staff so that they are understood.

Recommendation. Holistic staff hazard assessment and reduction is essential in preserving combat power. Corps protection cells should continue to refine their risk management processes, testing risk reduction measures during military decisionmaking process (MDMP) war gaming. The process should include input from across the staff, not just within the protection cell. Risks should be communicated to the commander daily, informing him of his largest hazards for the next 24, 48, and 72 hours to allow anticipation and the development of branch plans.

DOTMLPF-P. This trend is a doctrine, training, and leadership issue. Army risk management is nebulous at the corps level and leaders do not understand how to clearly translate risk to commanders.

Doctrinal references. ADP 3-37, *Protection*, 31 JUL 2019; ADRP 3-37, *Protection*, 18 DEC 2017.

Section 2.1.6. Fires Planning Horizon

Observation. There was difficulty maintaining fires planning horizons beyond 48 hours.

Discussion. The fires enterprise should be able to clearly define the roles and responsibilities of the fires planner and fires battle major (during current operations [CUOPS]), ensuring that fires planning remains focused on the targeting process vice CUOPS.

Recommendation. At the corps level, CUOPS should be a lower priority than planning discreet shaping operations such as suppression of enemy air defense (SEAD) in support of rotary wing aviation deliberate attacks and joint fires. The roles and responsibilities should be codified in an SOP) and in continuity books.

DOTMLPF-P. This is a doctrine and leadership issue. Doctrine does not clearly articulate roles and responsibilities of a field artillery brigade, division artillery, and force field artillery headquarters in reference to roles and responsibilities of fires units at echelon. Leaders needs to define roles and responsibilities within an SOP and provide this to subordinate organizations to allow a more cohesive fires plan at echelon, allowing decisive deliberate targeting.

Doctrinal references. ATP 3-60.1, *Dynamic Targeting*, 10 SEP 2015, chapter 4; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017; ADRP 5-0, *The Operations Process*, 17 MAY 2012; ADRP 6-0, *Mission Command*, 17 MAY 2012; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADP 5-0, *The Operations Process*, 31 JUL 2019; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 2.2. DIVISION TRENDS

Section 2.2.1. Division Deep Maneuver

Observation. Use of deep maneuver as part of the division's overall scheme of maneuver can improve the ability to collect and target against exposed enemy positions.

Discussion. One of the most significant challenges divisions face in the current operational environment is forcing the enemy to react to friendly maneuver formations to expose them for destruction by lethal fires. Through careful planning, coordination, and synchronization, divisions can accomplish this by conducting multiple deep maneuvers using battalion-sized light infantry air assaults and reconnaissance in force operations. These attacks cause enemy forces to deploy from their defensive positions, improving the division's ability to collect, acquire, and dynamically target enemy forces using joint fires. These deep operations inherently carry higher levels of risk than other types of operations and should be mitigated by synchronizing SEADs, air interdiction, electronic warfare, and ISR assets to enable ground maneuver. To regularly plan and execute these types of missions, the division should first have well-established SOPs for air assault, or by deliberate attacks out of friendly contact in the deep area by the combat aviation brigade (CAB); and should have a daily battle rhythm event to determine if friendly and enemy conditions have been met. This battle rhythm event (also known as a mission approval brief) occurs hours before execution and ensures proper coordination has taken place and approves the mission for execution at a later time, usually during periods of darkness. Deep maneuver missions also require the division to assign a direct support relationship between indirect fire

and attack aviation assets to the ground maneuver elements, improving their agility, lethality, and survivability. In execution, ground assault forces seize key terrain, conduct dismounted area reconnaissance, and then conduct a hasty defense while continuing to screen follow-on objectives using organic ISR assets at their echelon. While on the objective, the air assault battalion quickly disperses, preventing enemy forces from targeting the assaulting force and improving survivability. To allow for quicker clearance of joint fires and close air support, the division creates noncontiguous areas of operation (AOs) for the assaulting force. The division also reduces the risk to the force by positioning artillery where it can provide responsive fires.

Recommendation. Continue using deep maneuver to enable shaping and success of future operations (FUOPS). Deep operations assume high levels of risk when employing simultaneous air or ground maneuver forces. Therefore, a dedicated and deliberate process to develop and synchronize the enabling resources is required for this division-level operation.

DOTMLPF-P. This trend is an organization issue. Continue to organize divisions in a way that incorporates the CAB into all facets of planning, resourcing, and execution of targeting and maneuver to best leverage the capabilities that Army aviation brings to warfighting.

Doctrinal references. Multi-Domain Battle. *Evolution of Combined Arms for the 21st Century, 2025-2040*, Version 1.0 December 2017, paragraph 2-3, pages 9-10; ATP 3-94.2, *Deep Operations*, paragraph 1-40, pages 1-9, 01 SEP 2016.

Section 2.2.2. Use of Combat Aviation Brigade as a Maneuver Force

Observation. Use of the CAB as an integral enabler supports the division's scheme of maneuver and shapes enemy formations ahead of ground maneuver elements.

Discussion. Successful divisions employ the CAB throughout the division's AO. As a maneuver and targeting force, the CAB is integral an part of the division's daily scheme of maneuver while shaping for or supporting the main effort during each phase of the operation. In the deep area, the CAB conducts deliberate attacks or nightly air assaults in a high-threat environment. Detailed planning and synchronization across all warfighting functions (WfFs) and all echelons is critical to the success of these operations as it enables the CAB to conduct operations beyond the coordinated fire line (CFL). To ensure coordination, the division conducts a mission approval brief as part of its daily battle rhythm. This meeting includes all the appropriate staff primaries including fires, nonlethal effects, special operations, joint LNOs, subordinate aviation, ground force commanders, and the commanding general. The meeting ensures that enabling effects, joint SEAD, sequence, timing, and a shared understanding of the commander's intent is coordinated and understood across staffs at all echelons. When the operation's tempo or a command post (CP) displacement does not facilitate holding a mission approval brief, the staff needs to be highly proficient in executing the rapid decision-making synchronization process to facilitate the same end state achieved from a mission analysis brief. This process directly contributes to enabling and protecting the CAB beyond the CFL.

Recommendation. Sustain the use of the CAB and all its inherent capabilities to create multiple dilemmas for the enemy in the deep and close areas. Continue to set necessary conditions to include enabling lethal and nonlethal fires to allow the CAB to achieve desired effects against the enemy. Include battle rhythm events such as the mission approval brief that facilitate coordination at echelons and across all WfFs while receiving direct guidance and approval from decision makers within the division.

DOTMLPF-P. Continue to organize divisions in a way that incorporates the CAB in all facets of planning, resourcing, and execution of targeting and maneuver to best leverage the capabilities that Army aviation brings to warfighting.

Doctrinal references. FM 3-94, *Theater Army, Corps, and Division Operations*, paragraph 7-37, 21 APR 2014; FM 6-0, *Commander and Staff Organization and Operations*, paragraph 14-9, pages 14-3-4, 05 MAY 2014.

Section 2.2.3. Protection and Survivability of Division Reconnaissance

Observation. Divisions inadequately consider protection and survivability for division cavalry (DIVCAV) squadrons in planning, task organization, and supporting enablers.

Discussion. When divisions determine during MDMP that their scheme of maneuver demands a ground-based DIVCAV squadron, they typically develop a thorough task organization to meet the commander's intent for the formation. If that intent is for aggressive rather than passive reconnaissance, planners typically allocate a variety of enablers to help the DIVCAV perform its role. These enablers usually include direct support artillery, direct support attack aviation with manned and unmanned teaming capability, engineer mobility, and air defense artillery. This task organization of enablers is suitable for aggressive reconnaissance in the current operational environment. Recent warfighter experience demonstrated that at least two divisions carefully considered all the enablers needed to conduct forceful, aggressive reconnaissance and task-organized accordingly. One division went as far as to rehearse how the DIVCAV would use its direct support attack aviation's manned and un-manned teaming capabilities to conduct division-level reconnaissance and observe fires for high-payoff targets. However, both division plans cells underestimated the risk to ground-based DIVCAV formations from long-range enemy fires. Regardless of overall task organization, if the division does not continually consider protection and survivability of the DIVCAV, then the formation may become combat ineffective before it can accomplish its reconnaissance objectives, as was the case with these recent squadrons. This recent trend would appear to suggest that ground-based DIVCAV squadrons are ineffective in the current operational environment; however, this assumption is inaccurate, and the risk from fires can potentially be mitigated. Planners can potentially mitigate the risk against the DIVCAV by placing a counter-battery radar under operational control to the formation to provide reactive counterfire using its direct support artillery. Barring this step, planners could task another unit to move radar in support of the DIVCAV as it maneuvers through the enemy's disruption zone. Counter-battery radars are a limited and essential resource to the division, but the opportunity to respond quickly within the cavalry squadron with its direct support artillery may increase the survivability of the formation, allowing it to continue to maneuver through the disruption and battle zones to achieve its reconnaissance and security objectives.

Recommendation. Divisions should continue to allocate the enablers to ground reconnaissance squadrons tasked to conduct forceful, aggressive reconnaissance. Planners should also include counter-battery radar or task other units to maneuver that asset to continually provide support to the DIVCAV. Regardless of whether or not counter-battery is assigned, units should codify the use of direct support attack aviation with manned and un-manned teaming capability to observe targets for the DIVCAV's direct support artillery to engage high-payoff targets within their SOPs. Divisions should also include DIVCAV operations in the TWG and the PWG to provide reactive counterfire and employ information operations and cyberspace electromagnetic activities (CEMA) to mitigate risk from the enemy's holistic indirect fire network for increased survivability.

DOTMLPF-P. The main problem is that DIVCAVs in warfighter exercises (WFXs) are built as ad hoc organizations, generally with insufficient time to train as a collective formation. The enablers that are brought together are from different organizations with unique backgrounds, which induces friction due to the units not knowing each other's capabilities and modified table of organization and equipment (MTOE). The solution is to form the DIVCAV no later than three months prior to the exercise, allowing it sufficient time to understand the tasks it should undertake given the equipment and organization it will use for the exercise. Ideally, the DIVCAV is at full operational capability prior to the last division command post exercise (CPX), allowing it at least one training exercise to build as an organization.

Doctrinal references. FM 3-98, *Reconnaissance and Security Operations*, paragraphs 1-35 to 1-42, pages 1-7 to 1-10, 01 JUL 2015; ATP 3-09.12, *Field Artillery Target Acquisition*, paragraphs 2-1 to 2-25, pages 2-1 to 2-5, 24 JUL 2015.

Section 2.2.4. Defensive Cyberspace Operations Knowledge

Observation. Defensive cyberspace operations (DCO) effectively defend all internal networks.

Discussion. Most unit computer network defense (CND) teams effectively demonstrate DCO measures with no intrusions to the network. Using fielded tools such as the Palo Alto firewall, Microsoft's enterprise security management, and Security Onion, units instantly adapt to adversarial cyberspace operations and successfully protect mission command systems. Units are well equipped to not only maintain the security of their own network, but all subordinate networks in a centralized manner. However, this success is based on the effectiveness of a few subject matter experts for all of the division's network operations. To ensure continuity, units should document these best practices and equipment utilization standards. The best cyber-security practices should be proliferated to other units and incorporated in institutional training. With tools properly configured, CND teams strategically block and provide timely reports to their command for further analysis of suspected adversarial activity attempts.

Recommendation. Units should maximize their network and services vigilance by cross training personnel at each CP to access a multi-tiered and multi-angled view of the division security posture and codify TTP and update SOPs to capture actions that mitigate or prevent a network intrusion.

DOTMLPF-P. Additional training and leadership focus may help leverage CND tools that have been fielded, but materiel readiness is the significant discriminator. Units attached to the division do not have the same equipment and are less capable of preventing intrusion.

Doctrinal references. Joint Publication 3-12, *Cyberspace Operations*, chapter II, paragraph 2a2a to 2a2b, pages II-2 to II-4, 08 JUN 2018; FM 3-12, *Cyberspace and Electronic Warfare Operations*, paragraph 1-28 to 1-34, pages 1-7 to 1-8, 11 APR 2017; FM 6-02, *Signal Support to Operations*, paragraph 1-16, page 1-5, paragraph 2-20, page 2-4, 22 JAN 2014.

Section 2.2.5. Mission Command Information System Leveraging

Observation. Battle staff often have limited user-level training utilizing mission command information systems and cannot fully leverage fielded digital information systems due to lack of familiarity or training.

Discussion. Successful units have trained digital master gunners (DMGs) for each WfF and conduct refresher training for operators of each information system fielded. Without deliberate training programs in place, staff members will build and use limited overlays and briefing tabs on command post of the future, and manual workaround methods will be used rather than data exchange between systems. The configuration of Army Battle Command Systems on the tactical network is complex and easily misunderstood. This lack of training reduces use of technical rehearsals which are critical to realizing fielded capabilities. Specifically, limited experience with intelligence and fires information systems results in incomplete configuration and use of manual processes for time-sensitive dynamic fire missions.

Recommendation. Specific and deliberate identification of fielded systems should lead to a training program for digital proficiency on all information systems (DMGs). Consider including refresher and advanced training to improve proficiency and fully leverage new technologies.

DOTMLPF-P. Training DMGs and system administrators for each system is the first step. DMGs should conduct additional training for each operator and user to deepen proficiency and familiarity.

Doctrinal references. ATP 6-0.5, *Command Post Organization and Operations*, paragraphs 3-18 to 3-20, pages 3-4 and 3-5, 01 MAR 2017; FM 6-0, *Commander and Staff Organization and Operations* (with change 2), paragraph 1-47 and 1-49, pages 1-8 and 1-9, 05 MAY 2014.

Section 2.2.6. Network Redundancy

Observation. Successful units effectively deploy, use, and sustain multiple networks to support information requirements through primary, alternate, contingency, and emergency (PACE) methods.

Discussion. Many units recognize the need to mitigate operational impacts of terrain and distance, enemy jamming, or system failures due to technical or human problems. These units use high-capacity line-of-sight radio (HCLOS) and satellite communications (SATCOM) resources to support the upper tactical internet. As distance or terrain challenge HCLOS, SATCOM sustains communications at lower bandwidth thresholds. As time and resources permit, successful units employ retransmission for combat net radio (CNR) and HCLOS between each CP and to subordinate headquarters. The integration of joint capabilities release platforms, multiple CNR networks, and iridium phones are all effective at mitigating disruption. Ultrahigh frequency (UHF) tactical satellite (TACSAT) and high frequency (HF) radios provide capability for coordination with higher and adjacent units. This is often recognized in planning and operation orders, but not always fully resourced or executed. The division should strive to have critical information transmitted across all of its command nodes in near real time through

effective use of all fielded capabilities. When an alternate network which is not familiar to staff members is selected, communication disruptions quickly become operational disruptions. The design should also allow for the volume and type of traffic that they receive. Units that do not effectively maintain multiple networks for active use become overly dependent on single points of failure and struggle to adapt to degraded conditions.

Recommendation. When designing the networks for a mission command system, assume each will fail in some way during the operation. Develop network, link, and server redundancy between each CP to mitigate the effects of terrain, tempo, or jamming threats. Enforce equipment requirements for redundancy in radio systems at each subordinate headquarters on lower tactical internet, including UHF, TACSAT, and HF.

DOTMLPF-P. Training at institutional and unit levels should integrate impacts of degraded communications for each WfF and digital system. Alternate means and methods of reporting will be well known and familiar through repetition and rehearsals. Leadership focus on employing all tactical capabilities for redundancy will result in greater training value on perishable skills.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; FM 6-02, *Signal Support to Operations*, paragraph 1-16, page 1-5, paragraph 2-20, page 2-4, 22 JAN 2014.

Section 2.2.7. Division Information Architecture

Observation. Division information architecture does not create distributed mission command.

Discussion. A division's information architecture is the different processes of knowledge management procedures that are designed to deliver data and process information efficiently from the unit reporting to the staff section that needs the data from that information. This principle is compounded by the separation of the command nodes through time, distance, and space. The division should strive to have real-time information transmitted across all of its command nodes in near real time. When designing their information architecture, divisions often use generic reporting requirements that do not parse out the specified information required to maintain shared understanding. The design also does not allow for the volume of traffic that they receive. When dividing up the responsibilities, the different command nodes often do not work together to share responsibilities; rather they duplicate their efforts and further compound their latency. When in contact, the amount of data and information becomes overwhelming and the infrastructure cannot keep up. As a result, the receiving command node often prioritizes the data, usually prioritizing troops in contact, and delays other items such as enemy high-priority target locations that decay because of time.

Recommendation. When designing the information architecture for a division, the first area to address is the unit's reporting requirements, which should look at which information is required to answer CCIRs immediately, and general information separately. Second, each information requirement should be assigned to the different command nodes with processes that allow the information to tie back into the other nodes. The command nodes should build their reporting architecture to handle a large amount of traffic simultaneously, not sequentially. Additionally, when leveraging their digital technologies, the design should be able to simultaneously broadcast the information to all other command nodes.

DOTMLPF-P. Leadership and education can enforce efficient reporting of information requirements supporting the operations process and integrate doctrine into unit processes.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014.

Section 2.2.8. Staff's Holistic Assessment

Observation. Division staffs initially struggle with assessments in the operations process and visualization of information, but during the course of the exercise, they modify their process and products to improve shared understanding and commanders' decision making.

Discussion. Prior to the start of the WFX, the assessment process for divisions is focused on the operations research and systems analysis (ORSA) officer conducting correlation of forces modeling (COFM) to determine force ratios during course of action (COA) development and COA analysis (war gaming). The COFM is a planning tool to help determine if a unit has enough assets to close with and defeat an enemy. COFM analysis is limited in that it is a series of mathematical calculations that do not represent all variables in the operational environment. Once the exercise begins, division staffs struggle with analyzing and communicating where the division is located relative to the enemy and the campaign plan. Instead, division staffs focus on presenting COFM to the commander. Following some coaching by MCTP observer-coach/trainers at two separate WFXs, an effective ORSA TTP was developed, which gathers information from across staffs and combines the following:

- An operational timeline that describes the major critical events planned through the course of the campaign and an assessment of where the division is in relation to the planned timeline.
- A COFM analysis of expected friendly and enemy combat power for the next 24, 48, and 72 hours based on planned operations.
- A modified decision support template which compares what the division was able to accomplish in relation to terrain; the battlefield framework of the division deep, close, consolidation, and support areas; and the planned decision points.
- A narrative that describes if the division is on or off plan and an assessment of what caused deviation to the plan.

Recommendation. Division staffs need to provide a holistic assessment of where the division is in relation to the plan and enemy forces to support shared understanding and commander's decision making. Based on their training, background, and location in the G-5 plans cell, ORSA officers are best suited to synthesize information from across the staff and present their findings to the staff and commander during the operations process. Assessment tools should not be focused solely on COFM analysis but should include a measurement of time and space. The assessment should also include what caused deviations from the plan.

DOTMLPF-P. Leadership guidance during the planning process will improve the quality and composition of assessment teams and appropriate staff-wide synchronization efforts.

Doctrinal references. ADRP 5-0, *The Operations Process*, 17 MAY 2012; ADRP 6-0, *Mission Command*, 17 MAY 2012, FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADP 5-0, *The Operations Process*, 31 JUL 2019; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

Section 2.2.9. Comprehensive Information-Related Capabilities

Observation. Staffs are challenged in the synchronization of IRCs.

Discussion. The distribution of IRCs across staffs and the tendency to treat lethal and nonlethal capabilities as separate and distinct activities prevents the effective integration of IRCs. IRC planners are challenged by the difference between garrison and deployed settings with modified reporting relationships and geographic locations within the CPs. Additionally, lethal fires employment and coordination is the primary focus of discussion during the TWG. Nonlethal capabilities are discussed at the end of the meeting and seldom cover the same enemy systems or locations as the lethal fires. The targeting effort should expand its consideration of available assets beyond lethal methods. Targeting discussions need to include the IRC planners to ensure consideration of the cognitive and physical impact to facilitate the layering of lethal and nonlethal capabilities on designated targets.

Recommendation. Review the placement of IRC planners within the staff to determine the optimal alignment in garrison and deployed settings. Incorporate a daily IRC synchronization meeting chaired by the G-3 information operations officer into the battle rhythm to coordinate the efforts and activities of the IRC planners and update the unit plans SOP to define the agenda, inputs, outputs, participants, and product templates. Participants in the IRC synchronization meeting should include staff members from the G-2, G-33, G-35, fire support element, and special operations forces (SOF) LNO to ensure the IRC activities are synchronized into the larger scheme of maneuver and that outputs feed into the TWG. Nonlethal targeting should employ similar templates and products, where appropriate, as those used by lethal targeting.

DOTMLPF-P. Organization and training will help integrate IRCs into targeting and synchronize all effects.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014, FM 3-13, *Information Operations*, 06 DEC 2016.

Section 2.2.10. Special Operations Forces Integration in Division Plans

Observation. Minimal coordination and limited control measures were established between the division and supporting SOF units, resulting in misunderstanding.

Discussion. When integrating special operations capabilities into division operations, the staff should consider the following:

- Establish combat identification procedures to reduce the potential for fratricide, especially when SOF are working with foreign security forces
- To prevent fratricide, SOFs should ensure the division is thoroughly briefed on any foreign forces' operations they work with. The staff should then apply these combat identification characterizations to rules of engagement to enable engagement decisions and the subsequent use, or prohibition of use, of lethal weapons and nonlethal capabilities based on intelligence knowledge of the enemy.

Recommendation. After analyzing the aforementioned planning considerations, the staff should develop coordination measures between the division, SOF, and host-nation security forces and include them in the concept of the operation. Staffs should also coordinate rehearsals between the division and SOF. These provide the best means of reducing missed opportunities, unnecessary delays, and the potential for fratricide during operations.

DOTMLPF-P. Leadership and education emphasis on integration with SOF, host nation, and coalition partners will help improve planning considerations and familiarity with coordinating with external capabilities.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014. Other manuals are not listed due to restricted distribution.

Section 2.2.11. Contested Simultaneous Command Post Operations

Observation. Staffs struggle to simultaneously plan and execute operations in a decisive action environment.

Discussion. Headquarters at all echelons are designed to simultaneously conduct operations and plan follow-on operations to maintain operational tempo. Division staffs are challenged in manning and providing the necessary mission command systems for the main and tactical CPs, mobile command group, and support area command post (SACP) to ensure operations and planning are conducted in a non-permissive, decisive-action environment. During disruptions to CP operations such as indirect fire; chemical, biological, radiological, and nuclear (CBRN) operations; CEMA attacks; or survivability moves, the CPs not in contact or moving are designed and resourced to assume the CUOPS fight. The ability for the tactical and SACP to assume planning functions from the main CP is limited. Poor knowledge management procedures prevent the transfer of planning products between CPs. Divisions need to ensure the TAC and SACP are able to assume limited planning functions and a PACE plan is established before mission command systems are disrupted.

Recommendation. Develop a PACE plan for planning efforts on multiple mission command systems to provide redundancy in a CEMA denied environment. Provide each CP with sufficient personnel and mission command systems to assume limited planning functions in the event the main CP is disrupted. Conduct movement of planning personnel to the tactical or SACP prior to the main CP conducting a survivability move. Establish knowledge management SOPs to ensure planning products are not restricted to one CP.

DOTMLPF-P. Training further iterations of CP displacement should validate plans or identify gaps. Organization of the command and control (C2) system can mitigate anticipated disruption challenges. Units lack personnel, equipment, and training to support alternate or critical event CPs' ability to effectively perform in large-scale combat operations (LSCO). The SACP needs an MTOE authorization and a defined role with the sustainment brigade and maneuver enhancement brigade (MEB) when operating together. Additional cyber and CEMA personnel are necessary to coordinate defensive measures between CPs. The joint air-ground integration center needs to be able to displace to additional CPs with minimal degradation to continue operations, which includes additional air force systems.

Doctrinal references. ADRP 5-0, *The Operations Process*, 17 MAY 2012; ADRP 6-0, *Mission Command*, 17 MAY 2012; FM 3-0, *Operations*, 06 OCT 2017; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ADP 5-0, *The Operations Process*, 31 JUL 2019; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

Section 2.2.12. Knowledge Management

Observation. Units do not perform quality assurance or quality control on orders or maintain version control of key products.

Discussion. Divisions and corps produced multiple fragmentary orders (FRAGORDs) with incorrect dates, incorrect order numbers, different times in the order (local and Zulu), and different standards for adds, deletes, and changes, resulting in confusion and version control issues. Products used for decision support tools such as the decision support matrix, synchronization matrix, and execution checklists are not published, but distributed through file sharing, email, or a dashboard. These products can often be found in various folders on the unit's file sharing systems and lack dates and version numbers, resulting in multiple versions being used by staff members and subordinate units.

Recommendation. Standardize order production requirements and perform quality assurance and quality control on orders; adhere to the guidance in FM 6-0 and codify variations by publishing in the SOP, if required. Require version control of products with date, version number, and individual responsible. These products should be published via the orders process and distributed on a file sharing system in a singular location.

DOTMLPF-P. Training knowledge management in established SOPs will increase familiarity and appreciation of best practices. Leadership and education can underscore the importance of clearly disseminating detailed directives and guidance.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014.

Section 2.2.13. Inefficiencies in Collection

Observation. Collection management requires multi-echelon synchronization and incorporation of all possible collection assets to maximize support to targeting and decision making.

Discussion. There is not enough collection capability in the Army to provide a division or corps continuous coverage of its entire AO across all domains and with the realities of combat loss, accidents, and required down time. The division and corps collection manager should work to coordinate the efforts of all possible assets in the AO to maximize their ability to answer commander's PIRs and support shaping and targeting operations. This includes requests to higher- and national-level collection assets, but it also includes specific collection tasks and requirements to subordinate units such as any DIVCAV squadron or brigade combat team (BCT). Observed collection managers from brigade to Army Service component commands (ASCCs) have universally been hesitant to leverage collection requirements on subordinate units, stating that they cannot or should not task the brigade's shadows. As well, nearly all observed collection managers were ineffective at passing information collection requirements to higher headquarters or national intelligence organizations that could assist with the overall information collection. Collection plans and requests from subordinate units are similarly rarely incorporated into the collection manager's collection plan. Intelligence has recently succeeded in getting PIRs to be tied with commanders' decision points, but this seems to have resulted in forgetting to collect on commander's non-PIRs—specifically, support to targeting, BDAs, support to operational understanding and situational awareness. The common tool used by schoolhouse-trained collection managers for synchronizing collection is often used to brief the collection plan during update briefs to the commander. This tool is not equipped to determine whether or not the commander's priorities are being addressed through collection during garrison operations or other low-intensity operations or in a high-intensity decisive action fight. During WFXs, it is even less effective. Collection managers are not taught or comfortable with making short “so what” assessments on the collection plan and are so challenged that it is skipped in discussion when training units are forced to use lower tactical internet.

Recommendation. List all possible collection assets on the collection plan and discuss during collection management and ISR briefings—even if the unit does not control them or have any current tasks for them. Provide specific collection tasks and missions to every subordinate unit and CP. Develop briefing tools that rapidly explain which problem set is being collected on by which capability, and which problems are not being addressed.

DOTMLPF-P. Collection management and S-2 and G-2 training courses require changes to incorporate additional practical exercises at the tactical level with particular focus on using nonorganic and nonintelligence information collection assets.

Doctrinal references. ATP 2-01, *Plan Requirements and Assess Collection*, 19 AUG 2014; ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019.

Section 2.2.14. Target System Analysis and Target Value Analysis

Observation. Units have emphasized synchronizing assets for targeting, but they still struggle to integrate all available capabilities that each unit possesses.

Discussion. Higher and subordinate echelon efforts are synchronized at the TWG and the TDB. Units have begun to realize the benefit of providing input from all the WfFs into the targeting and air tasking order (ATO) cycle. TWGs and boards have matured to incorporate input from more than just the fires section, and some units have nearly modified targeting meetings into a unit operations synchronization. This new model has garnered more participation, but its outputs are merely additional synchronization matrixes that add to the G-3's synchronization matrix. Products that are being built to facilitate targeting meetings list every asset that is available to the unit to use when targeting an objective. They synchronize time, space, and effects over an ATO cycle and effectively prevent friendly fratricide and duplication of efforts. However, these assets are not layered to degrade an objective or coordinated with other effects to create windows of opportunity to gain a relative advantage over the enemy. MCTP OC/Ts have observed that nonlethal effects have been planned and executed in a vacuum. When nonlethal effects are executed, they have a singular effect on the enemy within a certain time frame, then the enemy is able to recover over a period of time without any other integrated effect. Once some nonlethal capabilities are employed, they will not have the same effects on the enemy again. Nonlethal participants have attended targeting meetings not knowing how they can be integrated with other assets, which creates missed opportunities because the majority of the targeting focuses on the enemy's delivery systems and a complete breakdown of the target's components is not discussed. Target system analysis (TSA) and target value analysis (TVA) are conducted during planning and result in the formulation of multiple targeting products, specifically the attack guidance matrix, which is the guiding tool to determine effects on only enemy delivery systems and the critical components of those systems. Nonlethal capabilities then can be used to affect the other components. Units routinely do not conduct the requisite planning needed to target enemy systems effectively, hindering overall targeting efforts. Avoiding TSA and TVA will result in an incomplete picture of the enemy and possibly reduce the effectiveness of targeting efforts.

Recommendation. TSA and TVA should occur in planning and continue during the targeting cycle to ensure synergy of targeting efforts is sufficient to achieve the commander's desired effects during shaping efforts. Ensure the process for updating the attack guidance matrix includes the established level of decision authority and is incorporated in targeting meetings.

DOTMLPF-P. Doctrine and training may help decrease this trend. Updated doctrine that details an effective TSA and TVA process to support the targeting process will steer required training within the operational, institutional, and self-developmental domains.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; ADRP 3-09, *Fires*, 31 AUG 2012; ADP 3-19, *Fires*, 31 JUL 2019.

Section 2.2.15. Protection Working Groups

Observation. Units tend to struggle with establishing an effective PWG.

Discussion. During multiple exercises, the protection cells struggled to identify a clear focus within the PWG. Throughout the fiscal year 2019 (FY19) series of warfighter and ASCC-level exercises, units struggled with various aspects of this working group; however, not all units experienced the same issues. For example, one protection cell was able to pull in all the required personnel from across the staff and subordinate units (as required) to make assessments and develop recommendations for the commander, yet struggled to identify a clear focus of the working group. In comparison, during a different WFX, a unit was incapable of bringing in all the required and essential personnel to generate options for the command and also lacked focus during the working group. The protection prioritization list (PPL) is critical to gaining and maintaining focus during a PWG. The trend throughout the FY19 cycle was that, though some units developed a PPL early, all had difficulty adjusting the protection scheme of maneuver during operations and some did not develop a PPL at all until after operations began. The PPL is critical to identifying those assets within the unit formation that should be protected from multiple types of threats (for example, ... aerial, ground based, cyber, etc). Without this document, it is nearly impossible to conduct assessments and manage the limited number of critical protection enablers and capabilities to provide the commander with recommendations that allow freedom of maneuver and operational reach.

Recommendation. Units should develop a PPL early in the planning process to clearly identify critical assets and capabilities within the unit while incorporating the commander's priorities for each. Commanders should be involved in the process to clearly articulate their intent for the overall protection scheme of maneuver and update priorities as needed during operations.

DOTMLPF-P. Units should holistically assess the PWG by evaluating the current division PWG agenda, inputs, and outputs against best practices from other divisions, ADP 3-37, and an internal review of the effectiveness of various protection practices. Once a more refined PWG framework is established, exercise it during future CPXs, continue to refine it, and incorporate it into division SOPs and build confidence through repetition. The protection WfF is comprised of several basic branches, military police, air defense artillery, engineer, explosive ordnance disposal, CBRN, etc. However, minimal institutional education effort is given to those basic branches on the overall protection WfF. As a result, when these unique skill sets form the protection cell, they struggle with how to combine their unique specialties into a cohesive WfF aimed at protecting the force and mission. More education should be given to these basic branches on the overall protection WfF during institutional training.

Doctrinal references. ADRP 3-37, *Protection*, 18 DEC 2017; ADP 3-37, *Protection*, 31 JUL 2019.

Section 2.2.16. Engineer Planning and Inputs

Observation. Division engineer staff takes initial steps to clearly articulate the mission, task organization, and key requirements to subordinate units to efficiently conduct operations.

Discussion. FM 3-34, *Engineer Operations*, 02 APR 2014, under “Integrated Planning” in paragraph 3-1 states, “Supporting engineer unit commanders and leaders conduct parallel planning that provides effective outcomes for the engineer units that are employed and the appropriate input to the process of the higher headquarters.”

Division engineer staffs struggle to fully integrate subordinate units’ input into the planning process, mainly because an engineer working group, synchronization, or coordination meeting is not conducted with subordinate engineer units and staff (brigade engineer battalion and BCT staff or response cell equivalent). Instead, the staff relies heavily on communicating requirements and requests for information through brigade LNOs, which generates confusion and results in lack of clarity and accuracy in tracking engineer task organization and combat power statuses via digital and analog mechanisms. It also inhibits the ability to fully integrate the subordinate units’ assessments into planning FUOPS. Additionally, the division engineer staff fell short at supporting the collection and integration of engineer reconnaissance data (including terrain analysis, modified combined obstacle overlay, updating and disseminating obstacles overlays, etc.) that contributes to answering the CCIRs. FM 3-34, *Engineer Operations*, paragraph 2-73 states, “Engineers play a major role in the intelligence preparation of the battlefield process by anticipating and providing digitized mapping and terrain analysis products of likely contingency areas. Geospatial engineering improves terrain visualization and understanding of the physical environment. It is an essential contributor to geospatial intelligence. Engineer staff and planners provide a predictive and deductive analysis of enemy engineering capabilities to intelligence.” Finally, engineering capabilities could have significantly contributed to the fires WfF if deliberately involved in the targeting process by providing analysis on the mobility and suitability of potential targets and engagement areas to facilitate the repositioning of artillery systems.

WFXs 19-1 and 19-5 trends include the following:

- A lack of mobility or engineer collaboration with subordinate units led to inaccurate battle tracking of bridging (multi-role bridge company [MRBC]) and breaching (mine-clearing line charge) assets resulting in ineffective task organizations to support operations.
- Units were unable to employ line of communication bridges to replace float bridges in a timely manner.
- Friendly forces sustained significant combat losses due to a lack of explosive hazard awareness and ineffective measures to identify, mark, and neutralize mine fields.
- Division engineers did not participate in the division targeting process, which desynchronized engineer planning with division shaping operations.

Recommendation. Enforce execution of scheduled and established systems and processes (including battle rhythm events, FRAGORDs, working groups, etc.), to enable the division engineer staff to efficiently plan, identify mission requirements, resource, and execute engineer operations in support of all WfFs and in accordance with the operational demands for each mission (WGC, mobility, general engineering, etc.).

DOTMLPF-P. To exercise adequate C2 of forces, staffs require a thorough understanding of communications and information systems capabilities, sound tactical and combat platform employment techniques, and individuals' ability to parse and make sense of the data presented to provide sound and timely recommendations to allow commanders to make critical decisions. Increasing training frequency, rehearsals, and deliberate integration of subordinate units' bottom-up refinement while employing analog and digital systems into plan and operations will effectively mitigate risk to mission success.

Doctrinal references. FM 3-34, *Engineer Operations*, paragraph 3-1, page 53; paragraph 2-67, page 41, paragraph 2-73; page 42, and paragraph 2-79; page 44, 02 APR 2014.

Section 2.2.17. Wet Gap Crossing Synchronization

Observation. Units struggle with synchronizing the employment of all WGC fundamentals in support of LSCO. The application of surprise, extensive preparation, flexible planning, traffic management, speed, and organization (the six WGC fundamentals) were employed with distinct outcomes based on their effectiveness.

Discussion. The application of the six WGC fundamentals are used by units, but poorly synchronized, resulting in reduced effectiveness. The most common overlooked fundamentals are extensive preparation and traffic management. Extensive preparation includes comprehensive intelligence of the enemy's composition and disposition. Crossing area terrain should be developed early since gap crossing planning depends on an accurate and complete intelligence picture. Full-scale rehearsals are essential to clarify roles and procedures, train personnel (crews for zodiac [rubber] assault boats), inspect equipment, develop teamwork, and ensure unity of effort. Commanders should plan and initiate deception operations early to mask actual preparation. Without proper extensive preparation, enemy forces operating in the battle and support zones can quickly achieve effective attrition against friendly forces prior or during the gap crossing execution and ultimately stall combat power projection onto bridgehead objectives. Traffic management is essential to cross units at the proper locations and in the desired sequence and to cross as quickly as possible in accordance with the commander's task, purpose, and intent. The fundamental of traffic management enhances operational tempo by employing movement tables developed by the G-4 or division transportation officer (DTO) and the use of military police, neither of which are often used during gap crossing operations.

WFX 19-4 trends include the following:

- Limited extensive preparation observed, which led to the enemy achieving effective attrition against friendly forces, stalling rafting and full gap crossing progress.
- No movement tables developed by the G-4 or DTO with desired sequence or use of MPs to assist with staging areas, holding areas, and traffic control posts to control movement within the crossing area, according to the traffic control plan.

WFX 19-5 trends include the following:

- Limited extensive preparation observed, which led to MRBCs assets attrition below 25% across the division, requiring deliberate corps reconstitution prior to execution.
- No movement tables developed by the G-4 or DTO with desired sequence for crossing.
- No movement tables developed by the G-4 or DTO with desired sequence or use of MPs to assist with staging areas, holding areas, and traffic control posts to control movement within the crossing area, according to the traffic control plan.

Recommendation. Enforce the execution of well-synchronized and deliberate gap crossing operations to maximize efficiency and effectiveness through the optimal application of all wet gap fundamentals. Gap crossing synchronization should be planned at the division level. The plan should drive the collection and fires plan and should be planned out with enough time to allow shaping operations to establish favorable correlation of forces.

DOTMLPF-P. A repository of WGC materiel needs to be maintained on an accessible “one-stop shop” area of the Center for Army Lessons Learned website (<https://call2.army.mil>). Divisions, engineer brigades, MEBs, and MRBCs should conduct realistic training to build proficiency in the planning, rehearsal, and execution of WGC operations. They should train as they will fight (live gap crossing instead of simulation on flowing rivers versus still lakes) to ensure mission success.

Doctrinal references. FM 3-34, *Engineer Operations*, paragraph 3-1, page 53, 02 APR 2014.

CHAPTER 3

Brigade-Level Trends

SECTION 3.1. MILITARY POLICE TRENDS

Section 3.1.1. Synchronized Detainee Operations

Observation. Military police brigades struggle to plan and execute detainee operations, which results in desynchronized operations from the detainee collection point (DCP) to the theater detention facility.

Discussion. Military police brigades do not clearly outline the lines of communication (LOCs) and points of contact (POCs) to corps or divisions for detainee flow at the start of the warfighter exercise (WFX). Military police brigades should create a detention operations common operational picture (COP) with accurate numbers and locations of detainees across the corps area of operations (AO) to facilitate the flow of detainees from point-of-capture to the theater detention facility. This results in a lack of synchronization of detainee transportation through corps assets, requiring the use of air mission requests or contracted buses. When the military police brigade conducts detainee working groups with higher echelon and adjacent units, detention operations synchronization (OPSYNC) improves.

Recommendation. Publish a detention operations annex which clearly outlines roles and responsibilities at echelon, with DCPs, detainee LOCs, and POCs to subordinate and higher organizations. Create and publish a detention operations COP to facilitate a shared understanding of the detainee situation.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). Training and leadership can help decrease this trend. Units can reverse this trend by developing a training plan and integrating recommendations listed in this publication. Mission Command Training Program (MCTP) can facilitate by showing this as a trend during mission command training (MCT) at all levels.

Doctrinal references. Field Manual (FM) 3-39, *Military Police Operations*, 09 APR 2019.

SECTION 3.2. MANEUVER ENHANCEMENT BRIGADE TRENDS

Section 3.2.1. Maneuver Enhancement Brigade Role in Support Area

Observation. Maneuver enhancement brigades (MEBs) struggle to understand and execute their roles and responsibilities in the support area.

Discussion. MEB staffs struggle to define their roles or responsibilities for the supported division or corps headquarters in the support area. Divisions and corps tend to lack consistency in the employment and AOs of the MEB. It is common practice for the MEB to be assigned responsibility for the support and consolidation areas without combined arms augmentation. The lack of MEB staff input to the division or corps support area planning resulted in increased MEB missions over the course of the operation as divisions or corps identified gaps in the support area security plan. While integration into the support area command post (SACP) and subsequent working groups improved synchronization between the MEB and the divisions or corps, MEB staffs continued to struggle to articulate their mission and role in the support area.

Recommendation. Update doctrine to refine and clearly outline MEB roles and responsibilities in the support area. Refine doctrine on the consolidation and support areas and improve education on the employment of the MEB.

DOTMLPF-P. Training and leadership can help decrease this trend, but updated doctrine should drive this education. Updated doctrine will be needed to clarify the roles and responsibilities within the support area.

Doctrinal references. FM 3-81, *Maneuver Enhancement Brigade*, 21 APR 2014; FM 3-0, *Operations*, 06 OCT 2017; Army Techniques Publication (ATP) 3-91, *Division Operations*, 17 OCT 2014.

SECTION 3.3. ENGINEER BRIGADE TRENDS

Section 3.3.1. Engineer Roles in the Support Area

Observation. Engineer brigades lack understanding of their influencing roles and responsibilities within the support area and SACP.

Discussion. Engineer brigades identify their roles in directing and assessing engineer tasks based on assigned missions; however, they fail to influence the corps as the senior force engineer commander. The engineer brigades assign liaison officer (LNO) teams to the SACP and conduct face-to-face engagements with the staff; however, a lack of understanding of how to anticipate future engineering mission requirements on behalf of the corps limits their ability to influence the corps SACP staff, which results in a lack of synchronization of engineer efforts across corps AOs.

Recommendation. Clearly define the roles and responsibilities of the engineer brigade in the support area, as well as expectations within the SACP. Ensure LNOs placed within the SACP are able to communicate and integrate the engineer brigade's capacity and capability into corps plans and orders.

DOTMLPF-P. Leadership, education, and doctrine are the solution to this problem. Engineer leaders should engage with corps staff to gain an understanding of expectations in the relationship between the engineer brigade and the SACP. MCTP can assist by providing instruction on this topic through MCT seminars. Updates to engineer doctrine provide clearer expectations on the role of engineer elements in the SACP.

Doctrinal references. FM 3-34, *Engineer Operations*, 02 APR 2014.

Section 3.3.2. Knowledge Management

Observation. Engineer brigades and combat aviation brigades (CABs) do not assign a knowledge management officer or develop knowledge management systems.

Discussion. The lack of a designated knowledge management officer results in units failing to codify processes and tools to facilitate commander decision making and mitigate risk during operations. Additionally, the lack of a knowledge management system results in units not properly distributing orders and supporting fighting documents to all echelons. Engineer brigades and CABs also lack understanding that knowledge management is not just information storage and organization, but a common process to enable information and knowledge flow throughout

the staff to enhance shared understanding. Brigades often use a shared drive and share portal for information storage, but do not use standard procedures for information filing and retrieving with naming conventions, which results in multiple versions of the same products and causes the brigade battle staff to make additional notifications to the staff and subordinate units about updated products.

Recommendation. Identify a potential knowledge manager within the staff who can be formally trained to oversee knowledge management and develop a knowledge management standard operating procedure (SOP) to delineate where information is posted for planning, collection, sharing, etc. Validate the knowledge management process through collective training events at home station and develop a primary, alternate, contingency, and emergency (PACE) plan for knowledge management.

DOTMLPF-P. Leadership, training, and personnel are the solutions to this problem. First, leaders should realize the benefits of trained knowledge management officers and how they enable shared understanding throughout the brigade. Second, units should appoint a member of the staff as the knowledge management officer prior to an exercise or contingency operation. The assigned knowledge management officer should attend the proper training to succeed at this position.

Doctrinal references. ADP 6-0, *Mission Command*, 31 JUL 2019; ATP 6-01.1, *Techniques for Effective Knowledge Management*, 06 MAR 2015.

Section 3.3.3. Wet Gap Crossing Planning

Observation. Engineer brigades are not integrated into the wet gap crossing (WGC) planning operations cycle.

Discussion. Engineer brigades, although not the primary element which executes WGC operations, do provide the senior force engineer with perspective on engineer task integration. Many divisions struggle with WGC during WFXs due to a lack of integration of the senior force engineer and staff into the WGC planning cycle, which results in ineffective use of division and corps engineer assets and significant losses to engineer equipment during WGC.

Recommendation. Integrate echelons above brigade engineer brigade staffs into WGC operations planning cycles to provide additional engineering expertise and mitigate potential risks to mission.

DOTMLPF-P. Training is the solution to this problem. MCTP instruction at corps, division, and engineer brigade MCT on the integration of the corps-enabling engineer brigade into WGC operations will improve overall staff understanding. A seminar series on WGCs sponsored by the Maneuver Support Center of Excellence would align engineer brigades, division staffs, and corps staffs to a common point of reference and create a shared understanding for the planning and execution of WGC operations.

Doctrinal references. FM 3-34, *Engineer Operations*, 02 APR 2014.

SECTION 3.4.

COMBAT AVIATION BRIGADE AND TACTICAL AVIATION BRIGADE TRENDS

Section 3.4.1. Knowing the Operational Environment

Observation. Incomplete intelligence preparation of the battlefield (IPB) results in a lack of understanding of the operational environment.

Discussion. CAB staffs do not conduct a sufficient level of IPB to support enemy-focused planning or develop a shared understanding of the enemy and the environment. CAB staffs often do not provide effective warfighting function (WfF) inputs to the S-2 to incorporate into IPB. CAB staffs fail to use IPB to understand the terrain and threat and are reluctant to construct an enemy event template and event matrix, making it difficult to provide assessments of enemy courses of action (COAs), especially outside of 12 to 24 hours.

Recommendation. Incorporate all WfFs into IPB. Develop IPB products to understand the terrain and threat.

DOTMLPF-P. Training and leadership can help decrease this trend. Units can reverse this trend by developing a training plan and integrating recommendations from this bulletin. Leaders should provide clear guidance to the staff regarding expectations for IPB. MCTP can facilitate this by showing cause (lack of IPB) and effect (poor planning and lack of situational awareness), leading to extensive losses or mission failure.

Doctrinal references. Army Doctrine Publication (ADP) 5-0, *The Operations Process*, 31 JUL 2019; FM 6-0, *Commander and Staff Organization and Operations* (with changes 1 and 2), 05 MAY 2014; ATP 2-01, *Plan Requirements and Assess Collection*, 19 AUG 2014; ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019; FM 3-55, *Information Collection*, 03 MAY 2013.

Section 3.4.2. Protection Cell

Observation. Brigade staffs fail to integrate protection across the WfFs.

Discussion. Brigades often assign protection officers who are inexperienced and lack the needed training in the protection WfF. The assigned protection officers typically fill this key staff position and are often dual hatted in a plans or battle captain role. Furthermore, units normally assign one protection officer, resulting in less than 24-hour coverage while balancing attendance at various battle rhythm events. CABs consider protection planning the sole responsibility of the protection officer and do not incorporate the staff and other WfFs into protection planning. CABs also fail to incorporate protection into key battle rhythm events such as the targeting board, OPSYNC meeting, and plans working group.

Recommendation. Identify qualified, experienced personnel to lead the protection cell. Include protection in all planning and ensure protection priorities and tasks are codified in orders.

DOTMLPF-P. Leadership, training, and personnel are the solutions to this problem. Educating the leaders on how they enable shared understanding throughout the brigade will enable the process to be successful. Assign a dedicated protection team from that staff that has the experience and personnel to assist all WfFs. Leaders should help protection officers influence external enablers when junior officers are unsuccessful.

Doctrinal references. ADP 5-0, *The Operations Process*, 31 JUL 2019; FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014. ADP 3-37, *Protection*, 31 JUL 2019.

Section 3.4.3. Deliberate Targeting

Observation. CAB targeting meetings have increased in frequency, but meetings lack structure and focus.

Discussion. CAB targeting meetings lack an established seven-minute drill (a tactic, technique, and procedure for deliberate targeting) and thus lack effectiveness in their targeting process. The lack of a clear agenda, along with inputs and outputs, results in units not maximizing the event and walking away with incomplete targeting products such as the target list worksheet and high-payoff target list (HPTL). Ultimately, units miss opportunities to develop the enemy situation and airspace plan for 72 hours out and are unable to properly synchronize other division enablers to support CAB maneuver, which also increases the risk to the CAB in large-scale combat operations (LSCO) and can make division leaders reluctant to employ the CAB in the deep fight.

Recommendation. Continue to conduct the targeting meeting seminar during MCT. Conduct repeated iterations of the CAB targeting working group (TWG) and approval board at home station. Coach the proper placement of the TWG in the WFX battle rhythm.

DOTMLPF-P. This trend is a training shortfall. Staffs should be encouraged to adhere to published doctrine in ATP 3-60, *Targeting*, 07 MAY 2015; and ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017. Coaching and teaching from MCTP should address targeting inputs, outputs, and the link to the division targeting process.

Doctrinal references. ADP 5-0, *The Operations Process*, 31 JUL 2019; ATP 3-60, *Targeting*, 07 MAY 2015; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017; FM 3-52, *Airspace Control*, 20 OCT 2016.

Section 3.4.4. Sustaining the Combat Aviation Brigade

Observation. CABs are effective at macro-level sustainment but lack the tools and knowledge to conduct micro-level sustainment.

Discussion. CAB sustainment cells should forecast supply requirements in measurable quantities to anticipate transitions and provide future requirements to supported commands. Developed running estimates should be used to create a shared sustainment situational awareness of higher, lower, and adjacent units. CABs often rely heavily on the logistics status (LOGSTAT) for all supply requests, which is insufficient to forecast sustainment requests further than 48 hours in advance. CABs fail to use predictive models developed through running estimates or planning cycle mission development to enable long-term supply forecasting.

Recommendation. Use the tools or logistics estimation workbook developed in MCTs and command post exercises (CPXs) to provide the precise necessary quantitative requirements. Continue to develop and modify the formulas used to meet the actual needs of the pace of battle.

DOTMLPF-P. Update doctrine to include a method of predictive analysis in the sustainment WfF and improve training to sustainment personnel on use of predictive tools.

Doctrinal references. ADP 4-0, *Sustainment*, 31 JUL 2019, FM 4-0, *Sustainment Operations*, 31 JUL 2019.

Section 3.4.5. Running Estimates

Observation. CAB staff running estimates lack a depth of analysis, resulting in current operations (CUOPS) struggling to battle track and make rapid decisions.

Discussion. Staffs do not understand the importance of how running estimates enable commander visualization, decision making, and shared understanding. Staffs lack the knowledge and training to integrate and use information systems to display running estimates. A lack of understanding of unit SOPs leads to unclear roles and responsibilities regarding COP management and components, which results in underdeveloped execution documents (decision support matrices, information collection plans, orders, etc.) and ill-defined processes and procedures to control and direct CUOPS. CUOPS do not use battle tracking tools (synchronization matrices, execution matrices, and operational timelines) to manage and control operations.

Recommendation. Include information system training and SOP development into the unit training plan. Ensure all members of the staff are familiar with the SOP and enforce utilization during training opportunities to refine and update products and processes.

DOTMLPF-P. Staff training on the importance and “how to” of running estimates is needed. Leaders should also provide guidance to staffs on the type of information needed to feed their decision-making process and visualization of the battlefield.

Doctrinal references. ADP 5-0, *The Operations Process*, 31 JUL 2019.

Section 3.4.6. Airspace Management

Observation. CABs struggle to design, implement, and control airspace.

Discussion. CAB units consistently fail to submit detailed airspace control measures (ACMs) to the divisions in accordance with published timelines and standards. The airspace control orders (ACOs) are often not consolidated, produced, and disseminated to the CAB from division, resulting in increased risk to CAB aircraft. The division’s unit airspace plan (UAP) does not always account for the CAB’s airspace requirements.

Recommendation. Update the airspace plan with all airspace users and integrate it into the TWG.

DOTMLPF-P. Further training on airspace planning and submission is needed for CAB air defense airspace management (ADAM) staff sections. MCTP can assist by integrating this trend as a class or breakout session at MCTs.

Doctrinal references. Joint Publication 3-52, *Joint Airspace Control*, 13 NOV 2014; FM 3-52, *Airspace Control*, 20 OCT 2016.

SECTION 3.5.

FIELD ARTILLERY BRIGADE AND DIVISION ARTILLERY TRENDS

Section 3.5.1. Intelligence Preparation of the Battlefield Integration with Higher Headquarters

Observation. The most successful units established themselves as the subject matter experts on enemy fires for their division or corps. Division artillery (DIVARTY) and field artillery brigade (FAB) S-2s functioned as the key contributors to the supported headquarters' IPB for enemy fires.

Discussion. During fiscal year 2019 (FY19) WFXs, divisions lost the majority of their combat power (70 to 75%) due to enemy artillery. Units set the conditions for successful targeting and proactive counterfire by tailoring doctrinal IPB products to describe the enemy's fires system and use of long-range artillery (LRA). These products do not stand alone, but input as layers to the supported headquarters' IPB. When integrated in the supported headquarters IPB, these products influence the development of the HPTL, priority intelligence requirements (PIRs), named areas of interest (NAIs), and the collection plan, synchronizing targeting of enemy fires with the overall scheme of maneuver.

Recommendation. Do not wait to receive the supported headquarters' IPB to conduct separate IPB and military decisionmaking processes (MDMP); participate in, attend, and contribute to the supported headquarters' IPB and MDMP directly (see Figure 3.1 on page 36). Provide the supported command with doctrinal IPB products, including overlays tailored to describe the enemy's employment of fires, especially LRA. Remain engaged in HPTL development, PIR development, and planning collection.

DOTMLPF-P. Doctrine inadequately describes the roles and responsibilities of the FAB, DIVARTY, and force field artillery headquarters (FFAHQ) S-2. Intelligence doctrine focuses on the brigade combat team (BCT) and does not address the functional or multifunctional brigade S-2s' contributions to the division's IPB. Fires doctrine briefly addresses DIVARTY and FAB S-2 duties; however the descriptions are generic, lack detail, and do not describe how the S-2s integrate with the supported headquarters and its targeting process. Intelligence and fires doctrine should be updated to address FAB and DIVARTY S-2 integration with the supported headquarters' G-2 and targeting process.

The military intelligence training strategy (MITS) is the standardized certification strategy for commanders to plan training and assess and evaluate their tactical intelligence warfighting function (IWfF) capabilities in an objective, quantifiable manner. Similar to brigade-level doctrine, MITS is focused on the BCT. Development of integrated MITS should be prioritized for the division, DIVARTY, and CAB, requiring all three organizations to operate as one IWfF at tier 1.

Doctrinal references. ATP 3-09.24, *Techniques for the Fires Brigade*, 21 NOV 2012; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017; ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019.

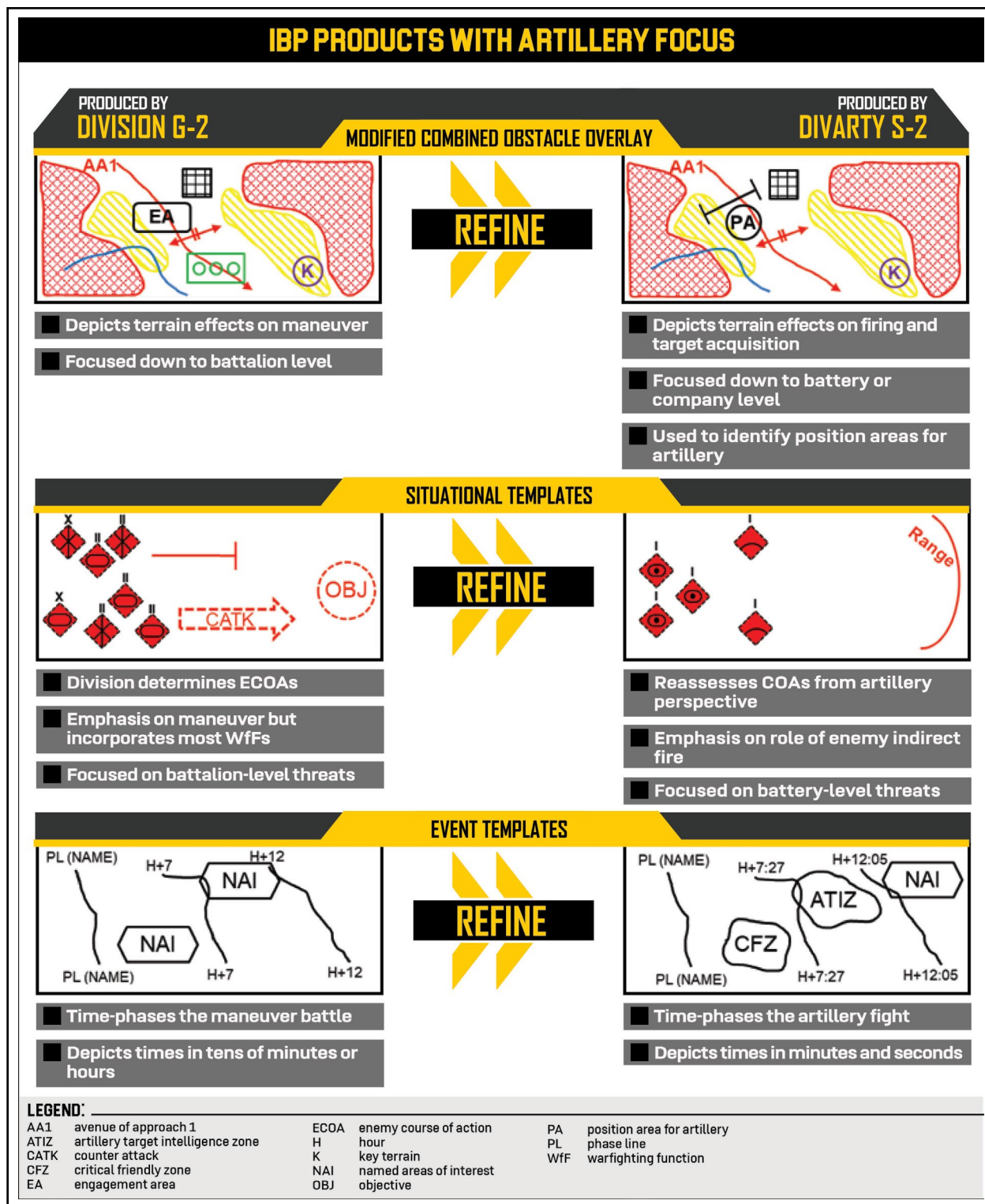


Figure 3-1. Refining division IPB products with artillery focus

Section 3.5.2. Intelligence Systems Architecture Management

Observation. Units that dedicate planning, training, and maintenance time prior to a warfighter to develop a detailed intelligence architecture and PACE plan integrated with the supported headquarters' G-2 are more successful and agile during operations.

Discussion. The lack of all-source intelligence technicians (military occupational specialty [MOS] 350Fs) and military intelligence systems maintainer and integrator (MOS 35Ts) within FABs and DIVARTYs means they require support from their higher headquarters and external augmentation to plan and establish the intelligence architecture. Without further training and expertise, units struggle to establish Distributed Common Ground System-Army (DCGS-A) connectivity on the local and wide area networks with mission command information systems and to data sources, which during a warfighter means units are missing approximately 30,000 intelligence reports daily, reducing their ability to provide predictive and timely intelligence in support of timely and accurate fires. Additionally, lack of architecture planning expertise leads to poor PACE planning and integration with G-2 architecture. The FAB or DIVARTY S-2 and G-2 spend hours via voice, chat, and email synchronizing intelligence that could be shared graphically in real time. At the analyst level, the lack of architecture support prior to a major exercise means analysts are not trained to manage the fires common intelligence picture (CIP) via DCGS-A, increasing the Soldier hours spent copying and manually entering intelligence information from disparate products and systems into the command post of the future (CPOF), onto slides, and onto analog products for other sections to reference, which increases workload and detracts from the ability to conduct timely and complete analysis.

Recommendation.

- Incorporate the IWfF PACE plan into the unit S-2 SOP and tactical standard operating procedure (TACSOP).
- Request 35T augmentation for training prior to and during WFXs. Send trained representation to higher headquarters' architecture planning meetings and WFX planning lifecycle events.
- Host a gunner entry program or have all intelligence Soldiers take the Digital Intelligence Systems Foundation Course I (online blackboard access through Intelligence Knowledge Network) to increase knowledge and competency regarding digital intelligence systems architecture and interoperability.
- Send at least one noncommissioned officer (NCO) or officer to the Digital Intelligence Systems Master Gunner Course to develop architecture planning capacity.
- Send analysts to Foundry's new All Source Production Course (AS308 in the Army Training Requirements and Resources System [ATRRS] catalog) and All Source Operations Course (AS309 in the ATRRS catalog) or have an NCO teach the courses (course materials available through Foundry). Both courses use DCGS-A. AS308 focuses on IPB and AS309 trains all source tasks associated with intelligence support to targeting, intelligence support to information collection and intelligence support to situational understanding within the context of a 72-hour decide, detect, deliver, and assess targeting cycle in a decisive action training environment.

DOTMLPF-P.

- Update doctrine to specify division and corps requirements to provide intelligence system maintainer support to functional and multifunctional brigades, especially the FAB, DIVARTY, and CAB.
- Pursue force design updates, adding 35Ts to the organization.
- Formally request field service representative support from the regional support office.
- Request unit-funded FSRs if possible, and fund temporary duty for augmentation from other organizations.

New facility plans should include open storage and environmental control adequate for units to keep DCGS-A family of systems equipment online 24/7 to receive security patches and updates and enable regular analyst use to conduct training and maintain proficiency.

Doctrinal references. ADP 2-0, *Intelligence*, 31 JUL 2019.

Section 3.5.3. Counterfire Analysis

Observation. Counterfire analysis (heat map or point of origin and impact line plot) produced by the DIVARTY or FAB S-2 is a best practice used to understand and communicate the enemy artillery situation to the G-2, joint air-ground integration center (JAGIC), division TWG, and adjacent units.

Discussion. Successful S-2s consistently produce daily counterfire heat maps that spatially and temporally depict known enemy artillery units and weapon systems. This requires proficiency in using DCGS-A and the Joint Automated Deep Operations Coordination System (JADOCS) to determine where the highest volume of enemy indirect fire is coming from and which friendly units they are targeting. Most units use the heat map to correlate and assess counterfire acquisitions with the associated enemy artillery unit and weapon systems, allowing effective targeting. Specifically, it becomes an information product used during a division's TWG and targeting board to facilitate creation of airspace control, position area for artillery placement, and allocation of counterfire assets. Related outputs include the refinement of division NAIs, new or refined target areas of interest, and changes to target nominations, air support requests (ASRs), and the information collection plan.

Recommendation. Coach units to produce heat maps daily and share with the division targeting team and G-2 (see Figure 3-2). Include the heat map in the division G-2's daily graphic intelligence summary for shared understanding on the enemy artillery situation.

DOTMLPF-P. Current intelligence and fires doctrine does not mention the concept of producing a counterfire heat map. The next update of FM and ATP 2-33.4, *Intelligence Analysis*, should codify the production of heat maps. The next update of ATP 3-09.90 should mandate the product as a required output from the battalion, DIVARTY, and FAB S-2s.

Doctrinal references. ATP 3-09.24, *Techniques for the Fires Brigade*, 21 NOV 2012; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017; ATP 2-01.3, *Intelligence Preparation of the Battlefield*, 01 MAR 2019.

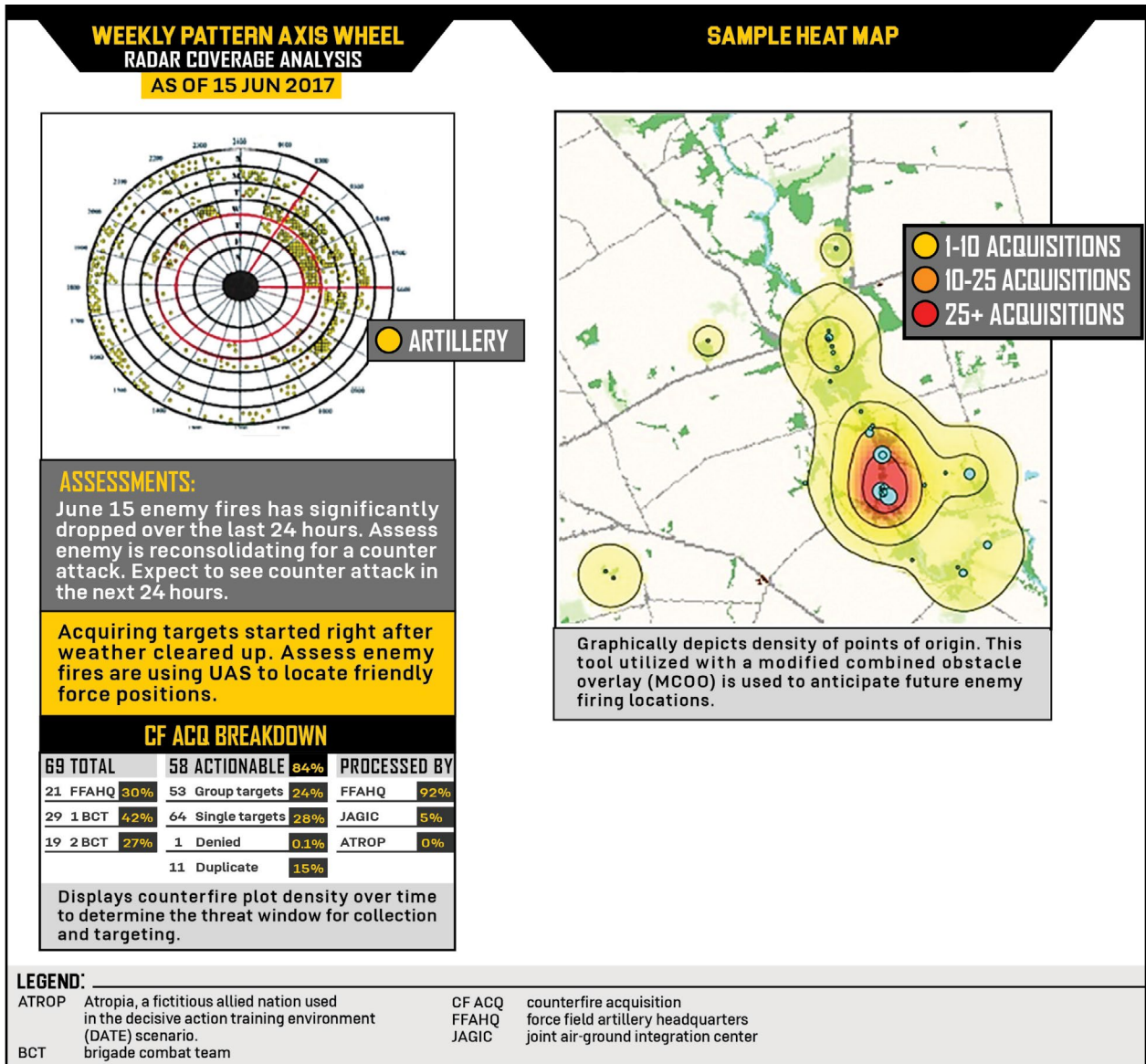


Figure 3-2. Proactive counterfire tools “a way”

Section 3.5.4. Counterfire

Observation. DIVARTYs and FABs are routinely unable to achieve effective reactive counterfire due to the challenges of enemy artillery range, integrating airspace, and an inadequate sensor-to-shooter linkage.

Discussion. Enemy LRA inflicted significant casualties on friendly forces during FY19 WFXs. The purpose of counterfire is to destroy or neutralize enemy weapons. Delivery means for counterfire encompasses many systems such as field artillery, close air support (CAS), army attack aviation, maneuver elements, mortars, and electronic attack. Counterfire is a function the division and corps commanders should address and is not solely the function of the DIVARTY or FAB. Successful counterfire should be integrated across the joint force to defeat the enemy's LRA capability. Surface fires is a critical component in this joint effort that protects the force through reactive counterfire. It also attacks the enemy's principal strength, LRA, and integrated air defense.

The DIVARTY and FAB executes counterfire through a combination of predictive analysis, radar zone management, and surface fires. DIVARTYs and FABs are routinely unable to achieve effective reactive counterfire due to the challenges of enemy artillery range overmatch, integrating airspace, and a deficient sensor-to-shooter linkage.

Many near-peer systems can range farther and displace faster than U.S. surface-to-surface fires' typical time of flight. Based on the opposing force (OPFOR) tactics and enemy systems capability, 75% of acquisitions originated either outside a division AO or long of the forward support coordination line. Cross boundary fires conducted by DIVARTYs and FABs exceeded 10 minutes on average due to a lack of coordination and authorization (see Figure 3-3), which, without preapproved authorization across a boundary, resulted in numerous unnecessary intervention points that added minutes to every fire mission. This problem is compounded by the pooling of long-range munitions by corps FABs rather than distributing the ammunition across the corps. The centralization of long-range munitions at the corps increased the challenges of range for divisions, the ability to mass across adjacent boundaries; and added an additional intervention point. Instead of allowing a division or multiple divisions to mass on a target, every mission needed to be routed to corps for approval, coordination, and execution.

The principal obstacle to the integration of airspace is the DIVARTYs and FABs do not incorporate airspace planning into their targeting process. Therefore, DIVARTYs and FABs do not produce a UAP. Without this plan, a division cannot submit surface fires ACMs for the ACO. The absence of planned and anticipated surface-to-surface fire ACMs on the ACO resulted in significant delays in airspace clearance of fires, especially for those fires violating the coordinating altitude. Every fire mission that went above the coordinating attitude required clearance through the division JAGIC.

Ineffective sensor-to-shooter links did not allow effective fire mission routing, resulting in untimely and ineffective reactive counterfire. Enemy surface fires have the capability to displace in 2 to 5 minutes and units struggle to streamline the sensor-to-shooter link to defeat this threat. Units are challenged to incorporate mission command integrations systems such as JADOCS and Tactical Airspace Integration Systems (TAISs) to streamline fire mission processing and tactical fire control. In addition, units are hesitant to establish quick fire nets during periods of high risk or opportunity. With the proper control measures, this could greatly facilitate the timeliness and volume of fires.

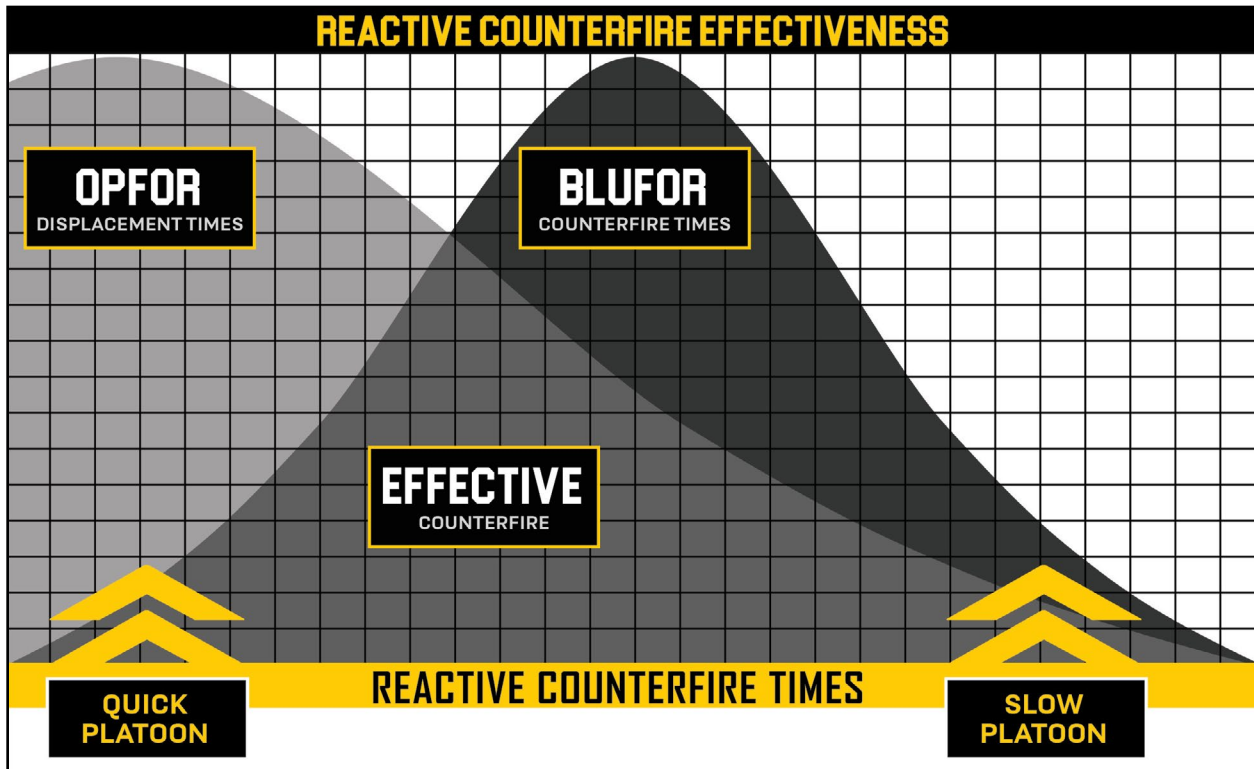
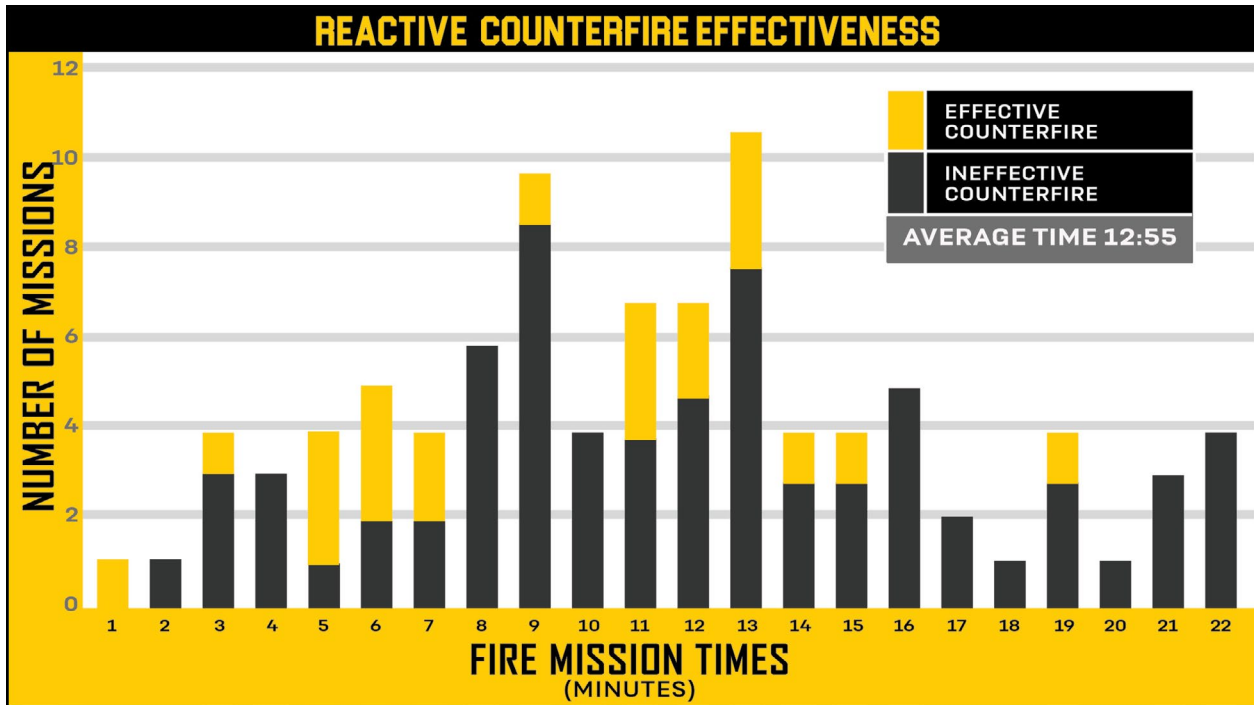


Figure 3-3. Reactive counterfire effectiveness

Recommendation. Organizations should consider adapting a more comprehensive and collaborative approach to the counterfire problem set. First, organizations should retain an aggressive digital sustainment training program that reinforces hands-on training and requisite leader competencies on the concepts of digital architecture. Second, to understand the complexity of cross boundary counterfire, especially in support of WGC operations, organizations should embrace and execute numerous counterfire leader development sessions. These sessions should involve the executors and senior leaders at all echelons within a division or corps. Lastly, rehearse thoroughly and often. Maximize the use of counterfire rehearsals at all echelons with added emphasis on cross boundary fires and always perform after action reviews.

DOTMLPF-P. This trend is a training issue. DIVARTYs and FABs should aggressively train operators on the systems with leaders establishing battle drills to communicate and execute complex cross boundary fires.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017; FM 3-09, *Field Artillery Operations and Fire Support*, 04 APR 2014; Training Circular (TC) 6-0.2, *Training the Mission Command Warfighting Function for Battalions, Brigades, and Brigade Combat Teams*, 15 JUL 2019.

Section 3.5.5. Targeting Working Group

Observation. Every DIVARTY and FAB successfully implemented a TWG, which produced an assessment of friendly and enemy surface fires for the division or corps TWG and served as a method to synchronize surface fires for the FFAHQ.

Discussion. The meeting prior to the division or corps TWG informed deliberate targeting by providing an accurate estimate of enemy and friendly surface fires (primarily positioning and ammunition) 72 hours from execution. DIVARTY and FAB analysis provided an underpinning for the higher echelon headquarters to develop NAIs and target nominations against enemy LRA, which allowed the development of ASRs, an HPTL, and collection plan. Concurrently, at the DIVARTY or FAB TWG, the staff forecasted resources required of an FFAHQ at 72 hours, coordinated movement of those resources at 48 hours, and synchronized their employment for the next 24 hours. For each day, the DIVARTY or FAB conducted detailed planning against enemy surface fires using the Army targeting methodology of decide, detect, deliver, and assess (see Figure 3-4). This process resulted in a synchronized plan that included artillery positioning, target acquisition, airspace, and ammunition resupply. The alignment of DIVARTY and FAB planning with the joint air tasking cycle enabled improved synchronization between the division and corps fires element and the DIVARTY or FAB.

Upon completion of the DIVARTY or FAB TWG, the DIVARTY or FAB S-3 and S-2 attended the division TWG and provided the surface fires recommendation to the DIVARTY or FAB commander and division/corps targeting personnel. Simultaneously, the executive officer supervised the outputs from the TWG into the battle rhythm to request, coordinate, and synchronize key resources.

While successful in enabling division or corps targeting, staffs struggled using this meeting to produce field artillery support plans for execution by subordinate battalions and CUOPS. In addition, assessments from CUOPS were often not integrated into the planning cycle, which often resulted in a desynchronized execution.

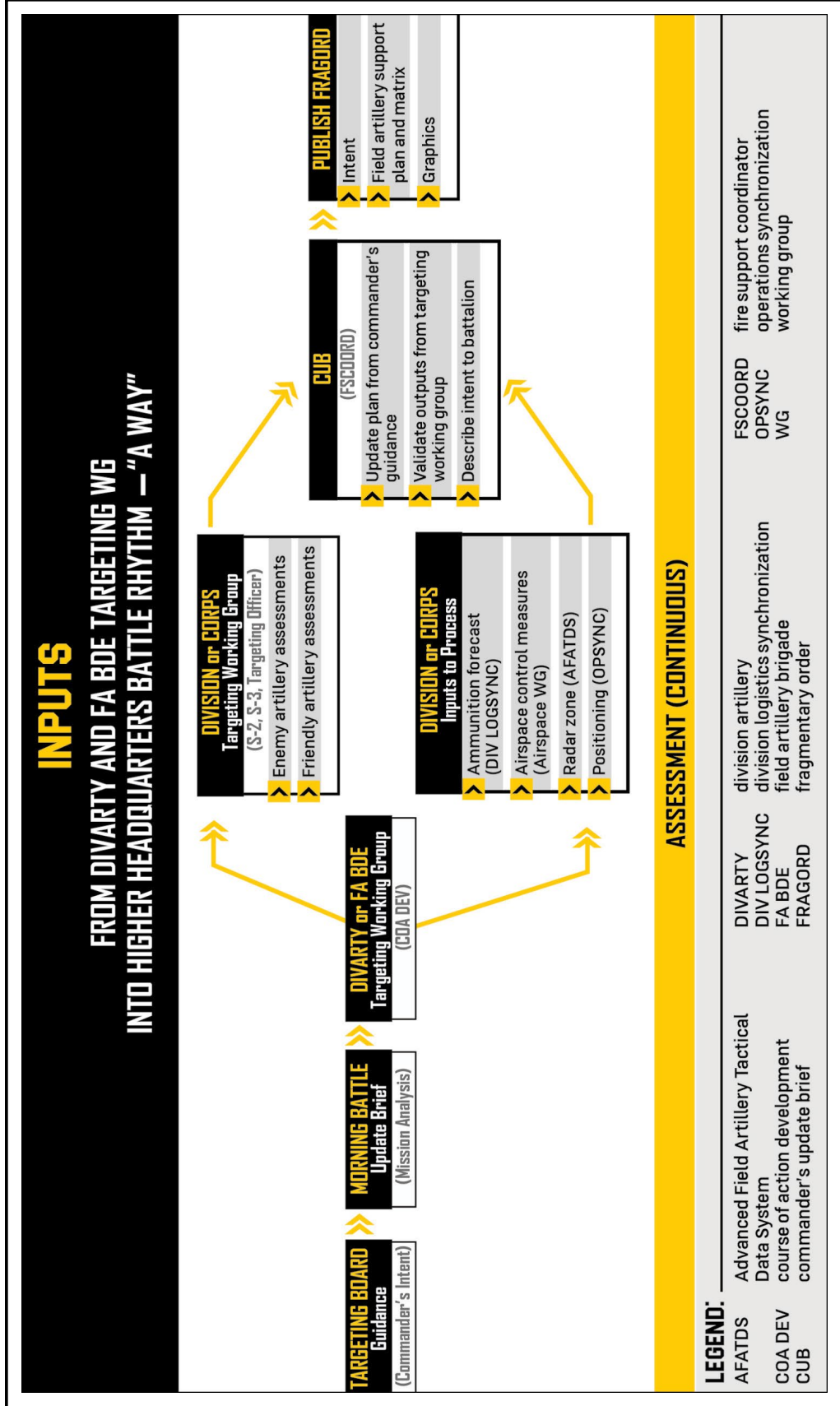


Figure 3-4. Sequencing of staff inputs from DIVARTY and FAB TWG into higher echelon headquarters battle rhythm—“a way”

Recommendation. Sustain the DIVARTY and FAB TWG and streamline the meeting's outputs within the battle rhythm and operation order (OPORD) process. Units should create order transitions standards and checklists to ensure CUOPS and subordinate units receive orders and understand the plan and objectives.

DOTMLPF-P. Codify the agenda, purpose, and outline of a sample FFAHQ targeting for the next update to ATP 3-09.90.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017.

Section 3.5.6. Cross Boundary Fires

Observation. Cross boundary fires were habitually ineffective (would exceed 11 minutes) due to a lack of coordination and clear authorities.

Discussion. Enemy LRA inflicted significant casualties on friendly forces. 75% of acquisitions originated either outside a division AO or long of the forward support coordination line. Cross boundary fires conducted by DIVARTYs and FABs would exceed 10 minutes on average due to a lack of coordination and clear authorities. Unclear authorities resulted in numerous unnecessary intervention points that added minutes to every fire mission. This problem is compounded when DIVARTYs, FABs, and fire support elements (FSEs) do not fully use mission command information systems to expedite fires through the artillery communication architecture.

DIVARTYs and FABs do not routinely coordinate with adjacent DIVARTYs and corps FFAHQ. The lack of coordination results in an inability to create a shared understanding of the surface fires threat. Without an understanding of the threat, divisions and corps headquarters are unable to create operational-level solutions to LRA. With a shared understanding, DIVARTYs and FABs can create permissive measures such as ACMs, call for fire zones, and kill boxes to allow multiple assets (including surface fires, fixed wing, and attack aviation) across the corps to mass effects on enemy artillery.

DIVARTYs and FABs do not have the authorities needed to prosecute timely cross boundary fires. Without prior clearance, a dynamic target is required to route the fire mission from the DIVARTY or FAB to a division JAGIC to a corps FSE, and then to an adjacent division JAGIC. This process is difficult and time consuming even for an experienced JAGIC due to the need to orient on a target and describe why an adjacent unit needs to fire into their AOs. Furthermore, DIVARTYs and FABs often do not have the authority to clear airspace utilizing their own organic ADAM/brigade aviation element (BAE) section.

Recommendation. Division JAGIC and G-3 air should empower DIVARTYs and FABs to execute the duties of the counterfire headquarters. The JAGIC and G-3 air should allow DIVARTYs and counterfire headquarters to clear air through procedural control below the coordinating altitude. This authority will decrease fire mission processing by an average of five minutes. Use fire support coordinating measures such as coordinated fire lines (CFLs), fire support coordination lines, kill boxes, and "no fire" areas to remove intervention points needed to clear ground. The authorities will not only facilitate cross boundary fires, but also empower DIVARTYs and FABs to execute their duties as counterfire headquarters. Lastly, rehearse cross boundary fires at corps fire support and technical rehearsals.

DOTMLPF-P. Train DIVARTYs and FABs and their supported headquarters to execute procedural airspace clearance. Specifically, if a fire mission resides within an active ACM, then the firing headquarters can clear the airspace for that mission. In addition, divisions and corps need clear authorities to fire cross boundary based on an informed assessment of tactical risk.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017.

Section 3.5.7. Standard Fires Orders and Advanced Field Artillery Tactical Data System Standardization

Observation. Fire control elements consistently did not develop standard fire orders within the Advanced Field Artillery Tactical Data System (AFATDS), resulting in incorrect firing data sent to the subordinate battalions and slower fire mission processing.

Discussion. Without an established SOP that detailed how to produce a standard fire order, the fire control element relied too heavily on the fire control officer (FCO) to process missions. A standard fire order is developed from the commander's guidance that includes a warning order, unit to fire, special instructions, and projectile and target number. A standard order should incorporate munition effectiveness based on the variables of the operation detailed in the attack guidance matrix. Rather than use a standard fire order that resided in AFATDS, the FCOs primarily allocated munitions based on personal experience and their understanding of the operation. On multiple occasions, the AFATDS recommended setting altered the FCO's fire order because the AFATDS operators did not receive a standard fire order for input and the database was not current. The error repeatedly resulted in either unintentionally low-volume fire orders or the wrong munition fired. These factors created a constant need to troubleshoot fire missions due to an absence of a standard fire order within AFATDS and inattention to database management. Lastly, an inconsistent fire order makes it difficult to properly forecast ammunition for future operations.

Recommendation. Develop an SOP that outlines how to produce an operation-specific standard fire order. Use the SOP as a guide, create fire orders based on munitions effectiveness and a daily attack guidance matrix to ensure the volume of fire will achieve the desired effects. Ensure that the fire control element incorporates the standard fire order within AFATDS and manages the AFATDS database. The management of the database includes verifying the input of the standard fire order, ammunition, positioning, and fire support coordination measures. This database should be verified daily during a battle rhythm event attended by every echelon to validate the database. Lastly, FCOs need to consider the combat power of a unit (tube strength) when sending fire orders to subordinate units to achieved desired effects.

DOTMLPF-P. This trend is a training issue and can also be resolved by using a working SOP.

Doctrinal references. References are not listed due to restricted distribution.

Section 3.5.8. Battle Damage Assessment Inputs into Targeting

Observation. Units improved at battle damage assessments (BDAs), which enabled effective deliberate targeting at the division level. However, this progress is not consistent across the force and is not well established in SOPs.

Discussion. Three of five DIVARTYs and FABs executed a deliberate approach to collect, validate, and disseminate estimated BDA to division G-2. DIVARTYs and FABs began to implement predictive BDAs based on volume of fire, target location error, timeliness of fires, and enemy displacement capability. For strikes against enemy artillery by CABs and joint fires, successful DIVARTYs and FABs monitor reports via transverse to update the enemy artillery assessment. Due to the high volume of reporting, units that do not have clear roles and responsibilities for receiving, correlating, and populating reports struggle to create an accurate assessment. Units that integrate assessments into the COP perform much better than those which consign assessments only to S-2 CUOPS. In addition, DIVARTYs and FABs use battle rhythm events to validate BDA, which allows geospatial intelligence or overhead persistent infrared to evaluate effects of friendly fires.

Most units continue to struggle with the final and most critical step—the dissemination of BDA. Joint air-ground integrations, BCT FSEs, CABs, and corps fires elements do not receive real-time enemy fires assessments from DIVARTYs or FABs. Units do not use mission command information systems to distribute this understanding. Despite the shortcomings in real time assessments, the enemy artillery assessments produced by the S-2 enable brigade and division targeting.

Recommendation. Units should be deliberate on how they receive, process, and disseminate estimated BDA. DIVARTYs and FABs should validate assessments to create informed assessments. Division G-2s should enable with the management and sharing of real-time information. A simple shared Microsoft Excel spreadsheet with a running tally that is plotted on CPOF would greatly enable the shared understanding needed to prosecute the division counterfire fight.

DOTMLPF-P. An update to current mission command information systems is needed to allow an automated BDA process that can calculate fire mission data and consolidate it in real time across several units and echelons to feed a CIP or COP. This shared understanding would allow the commander and staff to visualize current enemy combat strengths from BDA in time and space and contribute to more accurate targeting processes.

Doctrinal references. ATP 3-60, *Targeting*, 07 MAY 2015; *Redleg Update: The United States Army Field Artillery Branch's Newsletter*, "Challenges and Recommendations for Accurate Battle Damage Assessments in a Division Artillery (DIVARTY) Brigade," page 23, May-June 2019.

Section 3.5.9. Force Field Artillery Headquarters Responsibilities

Observation. Units were challenged in effectively executing the functions and tasks as the FFAHQ, specifically, establishing effective command and support relationships.

Discussion. DIVARTYs and FABs designated as the FFAHQ struggle with managing all the responsibilities associated with the functions and tasks of the FFAHQ, particularly, planning fires, positioning field artillery units, and planning and managing all sensor assets. FFAHQs are active in recommending and/or establishing support relationships to enable the supported force and main efforts in decisive action. Additionally, units often require situation reports, detailing locations and status, but struggle with planning, directing, and coordinating fire plans and unit positioning, which causes a desynchronized scheme of fires.

Recommendation. Address the accuracy of tactical SOPs and mission orders to ensure effective task organization, coordination measures, command and support relationships, and tracking and reporting procedures.

DOTMLPF-P. Conduct doctrinal review of the FFAHQ functions and organization during the unit's mission command training and during pre-WFX CPXs.

Doctrinal references. ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017.

Section 3.5.10. Integration of Ground Moving Target Indicators into Counterfire Battle Drill

Observation. Fire control elements used ground moving target indicators (GMTIs) to support counterfire operations and dynamic targeting.

Discussion. DIVARTYs and FABs executed a battle drill (see Figure 3-5 on page 48) that integrated GMTIs to support dynamic targeting of enemy artillery during counterfire operations. Initiated by a counterfire acquisition, this battle drill used GMTIs to identify the enemy artillery units and provided a target location for a follow-on dynamic fire mission. In an effort to maximize the lethality of surface-to-surface fires with this battle drill, S-2s integrated terrain analysis to identify suitable enemy position areas for artillery to help predict where the enemy may displace, account for distance and speed of enemy unit, assess enemy unit and weapon system type, and account for munition time of flight. The battle drill proved capable of disrupting the enemy's targeting decision cycle, which was measured by a reduction in the volume of fires on friendly forces. Intelligence architecture planning and execution is key to streamlining and optimizing the battle drill.

Recommendation. Coach units on the intelligence architecture required for receiving GMTI in a degraded communications operational environment. Codify GMTI integration into a battle drill.

DOTMLPF-P. Coach units to task-organize an expeditionary military intelligence battalion's processing, exploitation, and dissemination platoon to support the unit, which would provide the requisite personnel and capabilities needed to exploit and analyze GMTI. Codify GMTI integration into doctrine to influence future force design update.

Doctrinal references. References are not listed due to restricted distribution.

Section 3.5.11. Airspace Management

Observation. DIVARTYs and FABs do not effectively plan airspace against planned and expected counterfire targets, which significantly slows airspace clearance time.

Discussion. DIVARTYs and FABs do not incorporate airspace planning into their targeting process for submission into their UAP, and ultimately the ACO. Those units that do include surface-to-surface airspace requests for their assigned air tasking order (ATO) targets were not observed incorporating this same process for their planned counterfire targets when functioning as the counterfire headquarters. The absence of planned and anticipated surface-to-surface fires airspace in the ACO resulted in significant delays in airspace clearance of fires, especially for those fires violating the coordinating altitude through the division JAGIC.

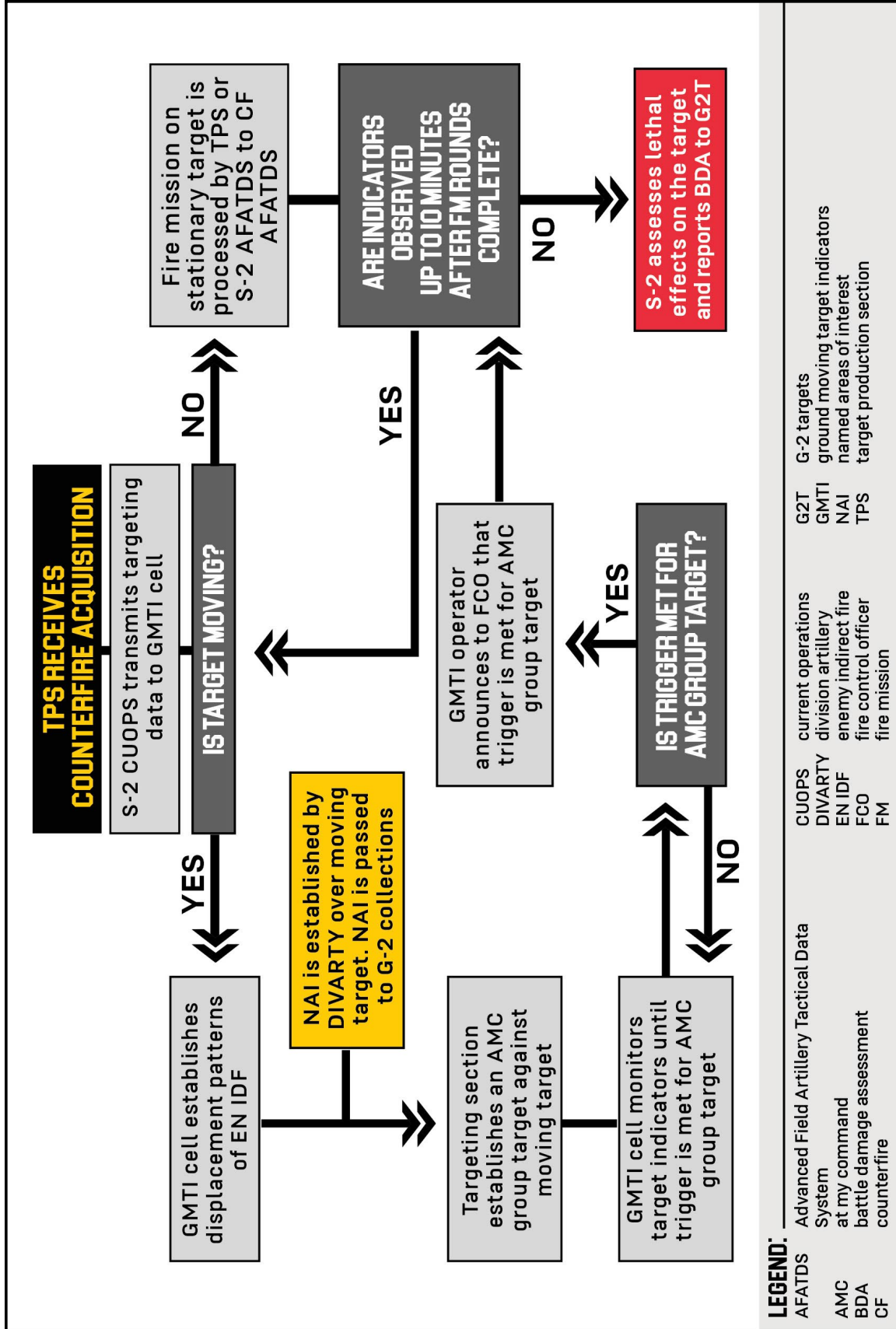


Figure 3-5. S-2 counterfire battle drill

Recommendation. Incorporate airspace planning requirements for deliberate and dynamic targeting and ensure that the submitted UAPs are validated upon receipt of the ACO, usually six hours before execution, to support rapid airspace clearance and a permissive surface-to-surface fires environment. Activate the required ACMs needed to facilitate surface-to-surface fires (see Figure 3-6).

DOTMLPF-P. This trend is primarily a training issue that could be addressed during a unit's training leading up to a WFX.

Doctrinal references. FM 3-52, *Airspace Control*, 20 OCT 2016.

Section 3.5.12. Division Artillery and Field Artillery Brigade Protection Cell

Observation. Units are not manning a protection cell and integrating the protection WfF into DIVARTY and FAB operations.

Discussion. FABs and DIVARTYs do not have a dedicated protection cell with clear roles and responsibilities. As a result, FFAHQ consistently lost half of its combat power to mines, direct fire, and unmanned aerial systems supported with artillery. By modified tables of organization and equipment (MTOE), a DIVARTY is authorized one air defense officer and a chemical officer who could perform the task. However, these individuals have competing requirements. Without a dedicated leader and cell, FABs and DIVARTYs do not place an emphasis on protection planning, coordination, and synchronization. The critical protection tasks are not executed or delegated to the already overwhelmed battle captain due to the absence of a dedicated protection team.

Recommendation. By CPX 2 or no later than 90 days from execution of WFX, identify and appropriately staff the protection cell. The division of responsibility can be distributed throughout the command post (CP). This will only be effective with a clearly defined leader who manages the function.

DOTMLPF-P. This trend is an organization issue. Designate a protection cell on the MTOE, which includes the chemical, biological, radiological, and nuclear (CBRN) officer, NCO, and air defense officer. This would not require any additional personnel, but would clearly state where the responsibility resides.

Doctrinal references. ADP 3-37, *Protection*, 31 JUL 2019.

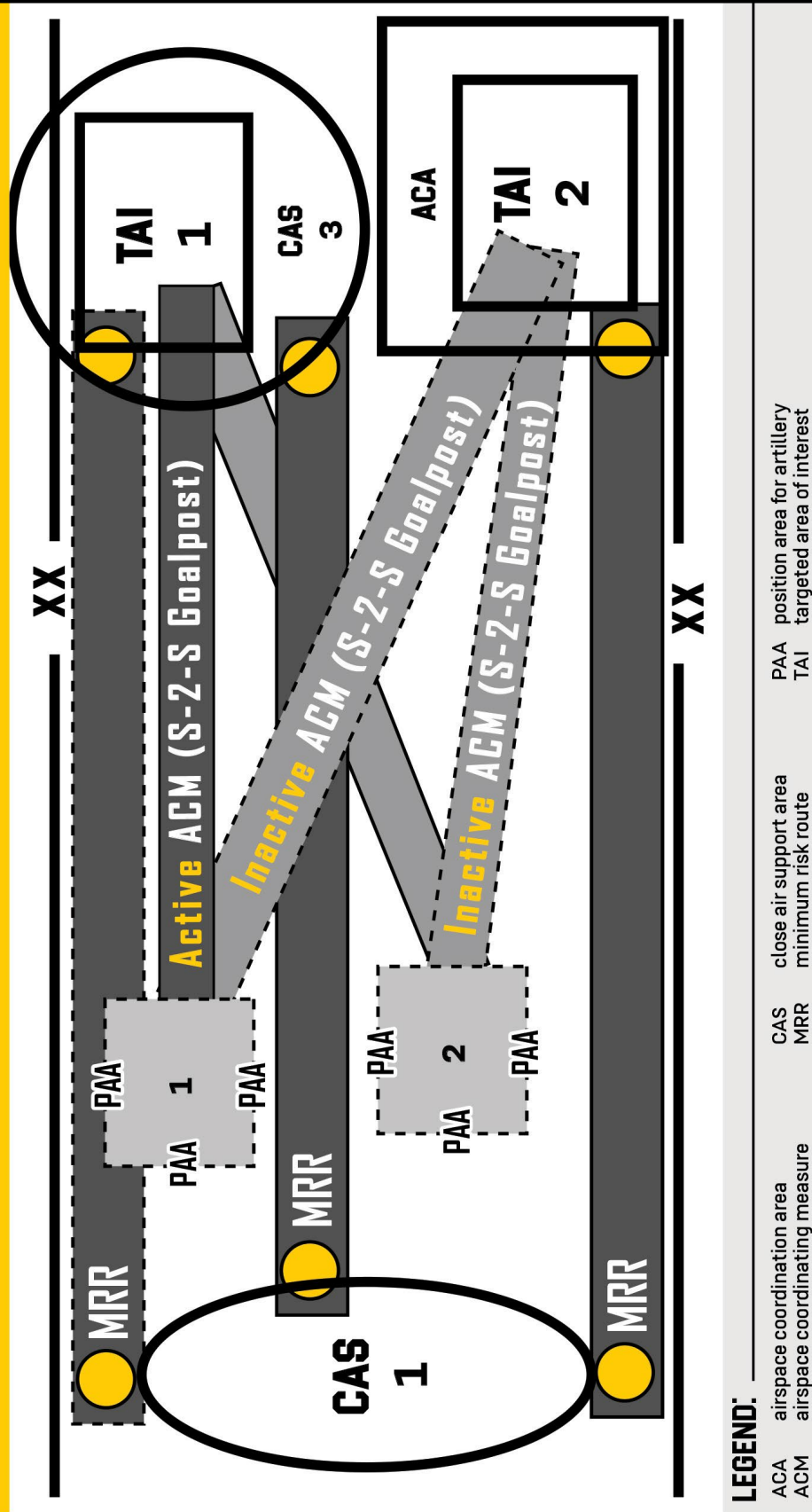
Section 3.5.13. Division Artillery and Field Artillery Brigade Sustainment Liaison Officer Team in the Support Area Command Post

Observation. The majority of units used a sustainment liaison within the SACP to streamline throughput distribution from combat sustainment support battalions (CSSB).

Discussion. DIVARTYs or FABs designating one to four personnel as a sustainment liaison with the SACP became an emerging trend during FY19. In all instances, tracking of critical classes of supplies (CL III, V, and VII) improved within the headquarters. Shared understanding of shortages, risk to mission, and criticality between the S-1 and S-4 and G-1 and G-4 improved. Additionally, during a brigade main CP displacement, the liaison team served as continuity of command and control (C2) for sustainment, which could prove crucial if a displacement timeline is more than 24 hours. The composition of the LNO varied by military occupational specialty (13 or 90 series), but the most successful were proactive at coordination.

JOINT FIRES PLANNING (MAXIMIZE JOINT FIRES)

Preplanning the necessary ACMs and properly managing their activation and deactivation increases the overall effectiveness of joint fires.



LEGEND:

- ACA airspace coordination area
- ACM airspace coordinating measure
- CAS close air support area
- MRR minimum risk route
- PAA position area for artillery
- TAI targeted area of interest

Figure 3-6. Joint fires planning (maximize joint fires)

Recommendation. Develop specified manning, equipment, task, and purpose for the SACP liaison team. Maintain the use of LNOs as the continuity of sustainment during CP displacement. Validate and test the LNO team no later than CPX 3.

DOTMLPF-P. This is a training and personnel solution that provides value to the DIVARTY and FAB.

Doctrinal references. ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017, chapter 1.

Section 3.5.14. Artillery Communication Architecture and Mission Command Information System

Observation. DIVARTYs and FABs are ineffective at employing mission command information systems to streamline fire mission processing across the artillery communication architecture.

Discussion. FABs and DIVARTYs demonstrated proficiency on individual systems (CPOF, AFATDS, air and missile defense workstation, DCGS-A, TAIS, joint capabilities release). However, units demonstrated varying levels of proficiency at integrating all mission command information systems into fire mission processing, planning, and CP operations.

Ineffective digital artillery communication architecture resulted in excessive target decay and canceled fire missions by overwhelmed fire control elements. DCGS-A to JADOCs to AFATDS routing was not created prior to the exercise. This shortfall resulted in labor-intensive and error-prone methods such as secure voice over internet protocol phone calls and transverse chat to process target data into fire missions. In addition, this lack of integration limited the volume of targets sent by the field artillery intelligence officer or JAGIC to the DIVARTY or FAB.

The lack of digital integration also hindered the planning and situational awareness with the higher echelon headquarters, subordinate battalions, and even within the CP. By not connecting the mission command systems through the data distribution service, DIVARTYs and FABs created a digital analog system, which means the data and information remains stale within standalone systems. Digital analog products require manual input, which infers additional labor and risk of error.

For example, a battle NCO will manually draw a CFL on CPOF that was originally recorded on an analog map. This method is time consuming and increases the risk of error. An intelligible solution is to import the fire support coordination measure from AFATDS to CPOF and TAIS through the data distribution service. This one fire support coordination measure represented one of hundreds of pieces of data that can be automated with the tools available within every CP.

Recommendation. Send leaders from every WfF to a digital master gunner (DMG) course to assist with mission command information system assimilation. Establish and retain the CP in a secure facility in garrison. Empower a brigade simulations officer (functional area 57) and DMGs to create a fully integrated and inoperable digital artillery communication architecture. Use weekly digital sustainment training to enable training and materiel readiness.

DOTMLPF-P. Increase MTOE authorization for DMGs.

Doctrinal references. FM 3-09, *Field Artillery Operations and Fire Support*, 04 APR 2014; TC 6-0.2, *Training the Mission Command Warfighting Function for Battalions, Brigades, and Brigade Combat Teams*, 15 JUL 2019.

Section 3.5.15. Transition of Command and Control from Force Field Artillery Headquarters to Another Headquarters

Observation. C2 transfer of DIVARTY functions to an FAB during main CP displacement are not effective.

Discussion. The trends from FY19 indicate a need for DIVARTYs to transfer C2 to a reinforcing FAB to facilitate CP displacement. Doctrinally, the DIVARTY serves as the FFAHQ and counterfire headquarters for a division. Based on these unique responsibilities and the existing relationships the DIVARTY has with the division staff, transitioning these authorities to an FAB that is aligned with a corps is problematic. Without a working knowledge of the division, FABs struggle to execute the FFAHQ or counterfire headquarters role effectively. They do not typically receive the authorities normally delegated by the division commanding general to manage radars, adjust fire support coordination measures, and modify the field artillery organization for combat. The lack of a working relationship with the division JAGIC significantly increases fire mission processing times, particularly during counterfire, substantially reducing effectiveness.

Recommendation. Educate the DIVARTY on the full duties and responsibilities of the FFAHQ and counterfire headquarters. Ensure clarity and shared understanding of the critical linkage between the DIVARTY and division staff. Execute fire control exercises that include division, corps, and JAGIC to train transition of C2 and non-standard fire control routing.

DOTMLPF-P. This trend is primarily a training issue that could be remedied through SOPs and practicing CP displacement.

Doctrinal references. ATP 3-09.90, *Division Artillery Operations and Fire Support for the Division*, 12 OCT 2017; TC 6-0.2, *Training the Mission Command Warfighting Function for Battalions, Brigades, and Brigade Combat Teams*, 15 JUL 2019.

SECTION 3.6. NATIONAL GUARD BRIGADE COMBAT TEAMS TRENDS

Section 3.6.1. Planning Horizons and Timelines

Observation. BCTs struggle to define and maintain planning horizons and complete the plan with sufficient detail and product output to subordinate units.

Discussion. BCT planning and operations processes routinely struggled to appropriately manage the execution of the MDMP on a timeline and in a manner that produced the required synchronization, achieved the commander's intent, and incorporated staff from across WfFs. The following were four main sources of friction that frustrated the BCT planning process:

- A lack of preparation to conduct planning, a plan to plan beyond a stated timeline.
- A lack of dedicated cross functional plans teams.
- A failure to clearly define and enforce the required inputs and outputs of each step of MDMP.
- Compounded by the previous three sources of friction was a failure to adhere to a planning timeline that allowed subordinate units sufficient time to plan and prepare.

Frequently, the BCT staff did not realize how little time subordinate units had been allocated because it generally published an order close to its original timeline. In reality, errors and gaps in the order were so significant that it required numerous updates and changes, up to and after units crossed the line of departure. These friction points culminated in an overall lack of understanding of the BCT plan and how the actions of their formation related to friendly and enemy units in time and space.

Recommendation. Conduct thorough preparation for planning, which like any military activity requires preparation and training. BCTs should clearly define how they will plan, the required tools, and the timeline. A BCT's plans standard operating procedure (PSOP) will define how a BCT will plan, but for a PSOP to be effective, plans teams should be trained against these standards and conditions. Leaders at the BCT level should use their PSOPs to drive planning efforts and ensure the necessary conditions are set to enable proper planning. Plans efforts cannot be left in the hands of the plans officers alone and should be closely guided by frequent and direct command group interface. Establish standing plans teams and train them similar to a vehicle crew or infantry squad. BCTs should clearly define who will compose plans teams. While BCTs frequently designate core planners, additional officers and NCOs should be assigned to planning efforts based on the mission and relieved of other responsibilities such as CUOPS or functional cell tasks. All WfFs should be integrated into planning efforts. Each WfF has a responsibility to support planning efforts, particularly from those specialties that reside outside the area of expertise of the designated core planners such as air defense, medical, civil affairs, etc.

Establish clear definition and delineation between the steps of MDMP. BCT leaders should clearly define the mission critical and mission enhancing inputs and outputs of MDMP, and when and which conditions are met to transition between one step and the next. Without clearly defining completion of the steps of MDMP, BCT planners frequently move to the next step without completing the previous step. This is most often the case with mission analysis, where the BCTs continuously made significant revisions to their assessments, causing substantial changes to the plan while still not fully understanding the operational environment, the enemy, or themselves. Provide subordinate units with adequate time to plan. Doctrine and practice recommends adherence to a 1/3 to 2/3 rule for higher headquarters to subordinate unit planning time. BCTs can mitigate extended planning by conducting collaborative and parallel planning with subordinate units.

DOTMLPF-P. This trend is largely a training issue. Focused staff training conducted by the unit on the execution of MDMP, SOP refinement, and understanding of WfF integration during planning will improve this trend.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, (with change 2), 05 MAY 2014; ATP 5-0.1, *Army Design Methodology*, 01 JUL 2015.

Section 3.6.2. Mission Rehearsals

Observation. Rehearsals do not synchronize operations or enhance shared understanding and generally revert to wargaming with command involvement.

Discussion. BCT staffs do not put sufficient rigor into COA analysis, resulting in a conceptual plan that does not synchronize combined arms maneuver and lacks input from all WfFs. The combined arms rehearsal (CAR) and the supporting functional rehearsals that occur prior end up being regurgitations of the concept of the operation or COA analysis events with command oversight. Failing to transition to detailed planning during COA analysis limits the effectiveness of these critical rehearsals. Although it is natural for some mission adjustment to occur during rehearsals, rehearsals should focus on friction points, critical events, and gaps in the plan, ensuring synchronization and understanding. Inadequate COA analysis results in poorly executed supporting functional rehearsals and CARs, necessitating major adjustments to the scheme of maneuver. For unit rehearsals to be successful, BCT staff should thoroughly war-game the plan prior to orders publication and rehearsal execution.

Recommendation. Place leader emphasis on quality COA analysis. BCT command groups should place heavy emphasis on their staffs executing quality COA analysis, to include clearly defining the necessary inputs to the wargame, the method of wargame that will be executed, and applying the proper leadership and senior staff to execute the wargame. COA analysis should be executed with the executive officer or lead S-3, with primary staff supported by planners representing their functional areas in heavy participation. The wargame should be organized with clear rules and defined outputs, most importantly, a thorough synchronization matrix by WfF and subordinate unit. Prepare for rehearsal execution. BCTs can only proceed to functional rehearsals and the CAR after the staff has conducted thorough COA analysis and the staff and subordinate units understand the plan. Commanders and staff should confirm that conditions are set to proceed to rehearsal execution by briefing the OPORD and conducting staff and subordinate unit confirmation briefs and backbriefs. BCT PSOPs need to codify in general terms what and how staffs and subordinate commands will participate in rehearsals as guided by the executive officer or S-3.

DOTMLPF-P. This trend is mostly a training issue. Focused staff training conducted by the unit on the execution of COA analysis, wargaming, and rehearsals and their outputs will improve this trend.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014.

Section 3.6.3. Common Operational Picture

Observation. Units struggle to maintain a COP that is accurate, relevant, and enables rapid decision making and assessment.

Discussion. BCTs struggle to maintain a digital or analog COP. The lack of a single COP prevents the commander and staff from making rapid and timely decisions as critical information is often not readily displayed and integrated in an instantly accessible fashion. Current operations integration cells (COICs) frequently use multiple maps to track friendly and enemy unit locations and activities, do not follow their SOPs for updating and integrating critical information from all WfFs, and continue to stovepipe information within functional cells. Critical information is available but not displayed, wasting valuable time attempting to find the subject matter experts. COICs frequently lack complete WfF integration, missing critical personnel and information necessary to fight the BCT and produce fragmentary orders (FRAGORDs). In an effort to build smaller and more agile CPs, BCTs have sacrificed collaboration without fully assessing the potential degradation of COIC capability.

Recommendation. Use one map. The COIC map set, graphics, and overlays should form the basis for the BCT COP. All relevant information from each WfF should be depicted in graphic overlays, including enemy graphics, to enable rapid assessment and decision making. Graphics and overlays should be updated every time friendly or enemy units move. The battle NCO should be empowered to ensure compliance. Consolidate and display relevant information. Around the COIC map, all other relevant information should be displayed, including staff running estimates, available combat power, and fighting products such as decision support matrices, commander's critical information requirements (CCIRs), and the operational synchronization matrix—all products necessary to fight the BCT. Clearly define the activities and staffing of the COIC in the SOP. BCTs should make clear which activities the COIC should perform and assign personnel to perform those functions. As an integrating cell, the COIC should include personnel across all WfFs to maintain accurate and timely assessment. Refine and integrate events, such as shift change briefs and two-minute drills, into the overall process for ensuring a COP, supporting collaboration, and shared understanding. The COIC should be manned to fight the BCT and manage substantial quantities of information, but produce FRAGORDs as necessary to direct the actions of the BCT.

DOTMLPF-P. This trend is a staff training and procedural issue. Ensure the staff sections use the same scale map with general graphics for planning purposes. Train the staff to manage running estimates, determine what information is relevant to the COP, and frequently update the COP through the COIC staff.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017.

Section 3.6.4. Transition of Command and Control Between the Main and Tactical Command Posts

Observation. Units fail to develop and adhere to a structured process for facilitating the transition of C2 and relevant information between command nodes during displacement.

Discussion. The BCT commander employs the tactical command post (TAC CP) as an extension of the main CP to help control the execution of an operation and designated mission command tasks. Commanders and staffs struggle to define the personnel and equipment needed to facilitate situational understanding and control the fight from the TAC CP. Most units fail to recognize these as redundant and coexisting command nodes and lack a solid plan to transition C2 between the main CP and TAC CP. Units struggle to understand which systems, personnel, and capabilities need to be operational prior to assuming and transitioning command, which is usually due to a lack of a deliberate plan to identify and track specific information requirements, setting conditions to maintain a COP between the nodes. Too often, a transition of C2 only occurs when initial command, control, communications, computers, and intelligence systems are functioning, instead of following a thorough handover process, facilitating parity of situational awareness between the nodes. Commanders and staffs understood the need to exercise and implement the TAC CP, but struggled to understand the time required for movement, setup, and establishment.

Units also struggled with how to best man and equip the TAC CP. Ubiquitously, units codified the manning and equipment requirements of the TAC CP within their SOP, but failed to implement them as published. Commanders and staff representatives in the TAC would frequently fail to bring systems or personnel required to clear surface-to-surface fires or coordinate effects of joint aircraft on the battlefield. This burdened the battalions to clear BCT airspace or ensured the BCT was dividing its attention between three separate battalion-level fights, which led to a significant loss of capability at the BCT level.

Recommendation. Units should—

- Establish and execute technical rehearsals of all mission command systems and exercise CP setup, displacement, and functions during training exercises.
- Be capable of deploying, operating, positioning, and displacing CPs rapidly to operate in LSCO over large distances.
- Conduct frequent CP battle drills and update running estimates to ensure commonality of understanding among the staff and between nodes.
- Establish SOPs to detach the TAC CP from the MAIN CP for controlling specific operations or tasks.
- Document the staff (by MTOE position or functionality) and equipment assigned to the TAC CP in the TACSOP.
- Identify and codify the roles and responsibilities within each CPs in their SOPs to ensure effective unity of effort while exercising the TAC CP.

DOTMLPF-P. This trend is a training issue. Train staffs and planners to manage the transition by forecasting the likely need to employ the TAC CP and which systems, personnel, and equipment are necessary to control the operation for extended durations. Train on the requisite technical rehearsals and sequence them to properly facilitate situational understanding during transitions.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017.

Section 3.6.5. Movement and Maneuver: Integration of Army Aviation and Airspace Management into the Planning Process

Observation. The integration and synchronization of airspace management and Army aviation within the BCT plan was a consistent struggle for most BCTs early in the exercises.

Discussion. In most cases, the ADAM/BAE understood the concept of building a UAP that integrated and prioritized airspace users, but struggled to implement it. ADAM/BAE, fires, and plans lacked a common understanding of the different ACMs failing to fully support and enable the BCT scheme of maneuver. Believing they could not fire above a certain altitude and not understanding the airspace clearing process affected the range of the guns, which affected the tempo of the maneuver units and the massing of effects on the attack. When a representative from the ADAM/BAE was present and heavily involved in mission planning, combined arms maneuver improved. During each exercise, the ADAM/BAE gained a greater understanding of its responsibilities, including the UAP and ACO/ATO process, which allowed simultaneous use of indirect fires, CAS, information collection assets, and Army attack aviation.

Many BCT planners had trouble integrating attack aviation into their ground tactical plan due to poor communication and a lack of understanding of the asset. Planning for employment of attack aviation was not integrated across the staff or synchronized through all phases of the operation, resulting in indecision regarding when and how to mass effects. Efforts to mass effects were frustrated by a lack of cross functional staff input, including incomplete information and running estimates from the S-2, BAE, and fires, negatively impacting the timing and synchronization of the plan. Planners were frequently unclear how many attack and lift aviation assets were available, what their capabilities were, and how they were task-organized. Whether planning for reconnaissance, offense, or defense operations, inadequate staff input resulted in an incomplete plan.

Recommendation. Continue to include airspace planning throughout all steps of MDMP and incorporate into rehearsals prior to execution. Codify application of airspace requirements being collected throughout MDMP in future SOPs. Clearly define the role and responsibilities of the ADAM/BAE cell. Use the ADAM/BAE during planning events and working groups to integrate army aviation with the scheme of maneuver.

DOTMLPF-P. This trend is a training issue. Staffs and planners should be trained to operate in a collaborative environment, integrating all WfFs. Additionally, the entire staff should have a basic understanding of ACMs and the capabilities and limitations of Army attack aviation.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014; ATP 3-04.1, *Aviation Tactical Employment*, 13 APR 2016. Other references are not listed due to restricted distribution.

Section 3.6.6. Battle Tracking and Battle Damage Assessment

Observation. The IWfF consistently experienced challenges using the information gathered from collection assets and subordinate units to depict and maintain an accurate representation of the enemy on their analog and digital COPs.

Discussion. BCTs used various tracking mechanisms for enemy BDA. Some used large analog charts with silhouettes that were crossed off. These charts were posted in the COIC to provide the commander and staff a visualization of the overall enemy BDA. Other BCTs had no visual charts and used a spreadsheet on a shared drive, then briefed the BDA during key events. A third method involved using percentages and bubble charts on CPOF, which was subsequently projected in the COIC. All BCTs demonstrated confusion on the communications procedures for receiving and distributing BDA reports to and from their organic subordinate units. The root of the confusion in most cases was between operations and intelligence. If the report was provided to the battle captain in the COIC, there was not a clear plan to ensure that the S-2 was able to capture the BDA from it. In other instances, the subordinate unit reported directly to the S-2, which left the battle captain uninformed. Brigades also demonstrated a lack of understanding when it came to tracking the enemy BDA geospatially. Units tracked overall percentages, but not by enemy zone or friendly objective. The S-2 would state that the enemy brigade tactical group had 50% of its BMPs, but leave out the location. Therefore, the BCT had no way to assess force ratios on a specific objective. If all 50% of the remaining BMPs were on “OBJ ARIZONA” for example, that could be a decision point for the commander if an infantry company was tasked to attack that objective. This led to an unrefined enemy picture and uncertainty among the staff of which enemy assets remained arrayed where on the battlefield. The combination of organic reporting challenges, geospatial BDA tracking, and lack of control over their information collection platforms led to inconsistent reporting and prevented most units from being able to effectively update the enemy portion of the COP promptly so the commander could make rapid decisions.

Recommendation. Develop and codify the collection, reporting, and geospatial tracking method for BDA on analog and digital products in unit SOPs. Codify the delineation of formal combat reporting through the COIC battle captain and informal parallel WfF reporting chains in the SOP. Codify the S-2 CUOPS roles and responsibilities and the methods for maintaining the enemy portion of the COP in the SOP. Develop an IWfF communication plan (PACE) for each type of product, ensuring effective receipt and dissemination of information and reports, internally and externally.

DOTMLPF-P. This trend is a training issue. MCTP can help BCTs by providing several ways to collect, report, and track BDA geospatially on analog and digital products. MCTP can also assist with delineation of formal combat reporting through the COIC and informal parallel WfF reporting chains. During the day 1 WfF breakouts, the intelligence observer-coach/trainers (OC/Ts) can lead a discussion on the topic with the BCT S-2 cell.

Doctrinal references. ATP 2-19.4, *Brigade Combat Team Intelligence Techniques*, 10 FEB 2015. Other references are not listed due to restricted distribution.

Section 3.6.7. Intelligence Personnel Roles and Responsibilities

Observation. The BCT intelligence leaders did not typically have a clear understanding of their assigned roles and responsibilities when the brigade S-2 section combined with the military intelligence company (MICO) to form the brigade intelligence support element (BISE) and CP functional cells.

Discussion. BCT S-2s seemed unsure how to task-organize their staff section with the MICO and attachments to operate as a WfF. Most BCT S-2s struggled to manage their staff section in the beginning of the exercise. The MICO or BISE typically started the exercise as its own entity and was only truly integrated after the S-2 became more comfortable with the organization of the brigade's intelligence staff section. National Guard BCT S-2s faced an additional challenge because for some the MICO was from another state, and they were typically only vaguely familiar with the commander. The lack of familiarity led to lost time as the BCT S-2 developed an understanding of his relationship and authority with the various commanders. Successful BCT S-2s began with a strong plan, were supported by the commanders, and the relationship with the MICO was clearly defined in the OPORD. The BCT S-2 defined the duties of the MICO commander, the location of the BISE, and any attachments. Despite being assigned roles, members of the IWfF were still not familiar with their responsibilities or trained on the individual tasks associated with their roles and expectations. During the start of several exercises, personnel became confused on their fluid roles and responsibilities, which led to desynchronized efforts within the overall IWfF and intelligence support to the staff. Units designated a permanent intelligence officer for the plans cell to conduct information collection planning, but these efforts were not synchronized with the rest of the IWfF. This resulted in NAIs on the map with nothing to look at during COA analysis and a separate enemy overlay developed in the BISE depicting the enemy outside nearly all the NAIs. Over time, intelligence sections typically refined their roles and responsibilities, along with production due outs which increased their intelligence support to operations.

Recommendation. Codify roles and responsibilities in SOPs to train S-2 and BISE leaders and their junior Soldiers within their respective cells. This should include the purpose, responsibility, and intent for how their roles contribute to the overall mission.

DOTMLPF-P. This trend is a training issue. MCTP can help BCTs by providing several ways to define the roles and responsibilities before a unit arrives at the brigade warfighter exercise. During the day 1 WfF breakouts, the intelligence OC/Ts can lead a discussion on the topic with the BCT S-2 cell.

Doctrinal references. ATP 2-19.4, *Brigade Combat Team Intelligence Techniques*, 10 FEB 2015. Other references are not listed due to restricted distribution.

Section 3.6.8. Split Brigade Intelligence Support Element Operations

Observation. The need for a more mobile main CP has led some units to split the BISE with a portion remaining attached to the main CP and another portion separated from the main CP.

Discussion. Armored BCTs and Stryker BCTs have determined a need for a more mobile main CP. These were typically constructed using three or more M1087, 5-ton, family of medium tactical vehicles, expandable vans (also known as expando vans), resulting in a reduced number of personnel in the intelligence cell inside of the main CP due to a limited amount of available space. The remainder of the BISE was located in a tent or other shelter outside of the main CP, which led to several communications challenges that often restricted the brigade's ability to fully leverage the complete capabilities of the BISE. The lack of a CPOF in the segmented BISE or functioning data flow via DCGS-A through the data distribution service often meant that the BISE could not assist S-2 CUOPS personnel in the COIC, resulting in the S-2 CUOPS cell (typically only two personnel) building and maintaining the entire intelligence portion of the digital COP. The collocation of the MICO's analysis platoon, and other assets (for example, operational management team, Prophet Control) that may need to be integrated into the brigade intelligence section leads to better opportunities for fusion within the entire BISE. The separation of the BISE leads to communications planning that is equal to using a reachback cell. The benefit of having analysts physically located together cannot be underestimated.

Recommendation. Conduct detailed analysis on the risk associated with split BISE operations to balance mobility with functionality. Codify the detailed communications plan to overcome the physical distance between the two BISE sections to include a PACE plan for each type of product. Codify the roles and responsibilities in the unit SOP. A solution for the future would be to modify the equipment assigned on MTOE to the MICO to allow for the analysts to work from two locations.

DOTMLPF-P. This trend falls into several categories. The Army should decide what a main and TAC CP need and then source a materiel solution, which would add the right equipment to the MICO to complete its mission. Before this happens, MCTP can help BCTs in training to prepare the unit to function in the correct method.

Doctrinal references. ATP 2-19.4, *Brigade Combat Team Intelligence Techniques*, 10 FEB 2015. Other references are not listed due to restricted distribution.

Section 3.6.9. Staff Integrated Intelligence Preparation of the Battlefield

Observation. Units that plan for and execute a staff-integrated IPB create substantially greater shared understanding and preparedness for subsequent planning steps.

Discussion. Units that do not include staff-integrated IPB in their battle rhythm often struggle to develop an early shared understanding across the staff during mission analysis, resulting in time wasted during COA development to gain the required shared understanding across the staff. Some units included an executive officer-led working group early in mission analysis that was solely focused on staff integrated IPB, which provides a detailed understanding of the enemy across the staff. This process should be disciplined and trained on prior to execution during a brigade WFX. The S-2 should provide each WfF access to detailed threat products so that it can research and understand these threat capabilities from its WfF's perspective. For example, a fires officer on the unit's staff needs to know and understand the enemy fires assets and their capabilities to assist with developing the enemy situational template. This allows the staff to provide detailed analysis and assist in building the enemy COAs as a team. Units that successfully executed this process often backbriefed the staff around a map. The time spent working on staff-integrated IPB is quickly made up during the rest of mission and COA development due to shared understanding early in MDMP.

Recommendation. Codify the staff-integrated IPB process in the unit's SOP. Allocate time in the battle rhythm and planning timeline specifically for a staff-integrated IPB working group.

DOTMLPF-P. This trend is a training issue. MCTP can help BCTs by leading a discussion on the topic with the BCT S-2 cell. This topic will also be cover with the entire staff during the MDMP trends discussion.

Doctrinal references. ATP 2-19.4, *Brigade Combat Team Intelligence Techniques*, 10 FEB 2015. Other references are not listed due to restricted distribution.

Section 3.6.10. Massing Fires at the Decisive Point

Observation. BCTs struggle to mass fires at the decisive point in LSCO. A stovepiped approach to COA development fails to integrate WfF competencies and degrades fires' ability to shape and support maneuver.

Discussion. Planning the maneuver main effort COA without integrating fires puts planners in the position of figuring out how fires can fit into a plan already deemed feasible without fires, instead of planning fires as a functional piece of the plan. This ends with poor fire support tasks (FSTs) at brigade-level, which leads to poor field artillery tasks (FATs) at the cannon battalion. This planning failure affects subsequent preparation and execution steps of operations. FSTs coming out of COA development that were generated by the fires cell tagging onto the plan rather than from a maneuver requirement lack focus and detail, making it difficult for battalion fire support officers to nest their FSTs with the BCT's. Additionally, no guidance can be given to AFATDS operators regarding dynamic targets apart from the HPTL because there is no coherent fires plan. When fires ends its planning, the products that get back to the field artillery battalion tend to show sporadic targets that are not linked to the maneuver plan. The resulting FATs produced are generally ambiguous. This makes planning delivery system scheme of maneuver and setting resupply triggers difficult.

Recommendation. During COA development, the maneuver and fires planners should integrate to prevent a branching between maneuver and fires efforts and to maintain a common line of synchronized effort. Maneuver planners should consider task and purpose statements of fires targets as they would if employing a maneuver unit to do the same. BCT fire support coordinators should ensure the planned targets are executable and support the BCT commander's intent. This would ensure that fire support is tasked with attacking targets for the brigade commander's effort, rather than individual maneuver units. This also gives fires the potential to relieve maneuver units of a battlefield task instead of maneuver inadvertently tasking itself. Finally, this would ensure that delivery system movement, placement on the battlefield, and protection is considered as well.

DOTMLPF-P. This trend is a training issue. This trend is highlighted at the consolidated main event planning conference where BCTs are asked to incorporate training for this into their train-up. MCTP can also help BCTs by teaching this principle during the targeting and MDMP classes.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014; ADP 3-0, *Operations*, 31 JUL 2019; ATP 3-09.42, *Fire Support for the Brigade Combat Team*, 01 MAR 2016.

Section 3.6.11. Ineffective Sustainment Battle Tracking

Observation. BCT sustainment cells did not have effective methods of battle tracking sustainment or sharing this information outside the sustainment cell.

Discussion. BCT sustainment cells struggled to accurately track the status of sustainment. There was often a disconnect between what was reported by the subordinate units and what the sustainment cell tracked, reported to higher echelon headquarters, and requested from the echelons above brigade sustainment units. This resulted in BCT staff trackers not accurately reflecting what was expended by the subordinate units and delivered by the brigade support battalion and sustainment brigade. Battle tracking inaccuracies included significant discrepancies in equipment statuses, amounts of critical commodities, internal and external movements, and casualties. Internal sustainment working groups generally did not improve the sustainment cells' ability to detect discrepancies, make necessary adjustments, and forecast for future requirements because of low participation across the staff.

Each BCT attempted to track the statuses of equipment, commodities, and personnel; however, typically the information was not shared with the COIC or other CP cells. Shared information was frequently delayed or inaccurate. Consequentially, the COIC, plans, functional cells, and commander did not have a complete understanding of the BCT's posture and capabilities related to personnel; weapons; ammunition; and petroleum, oil, and lubricant indicators of combat effectiveness. This limited understanding hindered future planning, assessments of how the battle was progressing, decision making on employment of reserve forces, and potentially put the BCTs' mission at risk for failure.

Recommendation. The sustainment cell should ensure the commander and staff are able to visualize the unit's combat power and capabilities in time and space to facilitate successful execution of the BCT's mission. Precise and timely battle tracking is key to ensuring accurate analysis from the staff and decisions by the commander. The sustainment cell should develop systems, processes, and tools for battle tracking and update the BCT's TACSOP to reflect the changes. The TACSOP changes should reflect the method and frequency that the sustainment cell provides analog and digital reports to the COIC to ensure shared understanding of the BCT's posture and capabilities.

The sustainment cell, in conjunction with the other WfFs, BCT S-3, and BCT executive officer, should define which capabilities the BCT should track as combat power to inform CCIRs, decision points, and planning efforts. Preferably, the capabilities to track should be defined during mission analysis and proposed to the commander during the mission analysis brief. Once approved, the sustainment cell should track and continuously report the corresponding statuses of weapons systems, critical commodities, and personnel that support these capabilities to the COIC.

DOTMLPF-P. This trend is a training issue. MCTP can help BCTs by teaching this principle during WfF breakout sessions.

Doctrinal references. ADP 4-0, *Sustainment*, 31 JUL 2019; FM 3-96, *Brigade Combat Team*, 08 OCT 2015; FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014.

Section 3.6.12. Incomplete Logistics Estimates Result in Inability to Provide Anticipatory Sustainment Support

Observation. Sustainment cells are unaware of the distinction between running estimates and logistics estimates required to forecast and anticipate operational requirements.

Discussion. Doctrinally, synthesized information from the logistics estimates feed the sustainment cell's MDMP running estimate and enable the commander and staff to visualize and adapt the plan (or assume risk) based on logistics requirements. Producing running estimates without detailed logistics estimates resulted in ineffective mission analysis and reliance on LOGSTAT and personnel status reports for the duration of the operation. BCTs that did not produce detailed logistics estimates were forced to rely on reactive, instead of proactive, sustainment support. As operations progressed, BCT sustainment cells failed to forecast critical logistics requirements and provide the commander with options to mitigate or accept risk. The most prominent example relates to casualty estimation and mass casualty operations. Sustainment cells that did not conduct detailed and operationally focused casualty estimates were not able to anticipate battlefield losses, which ultimately led to the overall inability to prolong endurance or enable freedom of action.

Recommendation. Sustainment cells should develop detailed logistics estimates based on operational requirements to anticipate shortfalls and provide recommendations during the planning process. Logistics estimates and running estimates are separate and distinct staff products required for effective planning and forecasting. Information derived from the logistics estimates feeds the MDMP running estimate for sustainment. Requirements should be synchronized with the operational plan during the sustainment rehearsal and ultimately collated in the sustainment synchronization matrix. As the operation progresses, the synchronization matrix (and logistics estimates) should be continually validated and refined during daily logistics synchronization meetings and sustainment working groups.

DOTMLPF-P. This trend is a training issue. MCTP can help BCTs by teaching this principle during the MTC, WfF breakout classes, and each iteration of MDMP.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations* (with change 2), 05 MAY 2014; FM 4-0 *Sustainment Operations*, 31 JUL 2019; ADP 4-0, *Sustainment*, 31 JUL 2019; ATP 4-90 (Change 1), *Brigade Support Battalion*, 29 APR 2016; FM 3-96, *Brigade Combat Team*, 08 OCT 2015.

Section 3.6.13. Protection Cell Integration

Observation. Protection cells struggle to fully integrate with other WfFs during planning efforts.

Discussion. The protection cell, led by the protection officer, is charged with developing the scheme of protection that supports the commander's intent and uses commander's guidance to set priorities outlined in the protection prioritization list (PPL). This requires the protection cell to not only have a clear understanding of commander's intent and guidance, but how they are going to work with other WfFs to integrate into the operations process.

The brigade engineer is usually chosen to serve as the protection officer for the protection cell comprised of officers and NCOs from the engineer, chemical, military police, and air defense artillery functional areas. These personnel are selected because of their expertise in their function and ability to address issues the BCT faces with protecting and preserving combat power. While these individuals are experts in their functional area, they do not have the depth of knowledge or expertise required to effectively address all 16 tasks of the protection WfF without support from other WfFs. The struggle to nest other WfFs with protection and the operations process results in an ineffective scheme of protection and PPL, and more importantly, unnecessary loss of personnel and equipment.

Recommendation. Establish an internal system that addresses task and purpose of the protection cell to assist with defining roles and responsibilities for each member of the team. Negate the limitations of the protection cell by conducting an effective protection working group and ensuring personnel from within the cell are attending relevant working groups, such as the information collection and sustainment working groups. Finally, develop a draft scheme of protection and PPL based on the mission statement and commander's intent. Use these draft documents during MDMP and the initial working group to further refine how the brigade is going to protect the identified critical assets.

DOTMLPF-P. This trend is a training and leadership issue. These issues can be addressed by coaching the protection officer and protection cell members while working work with other WfFs to help ensure protection is integrated in the operations process.

Doctrinal references. ADP 3-37, *Protection*, 31 JUL 2019; ADP 3-0, *Operations*, 31 JUL 2019; FM 3-96, *Brigade Combat Team*, 08 OCT 2015.

CHAPTER 4

Sustainment

SECTION 4.1. UNDERUTILIZATION OF OPERATIONAL CONTRACT SUPPORT TO MITIGATE SHORTFALLS

Observation. Sustainment brigades and expeditionary sustainment commands (ESC) lack adequate operational contract support (OCS) cells capable of planning and overseeing contracting as a means to mitigate sustainment shortfalls in capabilities. Additionally, units lack staff synchronization and integration across warfighting functions (WfFs) and integrating cells with the implementation of OCS, resulting in a lack of nonstandard logistics available to units to mitigate capabilities gaps.

Discussion. The lack of integration among sustainment brigade and ESC staff sections in OCS operations results in underutilization of OCS, which could help provide solutions to sustainment shortfalls. The lack of integration among the staff often leads to a delay in awarding a contract or the lack of identifying a potential solution through contracting. It is important to implement and codify staff integration with the OCS cell in the tactical standard operating procedure (TACSOP) and define staff OCS roles and responsibilities within planning horizons.

Units should require staff section representatives to attend the requirement review board (RRB), which is the staff's mechanism to review, validate, prioritize, and approve selected contract support requests. Having the subject matter expert from the staff at all RRBs is a best practice for allowing the RRB voting members to receive quick and accurate feedback regarding the importance and potential overall impact of the mission if their requirement is not approved.

Additionally, many OCS cells in sustainment brigade and ESC support operations (SPO) sections lack the resident knowledge and skills to handle the multitude of contracting options during large-scale combat operations (LSCO). Units should ensure that OCS planning is recognized as a mission essential task with proper command emphasis and trained staff.

Recommendation. Sustainment brigades and ESCs should appoint members of the unit's OCS cell immediately upon notification of a mission if they do not already have a standing section in the staff. Units should send members from all commodities sections within the SPO section to the Army's OCS course (Additional Skill Identifier [ASI] 3C). Additionally, they should send the officer in charge of the OCS cell to the Joint Operational Contract Support Planning and Execution Course. This formal training will assist the OCS cell and SPO with providing the commander a more complete nonstandard logistics picture. It will allow knowledgeable staff the ability to advise the commander and others on contracting matters, integrate OCS among the entire staff, submit requirements packets, manage contract actions, and interface with contracting activities. Units should implement and codify the importance of staff integration with OCS in their TACSOP and define the OCS section's roles and responsibilities within planning horizons as part of the unit's staff terms of reference.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training issue. Formal training needs to be scheduled and executed for OCS personnel upon arriving to the unit.

Doctrinal references. Army Techniques Publication (ATP) 4-10, *Multi-Service Tactics, Techniques, and Procedures for Operational Contract Support*, 18 FEB 2016; Joint Publication 4-10, *Operational Contract Support*, 04 MAR 2019.

SECTION 4.2.

LACK OF MORTUARY AFFAIRS PLANNING, SYNCHRONIZATION, AND MITIGATION IN LARGE-SCALE COMBAT OPERATIONS

Observation. Mortuary affairs (MA) sections in sustainment brigades and ESCs continue to struggle with understanding the scale and scope of casualties within the corps during LSCO and how to adequately mitigate the shortfalls in processing, storage, and transportation of human remains.

Discussion. The ESC's distribution management center (DMC) and sustainment brigade SPO MA sections continue to struggle with forecasting the anticipated storage and transportation requirements for human remains. Additionally, these sections struggle to efficiently mitigate shortfalls in storage and transportation of human remains during LSCO. Many MA sections are not adequately integrated into the DMC staff and OCS cells within their units. In many exercises, MA sections are not effectively resourced with enough personnel and do not participate in key battle rhythm events.

Recommendation. ESCs and sustainment brigades should resource its MA section with dedicated personnel who can provide planning and oversight to MA operations during LSCO. If possible, units should send MA personnel to the Mortuary Affairs Officers Course (ASI 4V) at Fort Lee, VA, for additional training, if they do not have the MA specialist (92M) military occupational specialty.

The MA section should treat the movement of retrograded human remains similar to other commodities within the SPO (or DMC) section similar to the planning of fuel or water replenishment. The MA section should also be present and have input in logistics synchronization (LOGSYNC) meetings, distribution management boards (DMB), and movement boards to ensure the staff deliberately plans for the timely rearward movement of human remains throughout the area of operations (AOs) back to the theater mortuary evacuation point.

The MA sections should also integrate early with the unit's OCS cell to generate contracting requirement packets to help mitigate shortfalls in ice, refrigeration storage, and transportation. Finally, the MA sections of sustainment brigades and ESCs need to ensure their plans, estimate, and reporting are nested with the unit's S-1 or G-1 section, surgeon cell, and human resources operations branch (HROB).

DOTMLPF-P. This trend is a training issue. The leaders of the MA section should attend the Mortuary Affairs Officer Course and then develop a training plan to develop personnel to ensure that MA is a planned and resourced element within the Army system to retrograde the deceased.

Doctrinal references. ATP 4-46, *Contingency Fatality Operations*, 17 DEC 2014.

SECTION 4.3. HUMAN RESOURCES OPERATIONS BRANCH STRUGGLES WITH THE SCALE OF REPLACEMENT OPERATIONS

Observation. The HROB struggles with the execution of its mission because the scope and scale of replacement operations during LSCO often overwhelms the section.

Discussion. During warfighter exercises (WFXs), HROBs struggled with transitioning from planning human resources support to its execution. Sustainment brigades and ESC HROB sections continued to underresource their HROB sections with only two or three personnel, which often created significant seams and gaps in the execution of the full range of the HROB's mission, most notably in postal and replacement personnel operations. Current manning trends in unit HROBs lacked depth in capability and inhibited endurance during LSCO. The scope and scale of replacement operations consumed nearly all of the section's focus, and at times fell short of meeting mission requirements. Additionally, the synchronization of HR support among all echelons continues to be an issue.

Recommendation. The HROB section should be in constant communication with the sustainment brigade's HR company and develop a course of action (COA) and HR concept to support personnel replacements. The HROB should treat the movement of incoming personnel similar to the movement of a commodity such as fuel or water. The HROB should be present and have input in LOGSYNC, DMB, and movement boards. Additionally, the HROB's use of air assets as an alternate form of personnel movement provides timely HR support to the division to extend operational reach.

The HROB is also responsible for coordinating with the division G-1 for the division's priority of fill of personnel by command, military occupational specialty, and skill level. The division G-1 sections should take ownership of setting priorities and policies for the HROB and ensuring synchronization of HR operations at all levels. The HROB's participation in the G-1 synchronization meeting, together with the sustainment brigade S-1, surgeon, and MA sections will also improve HR SPO and provide anticipated HR support to the division.

DOTMLPF-P. This trend is a training issue. HROB requires training to track personnel replacement and movement of the personnel to the receiving unit.

Doctrinal references. Field Manual (FM) 1-0, *Human Resources Support*, 01 APR 2014; ATP 1-0.2, *Theater-Level Human Resources Support*, 24 JAN 2017.

SECTION 4.4. INEFFICIENT CRITICAL PATH OF BATTLE RHYTHM EVENTS LIMITS ANTICIPATORY SUSTAINMENT AND TIMELY ORDERS PRODUCTION

Observation. Units fail to plan future operations (FUOPS) at least 96 hours in advance and produce effective orders because they lack an effective critical path of battle rhythm events.

Discussion. Most sustainment brigade and ESC battle rhythms do not follow a logical process or critical path that allow staffs to plan for FUOPS and produce timely operations and fragmentary orders (FRAGORDs). Units' critical paths often do not provide staffs with the ability to anticipate requirements and facilitate the transition of operations from plans, FUOPS, and finally to current operations (CUOPS) for orders production.

The critical path ensures that battle rhythm events are scheduled in a logical order where outputs of key boards, bureaus, center, cells, and working groups (B2C2WGs) feed other battle rhythm events needed to produce an order early in the critical path. A detailed seven-minute drill for each

battle rhythm event listing key inputs and outputs assists in allowing the staff to understand how each battle rhythm event affects the others.

A flowchart of the critical path (see Figure 4-1) begins with SPO commodity manager forecasts typically created from customer reporting through logistics status (LOGSTAT) reports, leading to working groups (LOGSYNC) and boards (DMB and movement board), and culminating with an order verified and coordinated with all WfFs in a final working group (operations synchronization [OPSYNC]). Understanding the critical path to orders production facilitates the development of a battle rhythm that enables anticipation, flexibility, and responsiveness for sustainment units.

Although the functions of these events are more important than the meetings themselves, typically a successful critical path flows from the logistics synchronization meeting to a DMB to a movement board and ultimately to an OPSYNC for orders production. In most cases, the sustainment brigade SPO or ESC DMC sections use the DMB to connect the requirements of a draft distribution COA with the SPO mobility branch's movement plan to facilitate synchronization and orders production. For a sustainment brigade, the DMB is typically the most important battle rhythm event in the critical path because it links the requirements from supported units and commodity managers with the capabilities and transportation assets of the sustainment units, and identifies any shortfalls the staff should mitigate. The DMB should assess and adjust preplanned convoy movements that units have previously agreed to execute in the next 24 to 48 hours. Then, the DMB should validate new requests and convoy movements forecasted for 72 to 96 hours and beyond. For ESCs, the DMB should look to assess and adjust movements between execution and the next 96 hours, and forecast and coordinate planned movements beyond 96 hours. Upon the board's conclusion, the distribution integration branch (DIB) of the SPO section produces a draft FRAGORD, and it passes the plan to the sustainment brigade's CUOPS section for orders publication. The sustainment brigade DIB should submit the new movement requests 72 to 96 hours out to the division transportation officer (DTO) as input into the division's movement board. The DIB often uses a movement control team to submit these requests to the DTO.

Recommendation. Sustainment brigades and ESCs should understand which critical functions are needed in a logical order to conduct long-range planning beyond the 96-hour time horizon and issue a timely order to subordinate units. They should conduct required battle rhythm events that facilitate the production of orders, plans, and FUOPs planning horizons and synchronize the staff (see Figure 4-1). Units should develop a seven-minute drill for all battle rhythm events where proponents clearly and logically state the outputs from one work group, meeting, or board, which flow into the required inputs of other B2C2WGs to ensure they are nested and productive. Units should also nest the sustainment brigade or ESC battle rhythm with those of their higher headquarters (to include division and corps) to ensure brigade or ESC representation at those critical events. The battle rhythm should also consider the cascading effects on subordinate units' battle rhythm and planning time horizons.

DOTMLPF-P. This trend is a training issue. Sustainment leaders should train their staff to maintain a unit battle rhythm nested with higher headquarters and attend targeting working groups and planning sessions to anticipate requirements.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ATP 4-94, *Theater Sustainment Command*, 28 JUN 2013; ATP 4-93, *Sustainment Brigade*, 11 APR 2016; ATP 4-16, *Movement Control*, 05 APR 2013; ATP 3-91, *Division Operations*, 17 OCT 2014.

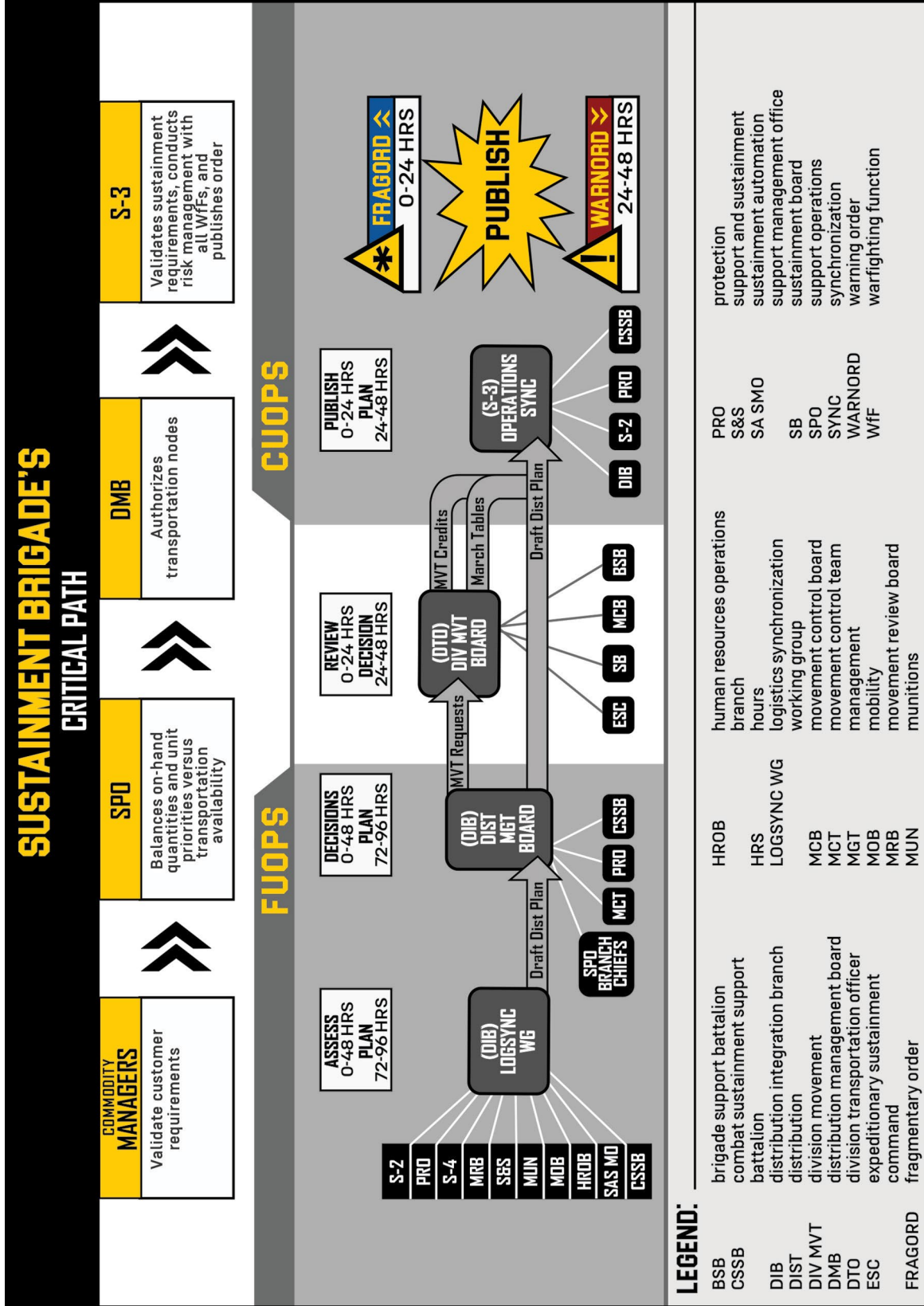


Figure 4-1. Sustainment brigade's critical path

SECTION 4.5. COORDINATING AND SYNCHRONIZING PROTECTION AND INTELLIGENCE WITH DISTRIBUTION OPERATIONS

Observation. Sustainment brigade and ESCs' protection and intelligence cells lack integration of both Wffs with the sustainment concept of the operation to properly mitigate risk during distribution operations and area defense.

Discussion. Sustainment brigade and ESC staffs should conduct OPSYNC meetings with representation from the S-2, S-3, battle captain, SPO mobility section, and their subordinate units. The OPSYNC is the appropriate venue to integrate these Wffs into sustainment operations. These unit leaders apply specific knowledge and details enabled by their separate Wff working groups. Many sustainment units lack the appropriate attendance, inputs, and outputs to the OPSYNC to properly integrate intelligence and protection into sustainment operations. The details from separate Wffs brought together during OPSYNC meetings are necessary to feed the unit's common operational picture (COP), update running estimates of the staff and subordinates, assist with the staff decision-making process for planning efforts, or support the commander in the visualization process.

Recommendation. Sustainment brigades and ESCs should ensure they conduct effective OPSYNC meetings to coordinate and synchronize the intelligence and protection Wffs with the units' sustainment operations. The chairperson of the OPSYNC is often the S-3 chief of CUOPS, who ensures that CUOPS remain synchronized in the short-range planning horizon across the staff and all Wffs in the unit. Synchronization is not possible if the Wffs are not present with the proper inputs from earlier B2C2WGs from the unit's battle rhythm. The S-3 section needs representation from all Wffs at the OPSYNC to validate preplanned short-time horizon missions and potentially make changes due to issues and the current enemy situation presented in the meeting. Units should create a seven-minute drill for the meeting that shows staff attendance requirements, inputs, and outputs. A seven-minute drill ensures all Wffs bring the appropriate inputs to the OPYSNC from their individual Wff working groups.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017.

SECTION 4.6. INADEQUATE STAFF RUNNING ESTIMATES, FORECASTING, AND LOGISTICS STATUS REPORTING

Observation. Many sustainment brigades and ESC staffs do not adequately forecast sustainment requirements out to 96 hours and beyond because they do not understand how their running estimates and LOGSTAT reports feed into the forecast.

Discussion. Incomplete staff running estimates and LOGSTAT reports from subordinate units resulted in many DMC and SPO sections focusing on the CUOPS planning horizon planning for missions that units would execute inside a 48-hour window, rather than FUOPS planning and forecasting of sustainment to a 96-hour time horizon and beyond. Many sustainment brigades and ESC staffs' running estimates are not detailed enough to forecast sustainment requirements beyond 72 hours, and in some cases, only 24 to 48 hours in advance.

Many ESC DMC and sustainment brigade SPO sections struggle to understand the requirements, capabilities, or shortfalls for their mission early in LSCO. By determining requirements, assessing capabilities, and mitigating shortfalls, the staff is better able to articulate execution of sustainment operations.

The deliberate use of determining requirements, assessing capabilities, and mitigating shortfalls (often referred to by the memory aid mnemonic device, DR-AC=MS or Determine Requirements – Access Capabilities = Mitigate Shortfalls) as a part of the planning allows the staff to identify risks associated with the shortfalls and forecasting requirements during planning and preparation, and then synchronize distribution management during the execution. Ideally, the iterative implementation of the determining requirements, assessing capabilities, and mitigating shortfalls process generates information in the form of an updated running estimate with forecasted requirements.

Determining requirements, assessing capabilities, and mitigating shortfalls ensures the staff provides the commander with relevant information, which is key to creating a shared understanding and visualization of the operating environment and forecasting requirements past the 96-hour time horizon. By integrating across long-range time horizons and synchronizing planning that facilitates the commander's decision making, the staff can anticipate potential decisions, enable the commander to visualize the operational environment, and forecast sustainment and distribution operations.

Recommendation. Staff collaboration can improve running estimates and the integration of WfFs as well as emphasize the importance behind the information. Developing accurate running estimates, supporting a plans process that includes all WfFs, and forecasting requirements uses doctrinal logistics planning tools such as OPLOG (Operational Logistics) Planner and Quick Logistics Estimation Tool (QLET) requires a deliberate staff planning process.

ESC and sustainment brigade staffs should use DR-AC=MS to assist with determining requirements, assessing capabilities, and mitigating shortfalls as part of planning and forecasting sustainment operations. Additionally, the DMC and SPO staff sections should use OPLOG Planner and QLET to assist in determining requirements and effectively forecast supplies and distribution management requirements across the planning horizons. Using OPLOG Planner, QLET, and LOGSTAT reports allows staffs to maintain their staff running estimates, which enable forecasting past the 96-hour time horizon.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. Army Doctrine Publication (ADP) 5-0, *The Operations Process*, 31 JUL 2019; FM 4-0, *Sustainment Operations*, 31 JUL 2019.

SECTION 4.7.

LACK OF A SUFFICIENT LOGISTICS COMMON OPERATIONAL PICTURE

Observation. Many sustainment brigades and ESCs do not produce a COP with sufficient staff running estimates that would allow the commander to visualize and understand the battlefield. Most staffs and SPO commodity sections also struggle to maintain an appropriate analog COP.

Discussion. The COP is key to achieving and maintaining situational understanding. The COP is a display of relevant information within a commander's area of interest, tailored to the user's requirements and based on common data and information shared by more than one command.

Sustainment brigades and ESCs create a COP with data from their staff running estimates. However, the staffs and SPO commodity sections often do not process or analyze the data to move up the cognitive hierarchy from information and data to knowledge and understanding, which would ultimately allow the commander to visualize and understand the battlefield. The SPO section in a sustainment brigade or DMC in an ESC is responsible for integrating subordinate units' LOGSTAT reports with the movement and maneuver COP or distribution plan that the unit's CUOPS controls.

The logistics COP provides the commander with visualization and understanding of how effectively sustainment units are supporting maneuver forces. It allows commanders to visualize the effects of their decisions on other elements of the force and the overall operation. Having an ineffective logistics COP often results in a disruption in sustainment and shortening the operational reach throughout the AOs.

Additionally, many sustainment brigades and ESCs do not adequately maintain their COP in the current operations integration cell (COIC) with updated operational graphics often enough to ensure the commander has the correct visualization of friendly unit locations and sustainment nodes across the AOs. This level of detail is necessary for friendly and enemy forces as well as supply nodes. Updating the COP is critical to gaining shared understanding and integration of WfFs through digital and analog forums.

Many staff sections and SPO commodity managers in sustainment brigades and ESCs also struggle to maintain an analog version of their running estimates, which would ultimately feed into an analog COP. An analog COP provides redundancy and seamless battle tracking if an information system failure, network failure, or power outage occurs.

Recommendation. Sustainment brigade and ESC staffs should create a COP from staff running estimates that facilitates the commander's decision-making style and presents relevant and intelligible information to the commander. Staffs should have discussions early and often with the commander on which information the COP should display and how the COP should graphically present it. A logistics COP creates shared understanding, enables anticipation for decision making, and gives the commander the ability to visualize the operational environment out to and beyond 96 hours. The CUOPS section should refine the operational graphics to include friendly units, enemy forces, and sustainment nodes by location on the COP.

The COP should incorporate running estimates from all WfFs or staff sections. Staffs should integrate across planning horizons and coordinate with higher, adjacent, and subordinate unit staffs to produce relevant information that the commander needs to see. Staffs should populate the COP with relevant information so the commander can make timely and effective decisions.

The COP should provide situational awareness and knowledge to the commander in order to enable decision making. The staff determines if the information related to anticipated decisions and display in a clear, concise manner designed to suit the commander. The COP should leverage mission command systems such as CPOF or CPCE to enable real time information sharing product updates across staff sections and formations.

The analog COP should provide redundancy and seamless battle tracking if an information system failure, network failure, or power disruption occurs. The staff should produce analog COP products that mirror digital products at regular intervals for the information to remain relevant should primary digital systems become nonmission capable. Analog products should be clearly marked with the date and time the staff created the products to ensure relevancy or initiate the demand for additional updates.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017; ATP 3-91, *Division Operations*, 17 OCT 2014.

SECTION 4.8.

LACK OF A WRITTEN TACTICAL STANDARD OPERATING PROCEDURE

Observation. Many sustainment brigades and ESCs do not have a written TACSOP prior to the start of the WFX that focuses on the unit's operations during LSCO.

Discussion. Many sustainment units do not have a TACSOP or it is incomplete. Most are outdated, excessively large, or primarily contains counterinsurgency (COIN) operations that do not take the fast-paced, chaotic, and violent operations necessitated by LSCO. Without a written TACSOP, sustainment units struggle to conduct battle drills inside the COIC and execute battle rhythm events that lead to the production of an operation order or FRAGORD. Many staff sections and officers struggle to understand their roles and responsibilities because the unit has not clearly articulated them in a TACSOP or a terms of reference. Without these key functions outlined in a unit TACSOP, most units continue to struggle understanding what is expected of their staff sections, reinvent processes and procedures, and lack the tools and continuity to effectively plan and execute operations.

Recommendation. Sustainment brigades and ESC staffs should create a TACSOP based on the operations and operational environment of LSCO that the staff will use. The units should create a streamlined, intelligible LSCO-based TACSOP instead of many units' TACSOPs, which often focus only on previous COIN operations. The TACSOP should define the unit's staff roles and responsibilities within planning horizons and codify the responsibilities. The TACSOP should include, at a minimum, unit battle rhythm events, critical path, seven-minute drills, battle drills, and staff roles and responsibilities within each planning horizon. Sustainment units should have a TACSOP that the commander has approved, the unit has trained with, and that the unit has disseminated to subordinate units, many of which might not be organic to their task-organization during home-station training.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017.

SECTION 4.9. MEDICAL CONSIDERATIONS

Section 4.9.1. Integration of Medical Considerations in Operational Planning

Observation. Most units fail to fully integrate organic medical planners and echelons above brigade medical units into the operational process.

Discussion. LSCO will have a significantly larger number of casualties than seen in Iraq and Afghanistan. During an average WFX, the tactical corps suffers 50,000 to 55,000 combat casualties. In the scenario of an immature and developing operational environment, definitive role 3 medical facilities will not exist. The demand for prioritizing casualty evacuations and hospital establishment is essential, and the complicated and intensive effort to establish a role 3 is poorly understood. For example, a combat support hospital (CSH) requires 15 acres of space, 15,000 gallons of water per day, and thirty one 53-foot flatbed trailers to move. Furthermore, it is completely reliant on external support for its protection and life support. Division and corps planners should better account for the implications of these logistics, which were usually hand-waved in the WFX 2019 series exercises. Additionally, they should take into account the impact of casualties on combat power, establishing medical treatment facilities, and casualty evacuation (CASEVAC) operations.

Recommendation. Division and corps planners should integrate with medical and sustainment planners to determine the most effective health service support plan and anticipate the impact of casualties on combat power estimation and sustainment priorities of effort.

DOTMLPF-P. This trend is a training issue. Improve realistic training to division and corps planners on medical operations and logistics. Include medical brigades as response cells and training audiences.

Doctrinal references. ADP 5-0, *The Operations Process*, 31 JUL 2019; ATP 4-02.55, *Army Health System Support Planning*, 16 SEP 2015; FM 4-0, *Sustainment Operations*, 31 JUL 2019.

Section 4.9.2. Casualty Evacuation Planning, Coordination, and Execution

Observation. CASEVAC operations in the WFX are limited by knowledge, resources, and unit participation.

Discussion. Within the WFX, tens of thousands of casualties require treatment and evacuation. Most units do not know or understand the complexities of casualty regulation and the coordination required to medically evacuate patients through the AOs (medical evacuation [MEDEVAC] and CASEVAC). The enormous numbers of casualties exceed the medical system inventory to medically evacuate to higher levels of care. CASEVAC by nonmedical means will provide the majority of evacuation from point of injury through role 2. The surgeon cells lack the knowledge and training to develop an analog medical common operational picture showing roles of care, ambulance exchange points, and MEDEVAC transportation locations. A lack of synchronization, development of a COP, and updating running estimates results in units and staffs being reactive instead of proactive.

Recommendation. Surgeon cell's staffs should proactively create and integrate initial medical plans and running estimates throughout the operations process and cross coordinate with the headquarters' staff. Medical planners need to specifically coordinate with the protection and sustainment cells for route status and available assets for CASEVAC and MEDEVAC planning. Times and distances should be calculated during intelligence preparation of the battlefield to analyze risk for viable COAs during the military decisionmaking process. This will provide the commander with the planning factors that will have an effect on the momentum and combat status during offensive and defensive operations.

DOTMLPF-P. This trend is a training issue. Improve training for sustainment personnel on MEDEVAC and CASEVAC planning.

Doctrinal references. ATP 4-02.55, *Army Health System Support Planning*, 16 SEP 2015; FM 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014; ATP 4-02.2 *Medical Evacuation*, 11 JUL 2019; ATP 6-0.5, *Command Post Organization and Operations*, 01 MAR 2017.

Section 4.9.3. Medical Mission Command

Observation. Integration of medical mission command and support to operations was lacking throughout the exercises.

Discussion. Medical brigades are responsible for all 10 medical functions in their subordinate CSHs, field hospitals, and multifunctional medical brigades. Medical brigades are functional brigades (FM 4-0) and are assigned to a tactical corps or the medical command (deployment support). Historically, medical operations within WFXs are set to automatic due to lack of medical unit participation and to avoid medical issues becoming a distraction to the training objectives of the training audiences. During fiscal year 2019, 1st Medical Brigade participated as the first medical brigade response cell, which allowed for direct interaction between the brigade, corps, and ESC. To replicate the medical higher command (HICOM) function, medical commands are required to be the theater medical command, which would allow the tactical corps and ESC staff to synchronize efforts across medical functions during the exercise.

Recommendation. Continue to include medical brigades during corps WFXs with a medical command as the HICOM with the end state of medical brigades as a training audience.

DOTMLPF-P. This trend is a training issue. Continued integration of medical brigades in WFXs and inclusion of the MC (DS) as medical HICOM.

Doctrinal references. FM 4-0, *Sustainment Operations*, 31 JUL 2019; FM 3-0, *Operations*, 06 OCT 2017; ATP 4-02.55, *Army Health System Support Planning*, 16 SEP 2015.

CHAPTER 5

Special Operations and Specialty Functions

SECTION 5.1. SPECIAL FORCES INTEGRATION AT DIVISION AND CORPS

Section 5.1.1. Special Operations Forces Organization

Observation. Special operations forces (SOF) units are reluctant to organize their targeting process (targeting working group [TWG] and board) and planning perspectives in relation to the 24-48-72-96-hour air tasking order (ATO) cycle.

Discussion. SOF units are hesitant to synchronize their battle rhythm with the ATO cycle because of concern it may constrain their flexibility to layer effects. Fortunately, recent warfighter exercises (WFXs) have proven that layering can and should occur within the ATO process because the ATO drives all combined force air component command (CFACC) operations and conventional unit targeting adheres to the ATO timeline. WFXs also provide a unique mission command challenge because the SOF enterprise has to design, refine, and execute a targeting process across multiple echelons for mission success (for example, special operations task force [SOTF] response cells have to manage tactical execution and initial targeting requirements, the combined joint SOTF and special operations joint task force [SOJTF] echelons have to manage their own TWGs and targeting boards for resource prioritization and allocation, and the SOJTF has to manage its special operations liaison element for integration with the ATO at the air component command).

Recommendation. To achieve layered SOF effects within a daily targeting process, SOF units should focus their TWG and targeting board into four ATO planning horizons (96, 72, 48, and 24-hour segments) and sequence the agenda from the future operations (FUOPS) to current operations (CUOPS) so that all collection and targeting resources across all warfighting functions (WfFs) are effectively planned, sequenced, and resourced by the SOJTF, joint task force (JTF), and the CFACC ATO.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training gap observed throughout the year. Mission Command Training Program (MCTP) will be able to increase capabilities of the fires WfF for SOF by coaching training audiences on best practice tactics, techniques, and procedures; battle rhythm development; and continued WFX integration into large-scale combat operations (LSCO) scenarios.

Doctrinal references. Army Doctrine Reference Publication (ADRP) 1-03, *The Army Universal Task List*, 02 OCT 2015; ADRP 3-05, *Special Operations*, 29 JAN 2018; Army Techniques Publication (ATP) 3-60, *Targeting*, 07 MAY 2015; Army Doctrine Publication (ADP) 3-05, *Army Special Operations*, 31 JUL 2019.

Section 5.1.2. Integrated Fires

Observation. SOF units suffer from underresourced fires sections.

Discussion. The SOF mission requirements of maintaining a CUOPS, FUOPS, and targeting cell are similar to a conventional force (CF) brigade combat team (BCT) fires cell. The current SOF modified table of organization and equipment (MTOE) manning does not adequately support the fires cell's requirements to maintain targeting operations across all planning horizons during 24-hour combat operations.

Recommendation. U.S. Army Special Operations Command (USASOC) and 1st Special Forces Command (Airborne) (1st SFC) should increase the size of the fires sections within the special forces group MTOEs so they are, at a minimum, equivalent to maneuver BCT MTOEs to manage a targeting process during LSCO.

DOTMLPF-P. This trend is a personnel gap observed throughout the year with all SOF training audiences. Each SOF training audience has identified this flaw and is addressing the growth of targeting and fires sections with their respective higher headquarters.

Doctrinal references. ADRP 1-03, *The Army Universal Task List*, 02 OCT 2015; ADRP 3-05, *Special Operations*, 29 JAN 2018; ATP 3-60, *Targeting*, 07 MAY 2015; ADP 3-05, *Army Special Operations*, 31 JUL 2019.

Section 5.1.3. Command, Control, Communications, Computers, and Intelligence Interoperability

Observation. Army special operations forces (ARSOF) command, control, communications, computers, and intelligence (C4I) interoperability with the greater Army continues to be a challenge within the WFX program.

Discussion. Although progress continues within the WFX program with C4I interoperability (for example, firewall exemptions approved, distributed common ground system [DCGS] working on SOF information enterprise, an SOF command post of the future [CPOF] common operational picture [COP] established and working, Advanced Field Artillery Tactical Data System [AFATDS] executing fires missions from SOF to CF, etc.), USASOC and 1st SFC should continue to use the WFX as a venue to enhance ARSOF's C4I interoperability with U.S. Army Training and Doctrine Command's (TRADOC's) centers of excellence C4I initiatives to maintain readiness for SOF's LSCO contributions. Recognizing that every theater may require different systems and platforms depending on the situation, establishing interoperability with CFs' C4I systems in a training environment will provide the foundation upon which ARSOF can build theater-specific systems to meet real-world contingencies. ARSOF's adaptability with multiple C4I systems ought to become part of the training readiness portfolio.

Recommendation. The SOF enterprise should attempt to acquire and maintain Army C4I systems (for example, DCGS, AFATDS, and CPOF, and CPCE) and continue training on Army C4I systems during WFXs to sustain and enhance CF and SOF integration, interoperability, and interdependence (I3).

DOTMLPF-P. This trend is a comprehensive materiel, training, and personnel gap for ARSOF observed throughout the year with SOF training audiences. USASOC is aware of these challenges and continues to work with U.S. Special Operations Command and U.S. Army Forces Command to bridge the interoperability gap.

Doctrinal references. ADRP 3-05, *Special Operations*, 29 JAN 2018; ATP 3-60, *Targeting*, 07 MAY 2015; ADP 3-05, *Army Special Operations*, 31 JUL 2019.

Section 5.1.4. Special Operations Forces Liaison Officer Teams

Observation. Conventional forces-special operations forces (CF-SOF) I3 depends on high-quality SOF liaison officer (LNO) teams, access to conventional C4I equipment, and workspace within CF headquarters.

Discussion. High-caliber SOF LNOs and additional augmentees (intelligence, communications, and sustainment representatives) significantly contribute to the achievement of enhanced CF-SOF I3. SOF training audiences typically embed a liaison team in conventional staffs to mitigate risk, enhance complementary effects, and improve responsiveness. However, SOF LNO teams require a place to perform their duties, access to key personnel, and access to conventional C4I systems. LNO teams should be located in a manner that allows them to interact with the current operations integration cell and joint air-ground integration center. This allows the LNO teams to quickly conduct coordination and deconflict operations. LNO teams should integrate with all staff sections to properly share information, participate in key battle rhythm events, and inform leaders of adjacent SOF operations. Training audiences should provide the SOF LNO teams with organic C4I systems such as a secure telephone, COP platform, and a tactical Warfighter Information Network-Tactical Secret Internet Protocol Router computer to communicate with conventional C4I systems.

Recommendation. SOF leaders should continue to select qualified personnel to represent the SOF enterprise within the CF training audience headquarters and consider making sustainment, communications, and intelligence augmentation personnel part of the SOF LNO package.

DOTMLPF-P. This trend is a training gap observed throughout the year. MCTP will be able to increase CF-SOF I3 by coaching training audiences to encourage and practice I3 on a more regular basis, incorporating SOF into multiple training venues, and conducting joint planning. During the exercise life cycle, MCTP will continue to enforce the CF-SOF memorandums of agreement developed by the training audiences that mandates effective SOF LNO integration within conventional unit headquarters.

Doctrinal references. ADRP 3-05, *Special Operations*, 29 JAN 2018; ADP 3-05, *Army Special Operations*, 31 JUL 2019.

Section 5.1.5. Understanding Special Operations Forces Capabilities

Observation. Division and corps staffs lack a clear understanding of SOF capabilities during LSCO, which negatively impacts their SOF effects requests.

Discussion. General SOF capabilities include working with regional populations, gaining access to hostile areas, preparing the environment for FUOPS, targeting enemy networks and their critical infrastructure and capabilities, and assessing local situations for opportunities. During LSCO, SOF retains the ability to work in concert with partner-nation forces, host-nation forces, and potential indigenous populations to achieve joint SOF effects. This requires SOFs and CFs to determine how SOF and their associated indigenous capabilities can contribute to LSCO. As a general practice, SOF should not be used as tactical reconnaissance elements for divisions and corps because these are considered conventional capabilities. SOF and their indigenous networks should be leveraged to aim for more challenging targets in denied space, such as launch and recovery unmanned aerial vehicle sites; location and assessment of active underground facilities; location and disruption of jammers, radars; and other critical high-payoff target list targets in the deep area. From a JTF perspective, SOF capabilities will be aligned against weapons of mass destruction, leadership networks, ballistic missile capabilities, and strategic and operational-level special reconnaissance tasks. These missions will likely consume most SOF capabilities. Any remaining SOF capabilities need to be prioritized against SOF-unique requirements and not for tactical reconnaissance unless there is no other option for the JTF.

Recommendation. Division and corps should focus on requesting SOF effects beyond the 96-hour mark and against problems beyond their conventional capabilities, to include leveraging indigenous capabilities supported by SOF, to ensure the joint force continues to employ SOF capabilities in a doctrinally correct manner.

DOTMLPF-P. This trend is a doctrine, training, leadership, and education gap observed throughout the year. MCTP provided the Center for Army Lessons Learned with best practices and examples to be considered for publication. MCTP will continue to coach training audiences on the proper use of SOF to maximize joint SOF effects during LSCO.

Doctrinal references. ADRP 3-05, *Special Operations*, 29 JAN 2018; ADP 3-05, *Army Special Operations*, 31 JUL 2019.

Section 5.1.6. Intelligence Warfighting Function and Special Operations Forces Requirements

Observation. SOF units struggle to adapt the intelligence warfighting function (IWfF)-to-SOF requirements in LSCO and often poorly integrate the IWfF with conventional units across echelons.

Discussion. Within the IWfF, SOF intelligence cells generally lack foundational training on the joint intelligence preparation of the operational environment (JIPOE) and intelligence preparation of the battlefield (IPB) in a LSCO environment. This hinders the J-2 and S-2's ability to effectively create enemy event templates that support commander's decision points, SOF operations, and SOF targeting. Additionally, the SOF units' Distributed Common Ground System-Army (DCGS-A) continues to hamper the SOF intelligence cells' ability to digest

the sheer volume of intelligence reporting that occurs during LSCO and to synchronize the intelligence portion of the COP with conventional units' J-2 and G-2 sections. These primary shortfalls often hamper SOF J-2's and S-2's ability to adapt to the SOF intelligence requirements in LSCO and provide predictive assessments that are nested with commander's decision points and SOF operations and targeting.

Recommendation. SOF unit J-2s and S-2s should develop a robust military intelligence training regimen with associated individual and collective military intelligence tasks that focus on JIPOE, IPB, intelligence fusion, collection management, and military intelligence architecture, to adequately prepare for SOF intelligence requirements in LSCO. Additionally, SOF J-2s and S-2s should train on and maintain their DCGS-A military intelligence architecture equipment to maintain interoperability with conventional unit J-2s and G-2s.

DOTMLPF-P. Units need to conduct training with the military intelligence section with emphasis on the JIPOE, IPB, intelligence fusion, and information collection.

Doctrinal references. References are not listed due to restricted distribution.

SECTION 5.2. CYBERSPACE ELECTROMAGNETIC ACTIVITIES

Section 5.2.1. Integration of Offensive Cyberspace Operations into Large-Scale Combat Operations

Observation. Division and corps training audiences and cyberspace electromagnetic activities (CEMA) sections are generally unfamiliar with the capabilities that offensive cyberspace operations (OCO) teams bring to the fight, and when employed, struggle to synchronize OCO capabilities with their ground scheme of maneuver.

Discussion. Division and corps staffs and CEMA sections continue to lack a general understanding of cyber mission force teams' capabilities as employed by joint force headquarters – cyber, in support of geographic combatant commanders. Broad expertise exists with electronic warfare employment within CEMA sections; however, that expertise does not extend to OCO due primarily to a lack of personnel with operational experience and OCO specific training at the division and corps level. Despite improvement since fiscal year 2018 (FY18), most divisions and corps struggled to keep OCO effects synchronized with the 72-hour ATO cycle and the ground scheme of maneuver. OCO effects were not modified to reflect changes in tactical operations when maneuver forces altered their objectives within 24 hours of execution, resulting in desynchronized effects.

Recommendation. Continue to educate senior leaders and division and corps staffs through MCTP- led training and formalized training.

DOTMLPF-P. This trend is a training issue. Cyberspace observer-coach/trainers will add cyber capability and effects synchronization training with existing MCTP-led mission command training conducted with division/corps staffs. Additionally, the FY20 MTOE change placing cyberspace officers (17A) at the BCT- and above level will enhance OCO and defensive cyberspace operations capability. Finally, the TRADOC-implemented Electronic Warfare Officer (17B) Transition Course will continue to improve training for electronic warfare personnel that are newly transitioned to the cyber branch.

Doctrinal references. References are not listed due to restricted distribution.

Section 5.2.2. Integration of Cyberspace Electromagnetic Activities and Command, Control, Communications, Computers and Intelligence

Observation. CEMA sections at division and corps continue to struggle to integrate C4I architecture into the units to contribute to the overall COP.

Discussion. During WFXs, most CEMA sections lacked mission command information systems to enable battle tracking and integration, which resulted in limited or no means to maintain a continuous digital connection with the CUOPS fight and no way to access or provide input to the units COP. Due to the lack of systems such as CPOF or the Electronic Warfare Planning Management Tool (EWPMT), CEMA sections developed analog products for limited battle tracking, running estimate updates, and requesting tracking within their section. If CEMA personnel maintained adequate analog products, it allowed planners to remain flexible between meetings, planning phases, and shift change backbriefs. However, it became evident that maintaining synchronization with higher and lower echelons proved difficult as the exercises persisted.

Recommendation. Initiate a capability gap analysis on MTOE for the CEMA section to identify equipment needed as a stop gap until EWPMT (the program of record) is fielded to units for electronic warfare personnel. CEMA sections need a system immediately to integrate into operations and rapidly distribute information.

DOTMLPF-P. This trend is a materiel issue. EWPMT, although in development since 2014, has yet to be fielded to the majority of U.S. Army units. CEMA sections' MTOEs have generally remained generally the same and fail to adequately equip the section for mission success.

Doctrinal references. ATP 3-12.3, *Electronic Warfare Techniques*, 16 JUL 2019; Field Manual 3-12, *Cyberspace and Electronic Warfare Operations*, 11 APR 2017; ADRP 6-0, *Mission Command*, 17 MAY 2012; ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

CHAPTER 6

Noncommissioned Officer Utilization

SECTION 6.1. ROLES AND RESPONSIBILITIES

Observation. Noncommissioned officers (NCOs) within each node do not have a clear description of their roles and responsibilities.

Discussion. NCOs are empowered with the appropriate authority, but they do not have a clear role besides what they are working on at that time. For example, when battle NCOs have a clear job, they become a single point of failure, as the unit does not have a replacement for those NCOs.

Recommendation. Clearly define roles and responsibilities within standard operating procedures (SOPs).

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training and leadership issue. Leaders need to articulate clear roles and responsibilities to their NCOs and to train their staff NCOs in processes and procedures with expectations in mind.

Doctrinal references. Army Doctrine Publication (ADP) 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 6.2. LOAD PLANS AND DISPLACEMENT OPERATIONS

Observation. Observations of displacement operations show that load plans are defined and followed.

Discussion. Detailed SOPs exist and are being executed. NCOs know and understand the SOP and are able to execute with minimal friction points. The common trend that is restricting displacement operations is the lack of operators capable of moving an entire division main command post. The amount of vehicles, equipment, and personnel that has to be moved forces units to make multiple turns to facilitate the move. Units seem to be understaffed on enlisted personnel to serve as operators during the jump.

Recommendation. Man units in accordance with modified table of organization and equipment (MTOE) strength for enlisted personnel. Officer positions are commonly filled.

DOTMLPF-P. This trend is a personnel issue.

Doctrinal references. Division MTOE

SECTION 6.3. DIGITAL MASTER GUNNERS AND BATTLE STAFF

Observation. There are only a few digital master gunners (DMGs) and NCOs qualified in battle staff within CPs.

Discussion. The majority of qualified personnel in battle staff are sergeants major who received their certification from the U.S. Army Sergeants Major Academy at Fort Bliss, TX.

Due to the lack of DMGs, digital gunnery tables are not completed prior to an exercise, and this prevents a confirmation that all systems are fully operational and communicating. Divisions are at a huge disadvantage as most of their formations are on a short tour. As units identify NCOs with potential for DMG and battle staff and secure a course slot, NCOs are already beyond the six-month retention requirement, and divisions will not get the return on investment. Fort Leavenworth, KS, broadcasts DMG courses in the same way battle staff is conducted. An assistant instructor at each installation and computer lab will allow DMG courses to be completed across the Army at minimal cost and with a huge gain to the force.

Recommendation. Personnel slated to serve short tours in Korea need screening for the 2S/5C qualification prior to being placed on orders until a local school can be established or video teleconference capabilities become available at Fort Leavenworth.

DOTMLPF-P. This trend is a training issue.

Doctrinal references. ADP 6-0, *Mission Command: Command and Control of Army Forces*, 31 JUL 2019.

SECTION 6.4. KNOWLEDGE MANAGEMENT

Observation. There is an absence of NCO involvement within the knowledge management section.

Discussion. The authorization for divisions and corps in knowledge management is an officer position. NCOs have not been observed within knowledge management sections during fiscal year 2019. The knowledge management officer, often tagged with the responsibility of request for information manager, becomes overwhelmed, and ultimately fails in adequately fulfilling the myriad duties required by the position.

Recommendation. Place more emphasis on the knowledge management course. Once NCOs are qualified in the area, they will provide added value to the team. Consider incentivizing the knowledge management course by awarding an additional skill identifier upon graduation, which would also help track qualified personnel.

DOTMLPF-P. This trend is a training issue. Make more slots available for NCOs to allow train-up and experience. Their ability to manage their units' documents could streamline processes and minimize confusion among the staff and subordinate organizations.

Doctrinal references. Field Manual 6-0, *Commander and Staff Organization and Operations*, 05 MAY 2014.

CHAPTER 7

Air Component: Airspace Control

SECTION 7.1.

PREPLANNED TARGET AWARENESS AND AIR LIAISON OFFICER INPUT

Observation. There is a lack of division integration for air interdiction (AI) supporting shaping operations for brigade combat teams (BCTs). Divisions are overly reliant on close air support (CAS), resulting in reactive targeting in the joint air-ground integration center (JAGIC).

Discussion. There is a continuing trend of divisions and BCTs being overly reliant on CAS versus AI or strike coordination and reconnaissance (SCAR). The divisions' focus on the close fight leads to an abundance of air support request submissions for CAS without specified requirements from the BCTs, which results in limited shaping by air component assets for the division's deep fight. Proper AI planning, updating, and execution enhances division fires shaping operations with air support. BCT target refinement and analysis allows for constant updates to division shaping. The majority of targets passed to divisions should be deliberate and refined, allowing for the most effective use of AI and SCAR sorties instead of having to rely on reactive targeting. Dynamic targeting is not anticipated or planned, which results in reactive and less effective employment of joint fires. There were several instances during WFXs where shaping efforts became overly reliant on division artillery despite the availability of air component assets with longer range and greater precision. When targets were removed from the battlefield, there were limited changes to division-friendly air plans, which forced air support operations centers into reactive attempts to re-roll many of their assigned aircraft from CAS to AI to action targets beyond the fire support coordination line. Additionally, CAS aircraft re-rolled to AI did not have the correct munitions to destroy or neutralize their targets. Furthermore, division ALO inputs were not fully recognized or heeded during targeting working groups (TWGs) or targeting decision boards (TDBs). ALOs were not given the adequate forum to advise on joint employment of air within the deep fight, which could have improved targeting efforts.

Recommendation. ALOs should emphasize the role of the air component in shaping operations to key staff, while educating on roles, authorities, and requirements to enable successful effects. Integrate early with the division staff to identify targets AI can best service and reduce reliance on limited organic assets such as Army Tactical Missile System and Guided Multiple Launch Rocket System. TWGs should strive to have a primary and secondary delivery asset that will achieve the desired effects and advocate for final approval during the TDB. Division and corps staffs should be open to ALO inputs in the targeting process. BCT staffs and their tactical air control party (TACP) should pass refined targets to divisions to enable effective targeting.

Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). This trend is a training and manning issue. Divisions and BCTs are thoroughly coached on the importance of deliberate targeting operations and how to leverage airpower. Fires planners are typically reliant on a small number of 131As. Division and corps staff should increasingly integrate staff TACP and ALOs into their operations to enable successful deliberate targeting in large-scale combat operations.

Doctrinal references. Joint Publication (JP) 3-30, *Command and Control of Joint Air Operations*, 25 JUL 2019; JP 5-0, *Joint Plans*, 16 JUNE 2017.

SECTION 7.2. INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE LIAISON OFFICER AND INTELLIGENCE DUTY OFFICER INTEGRATION INTO STAFF PLANNING PROCESSES

Observation. Many divisions limited aligned Air Force intelligence personnel to technical intelligence tasks instead of integrating them operationally across the entire staff and multiple warfighting functions (WfFs), contributing to the desynchronization of the collection plan from operations and the sub-optimization of theater intelligence, surveillance, and reconnaissance (ISR) assets.

Discussion. Intelligence, surveillance, and reconnaissance liaison officers (ISRLOs) work most effectively in their education and advisory roles in which they are able to cross boundaries such as operations and intelligence, current operations and future operations, division staff, and major subordinate commands while increasing G-2 staff capabilities. In these conditions, ISRLOs are able to better assist with developing collection strategies, identifying intelligence problems sets, and enabling staffs on all ISR matters. Similarly, intelligence duty officer/team (IDO/T) members that are empowered to reach into G-3 air, G-2 operations, and G-2 targets can help identify high-priority cross-queuing opportunities, improve battle tracking and battle damage assessment (BDA) efforts, and provide threat warning to G-3 air operations.

However, the observed trend is that ISRLOs and IDOs are used in limited technical functions, which restricts Army staff and processes. Some of the symptoms include few or stale preplanned collection requirements, overreliance on ad hoc collection requirements, underutilization of theater ISR, no preplanned BDA requests, and insufficient intelligence support to targeting. Some of the factors impacting ISRLOs and IDO/Ts outreach includes levels of G-2 and G-3 training, levels of training and initiative for Air Force personnel, and a lack of established expectations and involvement in targeting and intelligence working groups. Divisions that integrated aligned Air Force intelligence personnel across division staff functions and echelons benefited from improved ISR collections, which increased commander's critical information requirements satisfaction and provided better situational awareness, intelligence support to targeting, threat tracking, and BDA.

Recommendation. Division G-2 and ALO should advocate for ISRLO and IDO/T ability to support division and MSCs' staff on ISR collection strategy and planning, as well as intelligence support to targeting.

DOTMLPF-P. The use of Air Force intelligence personnel is a leadership and training issue. ISRLO, IDO/T, and to a lesser extent, the division ALO have the responsibility to educate the staff of Air Force personnel capabilities and scope; however, these members are generally lower in rank. G-2 and G-3 leaders should bear the responsibility of setting ISR expectations with their aligned staffs, to include lower echelon units, on the roles and processes for Air Force intelligence personnel.

Doctrinal references. JP 3-30, *Command and Control of Joint Air Operations*, 25 JUL 2019; JP 5-0, *Joint Plans*, 16 JUNE 2017.

CHAPTER 8

Army Service Component Command Trends

SECTION 8.1. VIBRANT RESPONSE 2019

VIBRANT RESPONSE is an annual U.S. Northern Command (NORTHCOM) chemical, biological, radiological, and nuclear response exercise which ensures the force is trained and ready to effectively respond to a national crisis or disaster in support of a lead federal agency.

Section 8.1.1. VIBRANT RESPONSE 2019: Commander's Critical Information Requirements

Observation. The commander's critical information requirements (CCIRs) were not effectively linked to decision-making tools.

Discussion. The CCIR, composed of friendly force information requirements (FFIRs) and priority intelligence requirements (PIRs), improved situational understanding and supported the commander's decision making. CCIRs should confirm or deny a gap in intelligence or confirm or deny an assumption. They link to a commander's decision point. Joint Task Force (JTF)-Civil Support developed a list of CCIRs and PIRs; however, the staff never operationalized or refined the CCIR and PIR for the current operational environment. They also were not time phased, presenting the commander with a long list of general CCIRs. Many of the PIRs were actually FFIRs that could have been assessed as serious incident reports (SIRs) which would require notifying the commander, but not a decision point. The staff had a decision support matrix (DSM) of 12 decisions, but the matrix did not link the CCIRs to those decisions. The staff did not have a formalized process to assess CCIRs to determine relevance. Additionally, the staff did not have an authority's matrix, which would have reduced information requirements to the commander. The commander made several decisions, such as use of an alternate aerial port of debarkation, movement of expedition medical support teams, chemical-biological incident response force transition, movement of Task Force One to Selfridge Air National Guard Base, MI, instead of a regional support center. These decision points were never added to a matrix and PIRs and FFIRs were never developed to support those commander decisions. If the commander is making decisions that the staff is not anticipating, the CCIRs likely require revision to prevent stagnation.

Recommendation. During mission analysis, operationalize the CCIRs for the area of operations (AOs) and develop a DSM that has CCIRs tied to decision points and provide an assessment of the status of the CCIRs. Define ownership of the CCIRs' assessment and DSM process and consider incorporating the CCIRs' working group in the tactical standard operating procedure (TACSOP). Reassess PIRs to determine those that are actually FFIRs or SIRs. Develop a SIR list that is tied to a wake up and notification matrix.

Section 8.1.2. VIBRANT RESPONSE 2019: Request for Information Management

Observation. Request for information (RFI) management did not effectively support subordinate units.

Discussion. The knowledge management officer had a digital comprehensive RFI tracker. The TACSOP designated the RFI manager with the responsibilities of tracking information requests and assigning RFIs to staff members for resolution. Answering RFIs often exceeded 24 hours. While crisis response missions generally do not support rapid response to information requests, the staff should still aim to reduce the response time, especially with regard to internal information requirements. A lack of action on RFIs resulted in subordinate units planning without key information, requiring the subordinate staff to plan on assumptions.

Recommendation. Consider briefing RFIs that exceed 12 hours to the commander or chief of staff at a battle rhythm event to ensure adequate leadership focus.

Section 8.1.3. VIBRANT RESPONSE 2019: Mission Assignment Tasking Order Integration into Warfighting Functions

Observation. Mission assignment tasking order (MATO) processes did not integrate the warfighting functions (WfFs) effectively.

Discussion. The future operations (FUOPS) integration cell processed and staffed MATO and mission assignments. The process involved heavy coordination with the J-3 and interagency planning cell (IPC) to help forecast upcoming requirements. Additionally, the FUOPS cell provided early notification of a potential mission to subordinate units. There was frequent coordination between the IPC, J-3, and FUOPS cell; however, there was little WfF synchronization to assess MATOs and mission assignments. Coordination often involved a staff officer walking the requirement among the WfF cells and task force liaison officers (LNOs) with no integration or collaboration. The more complex missions included a mission support package that was attached to the fragmentary order (FRAGORD). Although some requirements did not require much coordination, missions such as mass casualty decontamination (MCD) required a deliberate, collaborative process. Leveraging the entirety of the unit staff would serve to produce detailed mission orders and properly resource subordinate task forces. FRAGORDs often consisted of directly copying the mission assignment or MATO and the incident command center document into the FRAGORD with minimal additional staff analysis or outside agency coordination. The commander expressed concerns with the detail of FRAGORDs, coordination for resources, and force protection. However, subordinate commanders routinely had to coordinate with local civilian authorities for MCD transportation, medical evacuation, water, and force protection.

Recommendation. Consider development of a short MATO battle drill that integrates the WfFs and respective task force LNOs. This battle drill should serve to collaboratively assess requirements, drive coordination, and allocate resources required to execute the mission.

Section 8.1.4. VIBRANT RESPONSE 2019: Joint Task Force to Emergency Operations Center Communication

Observation. The JTF did not open direct lines of communication with the state emergency operations center (EOC).

Discussion. Since intelligence oversight restricts U.S. collection by military intelligence personnel and the JTF has limited collection assets, it is necessary to rely on information from external agency sources to answer information requirements. Much of the necessary information should have already been gathered by the state EOC. The JTF used U.S. Army North, NORTHCOM, and the defense coordinating officer to pass information to, and receive information from, the state EOC. This inhibited shared understanding and useful information from promptly getting to the JTF.

Recommendation. Establish direct communications with entities of the State state EOC, via the DCO defense coordinating officer and the unified coordination group (UCG) in order to facilitate time-sensitive shared understanding. This will allow the JTF to quickly rapidly attain the information needed to fulfill collection requirements and answer PIRs and CCIRs.

Section 8.1.5. VIBRANT RESPONSE 2019: Risk Management

Observation. The protection cell did not integrate risk management into the planning process.

Discussion. According to Army Doctrine Publication 3-0, Operations, 31 JUL 2019, the protection WfF is responsible for conducting risk management. The staff generally accomplishes this during intelligence preparation of the battlefield (IPB) with the creation of a risk management matrix. This product is refined throughout the military decisionmaking process (MDMP). Risk can be avoided, eliminated, transferred, or mitigated before the commander prudently accepts the risk. During course of action analysis (war gaming), the integrated staff tests risk reduction measures. These projected effects of hazards inform the commander's FFIRs in the same way collection informs the commander's PIRs. The FFIRs can then be added to the DSM, linking effects on friendly forces to commander decisions. The protection cell did not conduct a comprehensive risk assessment during the exercise. The anticipation of known hazards such as criminal gangs, radiation, logistics shortfalls, etc., would have allowed greater prediction, ongoing assessments, and allocation of assets before the loss of combat power. For example, criminal gang activity was a known potential hazard, however there was no decision point linked to requesting Michigan state police convoy escorts/checkpoints, or the request for TF Michigan to arm National Guard Soldiers under Title 32 authorities. While the protection cell eventually requested these actions, it was reactive in nature.

Recommendation. Incorporate risk management in the MDMP and maintain the running risk estimate throughout the operation. Ensure risk is linked to an FFIR to drive commander decision making. Develop a method for inclusion in the unit standard operating procedure (SOP), which quickly conveys key risks to the commander for the current operations (CUOPS) time horizon.

SECTION 8.2. ALLIANCE 2019

Section 8.2.1. ALLIANCE 2019: Contingency Action Standard Operating Procedures

Observation. Crisis action standing operating procedure (CASOP) refinement.

Discussion. The headquarters issued 57 FRAGORDs in the first five days of the exercise. However, many of these orders were auto-generated based on CASOP execution and could have been included in the base order. The staff conducted limited analysis when applying CASOP plans to the exercise, resulting in a lack of clarity in the orders process.

Recommendation. Verify the validity of the CASOPs and assign a WfF responsibility to update annually, prior to exercises. When applying the CASOP, conduct analysis on the plan rather than issuing orders in an algorithmic fashion.

Section 8.2.2. ALLIANCE 2019: Combined Forces Command Nesting

Observation. Nesting priorities with Combined Forces Command (CFC).

Discussion. The G-33 section did not monitor or communicate with CFC and U.S. Forces, Korea, through a formal meeting or working group. LNOs were not fully used in the current operations integration cell. The only continuous cross coordination was conducted through the CFC G-3 chat window.

Recommendation. Establish a more formal process to leverage LNOs to synchronize efforts. Determine the critical path for information flow among the headquarters elements and establish synchronization activities to enhance communications.

SECTION 8.3. YAMA SAKURA 75

Section 8.3.1. YAMA SAKURA 75: Bilateral Planning

Observation. Bilateral planning was not consistent between the corps and Japanese Ground Self Defense Force Northern Army functional and integrating staff cells.

Discussion. During the exercise, the U.S. corps and the Northern Army were co-located in large tents and buildings with the corresponding functional and integrating staff cells sharing workspace. Although maintaining the separation inherent in a parallel command structure, sharing workspace was intended to improve bilateral coordination, planning, and reduce the need for a separate bilateral ground operations coordination center between the two headquarters. Despite sharing the same AOs and the close proximity with their Japanese counterparts, the corps staff largely planned operations unilaterally with bilateral involvement occurring after corps commander approval. A critical path for decision making with a corresponding battle rhythm was not defined for the U.S. or Japanese forces. Although there were several individual staff sections which did plan bilaterally, Japanese planners were not present at most of the corps G-35 FUOPS operational planning teams (OPTs), or were present only as observers. A separate bilateral synchronization meeting with G-35 FUOPS planners from corps and the Northern Army was not conducted consistently each day, which led to desynchronization between the corps and Northern Army staff on FUOPS due to a lack of communication between counterpart planners. This disconnect limited the ability of both headquarters to exploit opportunities as the branch plans and sequels were not synchronized.

Recommendation. Establish a battle rhythm that specifies the critical paths for bilateral decision making and includes specific staff-to-staff coordination meetings and OPTs, with expected inputs, outputs, and attendees. OPTs should allocate sufficient time for planners from both headquarters to brief their current and future operations with a focus on ensuring shared understanding and unity of effort through operations that are synchronized or deconflicted, as required.

Section 8.3.2. YAMA SAKURA 75: Information Collection Plan Synchronization with Targeting

Observation. The corps G-2 struggled to synchronize the information collection plan with the targeting effort.

Discussion. The G-2 struggled to link the information in the collection plan to the targeting plan, which effected the fires effort. The staff struggled to understand the linkage between information collection and the targeting effort. Specifically, the authority to link the priority of the collection effort to the targeting efforts was not defined. The airspace control element did not effectively describe the enemy situation to the collection management section to influence the collection effort based on enemy capability. The G-2 targeting section did not link the discovered weapon system to the commander's decision points, desired effects, or synchronize the collection effort with the maneuver plan. As a result, the collection management section did not influence the desired effect with the air tasking order cycle.

Recommendation. Incorporate the running estimate and event templates to inform the staff of changes in the enemy situation and capability.

Section 8.3.3. YAMA SAKURA 75: Air Support Request

Observation. Air support request (ASR) submissions did not support shaping efforts.

Discussion. Corps submitted ASRs that were minimal and did not exercise the battlefield coordination detachment (BCD) to develop a cutline to arbitrate requests. ASRs were not being submitted to support strike coordination and reconnaissance nominations that would target within established kill boxes focusing on formations by prioritized target sets. The synchronization within the targeting working group (TWG) did not focus on the development of the target synchronization matrix (TSM), specifically the delivery requirement which would have put a higher demand and more emphasis on ASR submissions.

Recommendation. Within the TWG, synchronize all aspects and requirements to construct the TSM to identify the enabler support needed to achieve desired effects. Develop kill boxes within AOs to enable the use of combat power with air-to-surface capability. Communicate with the BCD to synchronize ASR submissions, ensuring they are clearly understood and the necessity for support. Also, communicate with the BCD to ensure all combat power is being maximized.

Section 8.3.4. YAMA SAKURA 75: Air and Missile Defense Command and Control Structure

Observation. There was no official bilateral air and missile defense (AMD) command and control (C2) structure to execute fires between U.S. and Japan Self-Defense Forces (JSDF) AMD systems.

Discussion. A U.S. Army Air and Missile Defense Command (AAMDC) participated in a higher command (HICOM) capacity for the exercise but did not play a role in a C2 structure for U.S. Patriot forces. The AAMDC also did not conduct fires coordination with JSDF AMD systems. Ultimately, JSDF and U.S. AMD assets conducted theater AMD operations with no coordination. The JSDF AMD commander and U.S. AMD Corps chief conducted bilateral communications to maintain situational awareness of the status of AMD systems in the AO.

Recommendation. The exercise should include an air C2 component to replicate AMD operations in a combined environment. The combined force air component command would ultimately hold engagement authority of air breathing threats at its level and ensure prevention of fratricide to clear missile fires for JSDF and U.S. AMD systems. The training audience would also benefit from a HICOM perspective if the 94th AAMDC provided additional staff and leadership to replicate real-world operations.

Appendix A

Acronyms

AAMDC	Army air and missile defense command
ACE	analysis and control element
ACM	airspace control measure
ACO	airspace control order
ADAM/BAE	air defense airspace management/brigade aviation element
ADRP	Army doctrine reference publication
ADP	Army doctrine publication
AFATDS	Advanced Field Artillery Tactical Data System
AI	air interdiction
ALO	air liaison officer
AMD	air and missile defense
AO	area of operations
ASCC	Army Service component command
ASI	additional skill identifier
ASR	air support request
ATO	air tasking order
ATP	Army technical publication
ATRRS	Army Training Requirements and Resources System
B2C2WG	boards, bureaus, center, cells, and working group
BCD	battlefield coordination detachment
BCT	brigade combat team
BDA	battle damage assessment
BEB	brigade engineer battalion
BISE	brigade intelligence support element
C2	command and control
C4I	command, control, communications, computers, and intelligence
CAB	combat aviation brigade
CAR	combined arms rehearsal
CAS	close air support
CASEVAC	casualty evacuation
CASOP	contingency action standing operating procedure
CBRN	chemical, biological, radiological, and nuclear
CCIR	commander's critical information requirements
CEMA	cyberspace electromagnetic activities
CF	conventional force
CFACC	combined force air component command
CFC	Combined Forces Command
CFL	coordinated fire line
CF-SOF	conventional forces-special operations forces
CIP	common intelligence picture
CND	computer network defense
CNR	combat net radio
COA	course of action

COFM	correlation of forces modeling
COIN	counterinsurgency
COIC	current operations integration cell
COP	common operational picture
CP	command post
CPCE	command post computing environment
CPOF	command post of the future
CPX	command post exercise
CSH	combat support hospital
CSSB	combat sustainment support battalion
CUOPS	current operations
DATE	decisive action training environment
DCA	division consolidation area
DCGS	distributed common ground system
DCGS-A	Distributed Common Ground System-Army
DCO	defensive cyberspace operations
DCP	detainee collection point
DIB	distribution integration branch
DIVARTY	division artillery
DIVCAV	division cavalry
DMB	distribution management board
DMC	distribution management center
DMG	digital master gunner
DOTMLPF-P	doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy
DSA	division support area
DSM	decision support matrix
DTO	division transportation officer
EAB	echelons above brigade
EN BDE	engineer brigade
EOC	emergency operations center
ESC	expeditionary sustainment command
EWPMPT	Electronic Warfare Planning Management Tool
FAB	field artillery brigade
FAT	field artillery task
FCO	fire control officer
FFAHQ	force field artillery headquarters
FFIR	friendly force information requirement
FM	field manual
FORSCOM	U.S. Army Forces Command
FRAGORD	fragmentary order
FSE	fire support element
FST	fire support task
FUOPS	future operations
FY	fiscal year
GMTI	ground moving target indicators
HCLOS	high-capacity line-of-sight radio
HICOM	higher command
HPTL	high-payoff target list

HROB	human resources operations branch
I3	integration, interoperability, and interdependence
ICP	intelligence collection plan
IDO/T	intelligence duty officer/team
IPB	intelligence preparation of the battlefield
IPC	interagency planning cell
IRC	information-related capability
ISR	intelligence, surveillance, and reconnaissance
ISRLO	intelligence, surveillance, and reconnaissance liaison officer
IWfF	intelligence warfighting function
JADOCs	Joint Automated Deep Operations Coordination System
JAGIC	joint air-ground integration center
JCR	joint capabilities release
JSDF	Japan Self-Defense Forces
JTF	joint task force
JP	joint publication
LNO	liaison officer
LOGSTAT	logistics status
LOGSYNC	logistics synchronization
LRA	long-range artillery
LSCO	large-scale combat operations
MA	mortuary affairs
MATO	mission assignment tasking order
MCD	mass casualty decontamination
MCT	mission command training
MDMP	military decisionmaking process
MCTP	Mission Command Training Program
MEB	maneuver enhancement brigade
MEDEVAC	medical evacuation
MICO	military intelligence company
MITS	military intelligence training strategy
MRBC	multi-role bridge company
MTOE	modified table of organization and equipment
NAI	named areas of interest
NCO	noncommissioned officer
NORTHCOM	U.S. Northern Command
OCO	offensive cyberspace operations
OCS	operational contract support
OC/T	observer-coach/trainer
OPLOG	operational logistics
OPORD	operation order
OPSYNC	operations synchronization
OPT	operational planning team
ORSA	operations research and systems analysis
PACE	primary, alternate, contingency, and emergency
PIR	priority intelligence requirement
POC	points of contact
PPL	protection prioritization list
PSOP	plans standard operating procedure

PWG	protection working group
QLET	quick logistics estimation tool
RFI	request for information
RHL	reconnaissance handover line
RRB	requirement review board
SACP	support area command post
SATCOM	satellite communications
SCAR	strike coordination and reconnaissance
SEAD	suppression of enemy air defenses
SHORAD	short-range air defense
SIR	serious incident report
SOF	special operations forces
SOJTF	special operations joint task force
SOP	standard operating procedure
SPO	support operations
SOTF	special operations task force
TAC CP	tactical command post
TACP	tactical air control party
TACSAT	tactical satellite
TACSOP	tactical standard operating procedure
TAI	target areas of interest
<i>TAIS</i>	Tactical Airspace Integration System
TDB	targeting decision board
TC	training circular
TRADOC	U.S. Army Training and Doctrine Command
TSA	target system analysis
TSM	target synchronization matrix
TTP	tactics, techniques, and procedures
TVA	target value analysis
TWG	targeting working group
UAP	unit airspace plan
UHF	ultrahigh frequency
WfF	warfighting function
WFX	warfighter exercise
WGC	wet gap crossing

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