EXECUTIVE SUMMARY

PROGRAM EVALUATION OF U.S. ARMY MISSION COMMAND SYSTEMS
EFFECTS ON TACTICAL DECISION MAKING

By Dan Stuewe

Mission command systems are the various communications systems used by the U.S. Army and its sister services in tactical, operational, and strategic environments. Examples of mission command systems range anywhere from a hand-held voice radio to technologically advanced computer software systems. No matter what the system is, they effect the commander’s tactical decision making, in training or in combat.

This research evaluated how mission command systems are effecting the decision making ability in infantry commanders at the company and battalion level while training at the Joint Readiness Training Center (JRTC) in Fort Polk, LA. The researcher chose the JRTC because it is the one of the Army’s most realistic and stressful environments available to units today.

While units train at the JRTC, they are constantly coached and watched over by the Observer-Controller/Trainers (OC/Ts) assigned to the JRTC. These OC/Ts spend an average of 21 days with the unit to constantly observe and provide performance feedback to the unit. During after action reviews (AARs), one constant focus area for OC/Ts is feedback on how effective the commanders were at employing their mission command systems to communicate to their adjacent, superior, and subordinate units to enable rapid decision-making in a time constrained environment. Based on feedback from surveys completed by the OC/Ts, the researcher evaluated the effects of the mission command systems (independent variable) and tactical decision making (dependent variable).
The researcher identified that more mission command systems did not result in better
decision making. The more mission command systems used by the unit, the worse the unit was
at making rapid decisions in a tactical environment. Additionally, the physical layout of the
command post’s communications architecture was critical to the commander’s ability to receive
information and make rapid decisions. Data showed that a poorly planned and rehearsed
communication’s architecture, typically with too many mission command systems, was directly
related to degraded decision making in the commander.

The researcher recommended that units chose the systems they want to employ early in
their annual training plan. Once the systems are identified, the unit should program cyclical
training events that train operators on the technical aspects of the system and leaders on the
actual employment of the systems. One recommended example was to include communications
training in conjunction with the weekly maintenance that units are required to do across the
entire Army. Once the unit begins routinely training on the systems and their tactical
employment, muscle memory would be achieved well prior to a training rotation at the JRTC or
deployment overseas to combat operations.
Program Evaluation of U.S. Army Mission Command Systems

Effects on Tactical Decision Making

MSA 699 Capstone Project

Submitted by:

Dan Stuewe

Monitor:

Dr. Robert “Bob” Weltzer
Dedication

To Lindsey, Joey, and Lily
Acknowledgement

The men and women serving as Observer – Controller/Trainers (OC/Ts) of Operations Group, Joint Readiness Training Center (JRTC) tirelessly work with ten brigade combat teams (BCTs) every year. These OC/Ts take this assignment at the JRTC, usually following an operational deployment, only to spend 21 days of every month in the training areas, serving alongside BCTs, and away from their families; special acknowledgement goes to these selfless Soldiers who provided assistance and patience in this research.
Dear Daniel,

Your Research Review Application has been reviewed and approved. You may start your data collection. This approval will not expire as long as your topic and methodology remain unchanged. If your topic or methodology changes, please submit a new Research Review Application and supporting documents to your instructor by e-mail.

Please contact your instructor if you have any questions. Also, be sure to check with your instructor concerning the due dates for your project.

Good luck with your project. This is the only notification you will receive. Please keep a copy for your records.

Kim Gribben
Assistant Director, MSA Program

Christina Prout
Administrative Secretary Master of Science in Administration Program

Christina Leigh
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>1-5</td>
</tr>
<tr>
<td>2</td>
<td>Review of the Related Literature</td>
<td>6-15</td>
</tr>
<tr>
<td>3</td>
<td>Research Methodology</td>
<td>16-</td>
</tr>
</tbody>
</table>

**Table of Contents**

Dedication ...................................................................................................................................... iii
Acknowledgement ............................................................................................................................ iv
Clearance......................................................................................................................................... v
Tables ............................................................................................................................................. ix
Figures.......................................................................................................................................... x

Chapter 1: Introduction ................................................................................................................... 1
  - Background ..................................................................................................................................1
  - Problem Statement .......................................................................................................................2
  - Research Objective ......................................................................................................................3
  - Description of Program Inputs .....................................................................................................3
  - Description of Program Outputs ..................................................................................................4
  - Assumptions .................................................................................................................................4
  - Research Limitations and Delimitations ......................................................................................4
  - Summary ......................................................................................................................................5

Chapter 2: Review of the Related Literature .................................................................................. 6
  - Introduction ..................................................................................................................................6
  - Background ..................................................................................................................................6
  - Issues/Variables ...........................................................................................................................6
  - Performance Criteria ....................................................................................................................14
  - Summary .....................................................................................................................................15

Chapter 3: Research Methodology ................................................................................................ 16
Tables

Table 1. Example T & EO ............................................................................................................. 15

Table 2. Decision Criteria for Training on Number of Systems or Architecture ...................... 39
Figures

Figure 1. Current Duty Positions of Survey Respondents 25
Figure 2. Duration that each respondent has served in the U.S. Army 25
Figure 3. The duration that respondents have served in their current duty position 26
Figure 4. Mission Command Systems at the Company 27
Figure 5. Receive Information and Make Decisions 28
Figure 6. Company to Platoon Communications Systems 29
Figure 7. Mission Command Systems at the Company Command Post (CP) 30
Figure 8. Company Communications Architecture Facilitating Decision Making 31
Figure 9. More Systems at the Company CP does not Improve Decision Making 32
Figure 10. Physical Layout of Communications Architecture 33
Figure 11. Company Level Understanding of the Battalion's Orders 34
Figure 12. The Company Commander was Overwhelmed with Information from the Battalion 34
Figure 13. Correlation between Number of Systems and Ability to Make Decisions. 36
Figure 14. Correlation between Number of Systems and Effective Architecture 37
Chapter 1: Introduction

Background

The U.S. Army Doctrinal Publication (ADP) 6-0 (2014, p. 1) defines Mission Command as “the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander’s intent to empower agile and adaptive leaders in the conduct of unified land operations”. Leaders across the Army continuously discuss and debate this definition because it is arguably one of the most important aspects of Army operations. However, it is still vague on how this aspect is measured and evaluated because mission command essentially means how well is the commander communicating to his unit and subsequently getting the unit to successfully accomplish their mission. Referencing back to the Army definition stated at the beginning of this paragraph, it mentions “using mission orders”, but the deeper question is how are those orders being communicated?

Statement of Purpose. Today’s commanders are especially challenged by approximately 12-22 types of communications systems that are required to conduct military operations at the battalion and or company echelon. Over the past eighteen training rotations at the Joint Readiness Training Center (JRTC) in Fort Polk, Louisiana, an infantry battalion has had an average of fifteen communications systems to receive orders or communication from their higher headquarters and also to communicate plans and orders to that battalion’s subordinate companies (Diven, 2015). These systems consisted of voice and digital communications systems that commanders often found themselves tied to in order to receive information, and too often, the commander is overburdened with the stress of ensuring the systems are operational while also becoming quickly inundated with the amount of information being received. The challenge of trying to lead Soldiers in combat or replicated combat environments is challenging enough
without having to worry about systems being fully operational, but there is also a constant
overload of information and immediate demands being placed upon commanders from their
higher-level leadership and the subordinates in need of guidance or direction. There comes a
point where too many technologically advanced communications systems are not helping.
Recent trends observed by the observer-coach-trainers (OC/Ts) at the JRTC suggested that units
with as little as two functioning mission command systems demonstrated the ability to develop a
better-shared understanding between the battalion and company and further lead to quicker
decision making within the units. Additionally, observations have also identified that infantry
units did a better job at maintaining situational awareness and communicating simple and
effective plans when their mission command systems architecture was simple and mostly analog
and rather than digital (Center for Army Lesson Learned, 2015).

Problem Statement

There are over 100 OC/Ts focused on mission command at the JRTC at all echelons, and
the topic of mission command is a major focus areas of each unit’s performance, effectiveness,
and deployment readiness. This research examined the following problem: How are mission
command systems at the U.S. Army infantry battalion and company level affecting the decision-
making ability in the infantry companies in a decisive action-training environment (DATE) at the
JRTC? In order to answer the primary research question the following series of sub-questions
were also investigated:

1. How is information being communicated to companies, from the battalion, while training
   at the JRTC?

2. What are the most commonly used mission command systems at the company level?
3. How are infantry battalions and companies designing their communications architecture in their mission command systems?

4. What factors contribute to the company commander losing the ability to understand their battalion commander’s intent, mission, or operational plan?

**Research Objective**

Units that come to the JRTC will often have a follow-on mission to deploy or be ready to deploy to combat operations across the globe. The OC/Ts have a deadly serious responsibility to help these units improve the way they are conducting their missions and it is already established that the conduct of mission command is imperative to their success. This research served to increase the knowledge of OC/Ts and unit commanders on how to better understand what mission command systems were more effective and how to employ the systems in a tactical or combat environment. The increased knowledge could then be applied to unit’s training plans and further increase their readiness to be able to deploy as a trained and proficient unit anywhere they are called to go.

**Description of Program Inputs**

Army infantry units all have standard operation procedures (SOPs) to outline and prescribe how that unit conducts their operations, based on the commander’s intent. An infantry unit’s SOP is synonymous with a program for the purpose of the research and this research evaluated specific portions of a unit’s mission command systems SOP. Inputs included the mission command systems that were employed during the unit’s JRTC training rotation. The systems were hand-held frequency modulation (FM) radios, the Joint Capabilities Release – Blue Force Tracker (JCR/BFT), and face-to-face meetings. The JCR/BFT is an expeditionary system that receives graphical pictures, digitally written orders, and simple text messages based on a
global positioning system (GPS) satellite that is encrypted to protect the information. This is very similar to email, but possesses a level of encryption to prevent hacking from enemy forces. While there are other systems that exist in the Army’s inventory, these were found to be most common across infantry units (Jones & Mabes, 2015).

**Description of Program Outputs**

The outputs of the mission command systems in the unit’s program, applied while training at the JRTC, were a combination of digital and/or analog graphics, mission orders, and combat instructions. These outputs are what informed and guided the commanders to make decisions in a high stress, replicated combat environment.

**Assumptions**

The researcher assumed that the OC/Ts had observed at least one JRTC rotation before the rotation used for this research. The researcher also assumed that the unit being observed for this research had employed their mission command systems at least once in a tactical training environment. Both assumptions prove to be true and did not compromise any of the data collected for the research.

**Research Limitations and Delimitations**

This research was focused on an infantry battalion and that battalion’s subordinate companies that rotated through the JRTC to conduct their operations in a decisive action training environment (DATE). DATE is the U.S. Army’s definition for replicating an operational environment that is as close to combat operations as possible with being actual combat. The researcher did not focus on other branches, locations, or operations.

This scope proved to be very suitable because it only focused on one particular type of unit (infantry), that conducted operations in one environment (the JRTC), and researched only
one particular aspect of the unit’s rotation (mission command systems). The research was kept
anonymous because commanders’ reputations and futures could be at stake if the study’s
audience perceived some of the candid facts and observations to indicate poor performance
within the JRTC training rotation. Surveys were conducted at the beginning of the unit’s 21-day
training rotation with instructions and consent to show that the actual unit designation and
command team’s personal information was not disclosed.

Summary

This research built increased knowledge that the OC/Ts have already gained a foundation
for through personal observations of multiple U.S. Army units that rotated through the JRTC. In
addition to the OC/Ts observations and feedback of the unit’s procedures to employ mission
command systems, the OC/Ts conducted after-action reviews (AARs) at three separate times
within the training rotation. These AARs provided additional input to the research because it
allowed for candid conversations between OC/Ts and Soldiers within the training unit.
Chapter 2: Review of the Related Literature

Introduction

In this section, the literature was divided into four sub-topics that highlight the research question. The first is the mission command (communications) systems that helped the battalion commander tactically communicate to the company commanders – to gain a better understanding of the higher command echelon is talking to the lower command echelon. The second was the actual communications architectures at both levels to understand how the commanders were physically establishing their systems to communicate vertically and laterally. Next, the trends and observations of which mission command (communications) systems that were effectively operating at the company level. Lastly, this section reviewed the compilation of factors that were contributing to the company commanders failing to understand their battalion commander’s plans and decisions.

Background

There was an extensive amount of literature on mission command systems within military publications, online archives, and databases because it is arguably one of the most important subject areas to evaluate a unit’s performance and effectiveness. Additionally, mission command systems are a critical component to any unit’s ability to fight and win. Mission command systems are what facilitates a unit’s ability to communicate in a tactical environment and make rapid decisions during operations, but every battalion and company has a unique way of doing this – there is not a single answer on how it is done.

Issues/Variables

Mission command at the battalion. The last Army Chief of Staff, General Raymond T. Odierno, (the highest ranking officer in the US Army,) recently said “There are several key
leadership traits that enable successful execution of mission command. First, the most important action you can take on a daily basis is to communicate. Communicate your vision, your intent, and your left and right limits to staff and subordinate command (2012).” The importance of mission command systems and how the efficiency at which the infantry battalions and companies employ them to tactically communicate on the battle field is simple to identify – it is a life and death business. Poor execution of mission command can get Soldiers killed. The researcher focused on obtaining literature more applied to the tactical level of mission command. The highest echelon of tactical warfare is a brigade combat team (BCT), which consists of approximately 4,000 Soldiers and few service members of other military organizations). The two levels above a BCT are operational and strategic (Headquarters, Department of the Army, 2014). The two echelons below a BCT that the researcher will focus on are an infantry battalion (approximately 700 Soldiers) and the subordinate infantry companies (approximately 140 Soldiers). While this research is focused on a military problem, the researcher also strived to obtain scholarly literature that was from civilian organizations so the aperture was not overly biased to just military observations.

**Fighting products.** Lieutenant Colonel Jeremy Schroeder (2015), an OC/T at the JRTC, found that a battalion commander should establish his or her own “fighting products” that his mission command systems will create in order to effectively communicate and allow the commander to process information that aid his ability to visualize the battlefield. These “fighting products” are an output of the battalion’s mission command systems that are ultimately employed to the subordinates for use and facilitate better shared understanding of the higher commander’s vision, intent, and plan. Examples of fighting products are the maps and graphics that show the infantry unit’s plans, synchronization matrices of all the units over time and space,
Establishing these products, utilizing them, and training the specific staff officers to build them prior to a training rotation at the JRTC or in combat is critical to aid in the rapid decision making required to be successful in accomplishing the unit’s mission.

**Understanding the systems at the battalion.** The challenges of efficiently conducting mission command at any echelon is not new, especially now in such a rapidly advancing age of information and technology. Lt Col William P. Jensen (2004) researched a larger aspect of Joint aspects of mission command with particular attention to the challenges in information management, common terminology, and how this all feeds together. While this literature was not at the battalion or company level, it did focus the point of commanders in today’s era are moving to wanting the capability to know everything or move toward omniscience. The challenges with this mindset are the inevitable effects of data saturation when mission command is purely looked at as a system and that system is what will make the decision. It doesn’t matter how much bandwidth or how many wireless devices are involved to create share understanding, there is always going to be the requirement for the commander to describe the vision and communicate the intent and plan.

Along similar lines of the relevancy of mission command systems and their challenges, another scholar from the School of Advanced Military Studies, Major Kenneth E. Viall (2000) built a monograph over 15 years ago that provide points still ringing true today. This research paper is a continued look at tactical information and tactical knowledge while using the term that existed before “mission command” was adopted by the US Army – that term is “command and control” or (C2). Some of today’s military leaders have verbally admitted that mission command might need to go back to C2 because it involves the word “control” and they are afraid “control”
is not happening anymore within Army leadership. Liao (2000) actually defines this C2 best by
describing command as giving an order while control is ensuring that the order is executed in the
prescribed manner.

In addition to literature from military sources, Professor Daniel Power (2008)
demonstrated the power of actual decision support systems and his points could be applied to
Army infantry units conducting training as well. Of note, software based systems have been
used as far back as 1963 for air-defense command and control (C2) systems to provide real-time
data and allow decision makers see the data in a way that would facilitate rapid decision making.
This software technology is just like some of the systems that the Army has been continually
trying to employ in tactical environments by combing data, documents, communications over
various platforms, and tasks all together to get the required decisions presented in a way that
allows commanders to visualize the problem and direct a way to fix it.

Communications architecture. Whether it be the company or battalion level, the
physical communications architecture plays a key role in how mission command systems are
emplaced within a unit’s command post and whether or not the systems help or hinder decision
making. Everything from where the radio sits and who is operating that radio to where the
computer is drawing up the plans or graphics for an upcoming mission. But before describing
the physical architecture, Phillip and Martin (2009) offer a great insight into how the
observations and decisions are actually carried out and with and aspect of time thrown into it.
The description of the “OODA loop” is a fascinating and explanation of how decisions are made
and also indirectly applies to how a communications architecture would be set up. The OODA
in “OODA loop” refers to the acronym OBSERVE, ORIENT, DECIDE, ACT, repeat (or loop).
Observation is the means by which one collects/registers information about the state of the
external world. What is one’s current state with respect to the environment? Orientation comprises the internal processes by which observations are compared with prior knowledge and experience to update an understanding of the world. Decision is the internal process by which various tentative solutions are assessed and one selected for action. Rationalize the projected change of state required, if any. Finally, action is the process by which the internally constructed solution is applied to the world. While this theory of OODA loop applies to decision making, Phillip and Martin (2009) add “plan” and “decision-making” into the formula to reconstruct it and better apply it to the challenges of time into the cognitive process of decision making and the rationale of why decisions are made.

**Accounting for the enemy.** The researcher is exploring mission command at the tactical level of warfare, using a DATE at the JRTC. Therefore, the affects of mission command systems that relate to enemy actions must be taken into effect. The analysis of the enemy (or threat) is critical to all visions, intent, and plans the company or battalion commander communicate over their mission command systems. A team of three OC/Ts at the JRTC published observations of the how companies analyze the threat at the JRTC; Neilson, Corbin, and Barron (2015) show that the DATE has shown most companies fail to properly account for the enemy when communicating plans to the units or reporting actions to their higher echelons. This is a direct result of not planning for the mission command systems required to properly take this aspect into consideration. As stated earlier in “fighting products”, one product that cannot be ignored to influence decision making is products that communicate what the enemy is doing and what it is anticipated to be doing in the future. This system can be digital or analog; but ideally it is both and it is just as critical as anything else placed within a unit’s communications architecture. Examples are the analog charts and maps showing what the
enemy patterns have been so the commanders can incorporate those actions into their brainstorming and analysis as well as the systems that offer real time observations of enemy actions (unmanned aerial reconnaissance and human reports of enemy activity).

**Mission command at the company.** Earlier the literature focused on the battalion (higher) level of mission command and how those systems, concepts, and theories aid in rapid decision making. However, the battalion consists of at least five or six companies. Therefore, the researcher must incorporate the subordinate companies’ mission command to fully understand how the systems affect decision making. In the US Army, the term “Common Operational Picture” (or COP) refers to what the commander can look to have the updated information required to maintain situational understating, awareness, and therefore make rapid decisions. Gregory Barry (2015) addresses the technological challenges involved with a company commander building a useful COP while avoiding the pitfalls of getting too focused on the advance technological systems. The COP must be a quick resource that is constantly receiving, disseminating, and analyzing information in a circular manner. This cannot be one person’s job – but it must be able to be understood by one person at a time. Consider the infantry company in a DATE that is not in a building or tent, but possibly alone in dense terrain without the comforts of four walls, because this is how an infantry company operates. The commander must then build products facilitating mission command systems that are efficient and easily understood in that austere environment.

The COP is part of a company command post (CP) and Jones and Mabes (2015) cover the US Army’s six doctrinal functions required to build a CP worth using. Similar to what Barry stated earlier, but highlighting the additional requirement of how a CP is conducive to troop-leading procedures (TLPs) is the focus of the next literature. CPs have to maintain the flexibility
of being useful in austere environments, but also have the advanced level of performance to be semi-digital and fully digital. This is because commanders cannot simply avoid the hard aspect of using technology to their advantage. Commanders must train and be ready to establish digital command systems as time permits because that is what is expected to communicate to their higher headquarters. Furthermore, even though an infantry company is only approximately 140 personnel in strength, the correct and best people must be identified to man the mission command systems that each company deems important to facilitating shared understanding and decision making.

The application of mission command at the company is so critical because technology is not going to stop advancing and systems are going to continually be pushed into company command posts. In White Sands Missile Range, New Mexico, there is an annual training exercises conducted with Army units to test new equipment being proposed from Army Acquisitions Corps teams that are trying to sell their products to become part of the Army inventory. An equipment contractor (Davidson, 2011) followed a unit from 2nd Brigade, 1st Armored Division in 2011 during their testing of satellite and terrestrial networks where individual Soldiers were carrying systems that instantly shared images of high-value targets across everyone’s device and populated the photos in command posts across the entire brigade. If this technology was forced upon commanders have to use at the company level, it could quickly become another system that will influence their decision making and possibly overwhelm the amount of information flowing into their decision making cycle.

**Not understanding what the boss wants.** Decisions are useless if they are not tied to what the boss (or higher level commander) needs as well as if the decisions do not aid in what the subordinates are expected to carry out. Arguably, the key component of mission command is
the facilitation of rapid decision making. However, if a subordinate is not set up, or if the subordinate’s CP is not set up to properly communicate to the boss, decision making is degraded. Therefore, the subordinate must understand what the boss wants, or rather needs to know in order to make decisions that will not only affect the subordinate unit but also the adjacent units to the left and right. Hallsten (2015) analyzes the struggles company commanders have with visualizing the battlefield compounded by the frustration of not communicating vertically with the higher commander to fully understand what is required. In a DATE, a commander cannot simply get in a vehicle to drive kilometers or miles to the commander and confirm, face to face, what is required. Therefore, the important aspect to research is what are the companies using to fully understand what the higher commander must know and internalize as the fact. The current technological advances can intimidate a young commander or worse yet, overwhelm them. The commander must be familiar with the existing systems enough to know who can maintain them and keep the systems employed to be useful in the time constrained environment of the DATE within the JRTC.

Hallsten (2015) looks further into the time and event driven actions that can determine when a company commander can rely solely on analog systems to tell the higher echelons what information they need and also be able to identify when the conditions are conducive to focusing more on reporting via digital communications to use technology to its advantage. The ability to understand when these conditions are set comes with time, experience, and most importantly – training. However, a general understanding of the available systems will allow the commander to know what systems are a priority and therefore build a unit that is proficient before arriving at the JRTC.
Another important aspect to understanding what the boss wants and being able to make better decisions is the way that group collaborates to present the information to the decision maker. When looking at how a group processes information, it is critical to consider the low status participants that are often overlooked and may hold information that the boss required, but no one was aware of that information because of that one individual’s apprehension (McNamara, Dennis, & Carte, 2008). In any company command post, the commander will rely on his team to not only employ their mission command systems, but also have the requisite skill to know how to pull the important information from the system and present it for decisions. Therefore, overlooking the skill and quality of the system operators within in the command post could prove detrimental to having the right information presented to facilitate rapid decision making.

**Performance Criteria**

Army training is evaluated using a training and evaluation outline (T & EO) for all training tasks. T & EO’s are a simple checklist used by an external observer to provide feedback and performance evaluations of selected tasks that fit the unit’s mission. The T & EO is a table and an example is seen in Table 1 below and can be found using the Army Training Network online (2016). The survey questions used in this research were very similar to the way a T & EO is formatted so the respondents were familiar with this method of capturing data.
Table 1. Example T & EO

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURES:</th>
<th>GO</th>
<th>NO-GO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Commander/first sergeant supervised establishment of the command post (CP).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Coordinated final locations with higher headquarters (HQ) staff element and communications chief.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Supervised positioning of vehicles and tentage in accordance with the layout plan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Supervised employment of camouflage and concealment measures to ensure consistency with current tactical situation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Supervised construction of barriers around CP area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Coordinated setup of communications equipment with higher HQ communications staff element using analog and/or digital communications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Established CP entrance and exit guard posts in accordance with instructions in the tactical standing operating procedures (TSOP) and/or higher HQ staff element's guidance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Designated helicopter landing area in coordination with the higher HQ staff element.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Enforced safety procedures in accordance with readiness standing operating procedure (RSOP) and applicable publications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Enforced environmental stewardship program procedures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Unit sat up the CP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Positioned all vehicles in accordance with layout plan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Sat up tentage in accordance with layout plan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Remoted radios and generators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Constructed noise barriers for all generators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Camouflaged all equipment, tentage, and vehicles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Constructed concertina wire barrier around the CP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Employed safety procedures in accordance with TSOP and applicable publications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Employed environmental stewardship program procedures.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITERATION:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>M</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL TASK STEPS EVALUATED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL TASK STEPS GO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRAINING STATUS GO/NO-GO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary

All the literature surrounding mission command systems and decision making have shed light on a few underlying aspects that bring these two variable together. The time, information available, and proficiency in the technology also play a critical role in the efficiency of battalions and companies’ ability to create mission command (communications) systems that are helping and not hindering decision making. Additionally, human nature and the individual characteristics of the users also weigh heavily on the effectiveness of these systems.
Chapter 3: Research Methodology

Introduction

The mission statement for the entire U.S. Army is stated in Army Doctrinal Publication (ADP) 1-0 as "Fight and win the Nation's wars" (2012). Most people would argue that is impossible to win any war without being able to effectively communicate. The U.S. Army's mission command systems are technologically advanced communications systems and all serve a purpose. There are more systems existing in the Army’s inventory today that it is doubtful that any one Soldiers could name them all. Therefore, this research will focus on the systems at the battalion and company level to examine how much the systems are helping commanders make decisions in a tactical training environment that is replicating the wars we are currently fighting or preparing to fight.

Research Methodology

In any environment, training or combat, Commanders at all echelons rely so much on their mission command systems in training or combat because those are the systems that transmit data from their subordinate leaders to help that commander stay situationally aware and well informed and therefore being able to rapidly make decisions. This research evaluated an infantry unit’s program or SOP, specifically on the correlation between battalion mission command systems and company level decision making to better understand if the mission command systems are helping, hindering, or hurting the subordinate company level commanders make rapid decisions, in what could be life and death situations.

In order to conduct this research, the data was collected from an active duty infantry unit conducting training at the world's premier training center, the Joint Readiness Training Center. The JRTC exists to put military units through the most rigorous, relevant, and realistic training a
unit could endure without actually engaging in actual combat operations. While training at the JRTC, every unit has other Soldiers, from outside their actual organization, observe and coach the training unit during their rotation; these individuals are known as OC/Ts. Therefore, in order for the researcher to be the least obtrusive to unit conducting their training, surveys were conducted with the OC/Ts to gain data on the unit's ability to make company level decisions while conducting their training at the JRTC. This is further explained later in this chapter.

Data Collection

Data collected. The data that was collected in order to answer the research questions came from an Army infantry unit conducting the most realistic and relevant training there is to offer. This was because the researcher wanted the primary data to come from a period in time where the systems and commander’s decision making was at the highest stress level in order to get the optimal data points. In other words, a professional sports scout isn’t going to go collect data on his potential recruit while that recruit is just warming up, the scout will see that recruit on game days and especially in the playoff games. The breakdown of what data was required is laid out in the subsequent paragraphs, starting with the overarching question.

Primary research data details. In order to answer the overarching question of how the battalion level mission command systems are affecting company level decision-making in a decisive action training environment at the JRTC, the researcher needed to gather some demographics on the OC/Ts; current duty position, time in service, time in position. This data helped the researcher understand the experience level of the OC/Ts has while serving with the training unit. In order to completely understand the independent variable (the battalion's mission command systems), the researcher needed to determine how many and what type of operational systems were being employed for this unit's training rotation. Additionally, the researcher
gained data on how long it took the company commander to make decisions while managing the
plans and orders being disseminated to him, what information is the company commander was
receiving from his battalion to make the decisions, and what system was being used the most to
communicate the information.

**Subquestion data details.** To build off of the overarching question, the researcher
needed to determine how information was being communicated from the battalion's mission
command systems to their subordinate companies, because each unit has their own preference or
standard operating procedure on how this is executed. The researcher identified the battalion's
preference on which systems they were using to communicate to the subordinate
companies. Additionally, the timeliness or battle rhythm that information was disseminated,
how is receipt of information was confirmed, and how effective the battalion though these
systems were for their subordinates.

Transitioning to the company level, the researcher identified what systems exist at the
company level to receive the information. The type, quantity, and status of each system was
required to understand what the subordinates were using. Additionally, the researcher gathered
data on the company commanders’ perspective on how well these systems received information
that allowed the commander to rapidly make decisions.

Building upon what systems the company commander was using to make decisions, the
researcher then required data on the physical set up or layout of the mission command systems
within the command post. This was separated from the previous group of data because each unit
built their set up or layout a little different and command posts are the locations where decisions
are most often made. The researcher also needed data on which systems communicated to other
systems, which ones sent information higher to their bosses, lower to their subordinates, or laterally to adjacent companies.

Lastly, the researcher identified any remaining factors that contributed to the company commander losing the ability to understand their battalion commander’s intent, mission, or operational plans that facilitated the decision making. These factors could have been, but were not limited to, the commanders level of personal motivation, level of confidence, level of competence, knowledge of Army doctrine and tactics, their personal assessment of how well they understand what decisions need to be made and when, and how much time they personally consumed to make decisions.

**Data Collection Procedures**

The data for this research was collected through surveys from the OC/Ts working with an anonymous infantry battalion conducting their training rotation at the JRTC. The battalion and its companies came to the JRTC and trained for roughly 21 total days while the OC/Ts worked alongside the unit the entire time observing their actions, application of military doctrine, building rapport, and provided honest coaching and feedback. At the end of the 21 days, the OC/Ts were basically treated like members of the unit and knew the unit as well as they knew themselves.

**Target Population.** The target population for this research was three infantry battalions and nine subordinate companies conducting their training at the JRTC in Fort Polk, LA. The recommendations and conclusions of this research will benefit all battalions and companies in the U.S. Army, but for this research, the target population was limited to only the infantry battalions and companies conducting the training rotation. Because the training was so rigorous and exhausting at the JRTC, and time is limited, the researcher further refined the target
population to the OC/Ts serving alongside the infantry battalions and companies. This was to allow the training unit to focus solely on their mission at the JRTC, to prevent the training unit from being influenced by knowing the researcher was collecting data, and to prevent unintended interruptions to the training unit's operations.

**Sample details.** There are at least ten Soldiers serving as OC/Ts for the infantry battalion and twenty-five OC/Ts for each infantry company. Therefore, the researcher had a total of at least 30 battalion level OC/Ts and 75 company level OC/Ts for a total of 105 minimum OC/Ts available to conduct the surveys and provide the required data. The researcher sent out the survey to all the infantry OC/Ts via Survey Monkey to keep the returned data anonymous and random. There were absolutely no vulnerable populations within this sample because OC/Ts cannot serve if they are under the age of eighteen, incarcerated, pregnant, or disabled.

Contact information for the respondents was not maintained in order to keep the surveys completely anonymous. The OC/Ts email addresses were not publicly available as they are on a government network server. Therefore, the researcher explained in the permission letter that OC/Ts were contacted via email, but their identities, email, and any personal information were not be included in the report.

**Instrumentation.** The permission letter allowing the researcher to conduct the data collection of this project is found in Appendix A and the consent forms for each OC/T are found in Appendix B of this research proposal. The survey that OC/Ts took is found in Appendix C. The survey is a combination of some basic demographics to group the results, Likert scale questions with a scale of 1 to 5 that gauge effectiveness of the mission command systems, and block check questions to understand the quantities of systems and their impacts on the companies. Lastly, the survey closes with an open-ended question to allow the researcher to gain
any additional data that wasn't considered when building the research plan. The survey was created solely for the purpose of this research and did not exist prior this research project. Additionally, because these surveys do involve human beings, the consent form in Appendix B was provided to each OC/T conducting the survey.

**Procedures.** The surveys remained anonymous by loading the survey into www.freeonlinesurvey.com and providing a link to the OC/Ts being asked to conduct the survey. The timeframe for this data collection remained anonymous to protect the identity of the units; the researcher conducted a meeting one month prior to the unit’s training rotation to brief the research plan to the population’s supervisors. Even though the researcher does work in the same organization as the respondents, there are not direct supervisor relationships. Therefore, the secondary purpose of the pre-briefing was to explain how data will be requested via email, but the responses are not tied to anyone's email address and therefore remained completely anonymous.

The survey was provided to the respondents at the start of the anonymous training unit’s rotation with a suspense to complete the survey at the conclusion of the unit's training and after-action reviews. This allowed the OC/Ts to briefly read the surveys at the start of the rotation to understand what the researcher was looking for during the training and allow time for the respondents to complete the survey while observing the unit. A 40% return rate was planned for and put 12% proved adequate to allow the researcher to draw conclusions. If a survey was incomplete, the researcher still used the questions that were answered. Once the surveys are complete, the researcher will deactivate the link on www.freeonlinesurvey.com and shred any printed results.
Timing. The start date of the survey was the day that the training unit will fully arrived to the JRTC and start establishing their mission command systems. Unfortunately, there were not any extensions to the time frame of this research because the training was on a timeline to deploy and redeploy and that timeline could not be extended.

Data Analysis and Synthesis

Quantitative analysis of the survey responses was used in this research to analyze the correlations between the variables to determine if they are in some way associated (Leedy & Ormod, 2012, p. 291). The responses were the primary data that was collected and displayed in a table to group the percentages of each question by the respondent to show the correlation between the mission command systems and how effective the company commander was able to make decisions. Additionally, scatter plots were used to show the correlation between the communications architecture in the unit's command post and how that architecture facilitated information to allow for company commander’s decisions. The researcher evaluated the program by using a bivariate correlation (Thompson, 2006) to determine the association of the two separate independent variables (mission command systems and communications architecture) with the company commander’s decision making (dependent variable) to enable a better understanding at what was influencing the company commander’s decision making in their training rotation at the JRTC.

Reliability and Validity

The reliability of this research resided in the experience of the OC/Ts. The daily duty of an OC/T is to evaluate a unit’s ability to properly conduct or execute specific tasks and because the OC/Ts do this every month for a different unit, their competence is well practiced over a variety of conditions.
The validity of this research came from the researcher conducting two bivariate analysis tests the independent variable changed but the dependent variable remained constant. This validated the research by looking at two separate variables, within the mission command systems, that were effecting the commander’s decision making.

**Limitations**

The limitations for this research were twofold; the sample size and bias. This research sample was only one unit within the entire U.S. Army and the results may not apply to every single battalion or company that exists. The data collected from the unit could have been different, although not drastically, from a unit conducting training at a different time of the year or a unit that had a different training glide path leading up to their rotation at the JRTC.

Second, the researcher and the respondent’s bias could have skewed the results because each leader and Soldier in the U.S. Army has their own opinion of mission command systems and their effects on decision making. This bias was combated by the fact that OC/Ts are taught and trained to remove their emotions from evaluating any unit that comes through the JRTC.

**Summary**

The secondary data from this literature review was qualitative, but the researcher wanted to approach this problem from a quantitative standpoint so the audience didn’t think this was just more of an opinion. The ability to quantify the systems and scale the OC/T’s feedback resulted in a more accurate analysis of effects that was easier to display and see the results on a chart, creating a greater understand of the problem.
Chapter 4: Data Analysis

Introduction

The purpose of this research was to evaluate how mission command systems at the U.S. Army infantry battalion and company level affect the decision-making in the infantry companies in a decisive action training environment (DATE) at the JRTC. The presentation of the primary data is displayed in the subsequent paragraphs as they relate to the research questions and conclude with a focus on the most pertinent data to answer the primary research question.

Description of Data Sources

The primary data for this research came from Observer-Controller/Trainers (OC/Ts) serving or having recently served at the JRTC. The OC/Ts have varying levels of experience as shown in the Figures 1, 2, and 3 on the next two pages of this chapter, but their observations were recorded during or at the conclusion of a single and anonymous JRTC training rotation. To further clarify the reliability of the data source, it is important to note that the unit that was observed for this data collection will remain anonymous, but the data was collected for one single unit in one single rotation, not numerous units over the course of many rotations.

The majority of OC/Ts assigned to the JRTC work with battalion, company, or platoon-sized infantry units. Figure 1 below shows that nine of the 12 respondents to make up the sample size for this data primarily served at the battalion level. The benefit of having 75% of the respondents coming from the battalion level is that those OC/Ts typically have more years of service in the U.S. Army than a company OC/T and therefore possess more experience to facilitate accurate and valid responses to the survey. Additionally, Figure 2 shows that the remaining 25% of the respondents were serving as company OC/Ts (a lower echelon than
battalion OC/Ts), but they also served 8 years or more in the U.S. Army and therefore the reliability to the primary data is further increased.

Figure 1. Current Duty Positions of Survey Respondents

Figure 2. Duration that each respondent has served in the U.S. Army
The time served by each respondent in their current duty position displayed below in Figure 3 shows that 50% of the respondents have been in position 12 months or more. The importance of this is to note that the JRTC will have 10 training rotations a year; this means that 50% of the respondents have observed at least 10 different rotations prior to the rotation that was used to collect this primary data.

![Figure 3](image)

**Figure 3.** The duration that respondents have served in their current duty position

**Analytical Results/Data Analysis**

The primary data collected for this research applies to both the primary research questions and the sub-questions. In order to best describe the results, the sub-questions and their supporting data analysis is addressed first and concluded with the primary research question. This is because some of the primary data results supported multiple sub-questions that facilitated the overall primary question.

**How is information being communicated to companies, from the battalion, while training at the JRTC?** The first step of the research was to determine how information was
being communicated to the companies, across which systems, which systems were most commonly used, and the effectiveness of the communication. Figure 4 below shows that the OC/Ts observed three different means that company received information from their superior headquarters, the battalion. The most common system used was the Joint Capabilities Release (JCR)/Blue Force Tracker (BFT) with 79% of the respondents observing this used the most often. Second to the JCR/BFT was 17% of the OC/Ts observing hand-held frequency modulation (FM) radios being used and one OC/T saw face-to-face meetings as the primary method of a company receiving information. With the vast majority of OC/Ts observing the JCR/BFT as the primary method, this indicates that battalion headquarters prefer to communicate over the more technologically advanced system available. However, this also eliminates the benefit of using point-to-point voice communications over a radio and could therefore leave the transmitted graphics or written orders up for interpretation once received at the company.

![Figure 4. Mission Command Systems at the Company](image-url)
To further evaluate the effectiveness of the communication, the OC/Ts provided observations on how well the company was able to receive the communicated information and in turn facilitate their decision-making in a tactical environment. Figure 5 shows that half of the OC/Ts disagreed that a company commander was able to receive information, over any of the three means displayed in previously in Figure 4, and make decisions from that communication method. Furthermore, the data was not a clean 50-50 split. While 50% of the respondents disagreed with the company commander was able to use their mission command systems to effectively to make decisions, 8% of the respondents were neutral, 33% agreed, and another 8% strongly agreed.

![Figure 5. Receive Information and Make Decisions](image)

The first two sets of data indicate that the digital graphics and written messages, similar to an email message, are the preferred method to communicate from a battalion to a subordinate company. However, at least half of the companies are not able to make decisions from this method of communication.
What are the most commonly used mission command systems at the company level?

To further evaluate the overall research question, the research considered not only the communication between the company and battalion, but also consider the infantry platoons. Most infantry companies will have at least three subordinate infantry platoons. Platoons are more expeditionary than companies are and have less ability to carry and maintain robust and advanced communications, but communicating information, plans, and decisions to the platoons is vital to mission success.

Figure 6 below amplifies the expeditionary aspect of the platoons by showing that OC/Ts observed 92% of the units preferring FM radio communication to the platoons and zero JCR/BFT. The lack of any JCR/BFT systems observed at the platoon level shows that there is not an opportunity to flatten the communications and increase situational awareness at the platoon level because they are unable to simultaneously monitor what the battalion is communicating to the company.
The high percentage of FM radio use at the platoon level also shows that the platoons may only have one or possibly two forms of communication at their disposal. Therefore, the researcher considered the number of communications systems used at the company level to better understand how many systems are being managed at the company, before filtering all the information into a form that can be communicated over the simple FM radio. Figure 7 below shows that a company command post had anywhere from one to possibly five communications systems operational in their command post at any time.

![Figure 7. Mission Command Systems at the Company Command Post (CP)](image)

**How are infantry battalions and companies designing their communications architecture in their mission command systems?** The data in Figure 7 shows that company command posts have a larger and possibly more adequate set of mission command systems when compared to their subordinate platoons. However, having more does not always equate to something being better. The OC/Ts observed the company commander’s design and physical layout of the mission command systems within the command post, also known as the
communications architecture. Figure 8 shows that companies were not overly efficient in their design and employment of communications systems. Even though 42% of the respondents agreed, there were still 25% of the OC/Ts that were neutral in their observations along with 33% disagreeing with the company commander’s ability to build a communications architecture to facilitated rapid decision making.

![Figure 8. Company Communications Architecture Facilitating Decision Making](image)

The researcher further analyzed the quantity of mission command systems and physical layout of the systems to evaluate the commander’s decision-making ability. Figure 9 addresses the quantity of systems and the OC/T’s observations show a resounding percentage of disagreement that a company would need more systems to perform better at the JRTC. Only one OC/T assessed a company CP needing more systems to make rapid decisions at the JRTC.

Referring back to Figure 7, this respondent was also one of the respondents that only observed one system employed at the company CP, therefore it is understandable that their assessment was to increase the quantity. However, aside from this one respondent, there is an
obvious correlation that OC/Ts observed three or less systems at the company CP while also assessing that more systems were not required to improve rapid decision-making.

![Figure 9. More Systems at the Company CP does not Improve Decision Making](image)

Now that data has shown more systems do not equate to better decision making, the layout of the systems was analyzed. Figure 10 shows the OC/T’s assessment of the importance on the actual design and layout of communications systems. Earlier in the data analysis, the overall importance of the communications architecture was addressed, but that data did not delve into what made the architecture effective to rapid decision-making. Figure 9 shows that more systems are not required, and Figure 10 shows that the critical component is how the systems are arrayed. In other words, within the command post, where are the systems actually placed for ease of accessibility, room for operators to maintain and employ the systems, and built in a way that the company commander can look at their command post and immediately know where the communication systems are and what is being transmitted on them.
What factors contribute to the company commander losing the ability to understand their battalion commander’s intent, mission, or operational plan? Prior to addressing the overarching research question, the researcher considered external factors from the battalion that could be a contributing factor to the ability to make rapid decisions at the company. Figure 11 shows that less than 50% of the OC/Ts observed the company commander achieving a full understanding of the higher headquarters orders. Furthermore, Figure 12 indicates that over 60% of the OC/Ts assessed the company commander as overwhelmed by the volume of information being pushed down to their subordinate.
It was obvious that the company commander fully understood the battalion commander’s orders and instructions that were communicated over mission command systems.

<table>
<thead>
<tr>
<th>All Data</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Standard Deviation</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 (8%)</td>
<td>4 (33%)</td>
<td>2 (17%)</td>
<td>5 (42%)</td>
<td>0 (94%)</td>
<td>1.85</td>
<td>12</td>
</tr>
</tbody>
</table>

Figure 11. Company Level Understanding of the Battalion’s Orders

Figure 12. The Company Commander was Overwhelmed with Information from the Battalion
Technical Interpretation with Pertinent Data

Throughout the evaluation of the company commander’s ability to rapid decisions at the JRTC, the independent variable seen in vast majority of the data is the quantity of mission command systems. The quantity of mission command systems influenced two dependent variables pertinent to the overarching questions. These two dependent variables identified were the effectiveness the communications architecture and the overall ability of the commander to make decisions, when clearly overwhelmed by the quantities of systems. A bivariate correlation was conducted with each of the data sets to ensure the reliability of looking at two separate but similar dependent variables.

Figure 13 shows the correlation between the quantity of mission command systems and the ability to rapidly make decisions. The larger blue dots in the Scatter Plot below show the higher concentration of responses and the orange downward arrow shows the negative relationship of the two variables. With only 12 respondents in the sample of OC/Ts, a strong negative relation was calculated and shows that the more systems at company commander disposal, whether those systems be at the battalion or company level, the less effective the company commander is at rapidly making decisions.
Figure 13. Correlation between Number of Systems and Ability to Make Decisions.

Furthermore, Figure 14 maintains the same independent variable of the quantity of Mission Command systems in the company CP, but analyzes the correlation between the number of systems and effectiveness of the commander’s communications architecture. In this Scatter Plot, the highest concentration of responses start with the OC/Ts that observed only two communications systems and remained neutral, but then there is a larger concentration of OC/Ts that disagreed in the communications architecture facilitating rapid decision making as the quantity of mission command systems increased to three and four systems per company command post.
Summary

Chapter 4 provided the data used to analyze the overarching primary research question and the four sub-questions to gain a detailed and relevant evaluation do today’s mission command systems and how they affect a company commander’s ability to rapidly make decisions. After the results of the data collection were collated and applied to each of the supporting sub-questions, the most pertinent data was identified and allowed the researcher to conduct two bivariate correlations and show that more communications systems do not increase a commander’s ability to rapidly make decisions. Additionally, the importance of the company commander’s communications architecture was identified during analysis of data from the sub-questions, but the second bivariate correlation also showed that more systems do not increase the effectiveness of a commander’s communication architecture.
Chapter 5: Summary, Conclusions, and Recommendations

Summary

Context. The topic of mission command systems is commonly debated in the majority of U.S. Army meetings, field training exercises (FTX), professional development conferences, and especially at combat training center (CTC) training rotations. This research focused on an evaluation of how the Army’s mission command systems affected tactical decision making at the company level during a training rotation at one of the Army’s three CTCs, the Joint Readiness Training Center (JRTC).

Problem. There are ten training rotations with ten different units that occur each year at the JRTC. Each one of these rotations present their own differences with regards to weather, enemy threat, assigned missions, and training objectives. However, the one constant problem that does not have a simple answer and is continually evaluated is how the unit’s mission command systems are effecting the commander’s ability to make tactical decisions.

Research objective. The researcher sought out to better understand and evaluate the effects of mission command systems on decision making because of its importance to how the commander leads their organization. Throughout the research, specifically the literature review, the researcher identified that the quantity of mission command systems at both the superior and subordinate levels was a key variable. Additionally, how the mission command systems were employed to build the communications architecture proved to be a key variable. The researcher wanted to evaluate these systems to identify an area for units to focus their training on and subsequently improve their own unit-internal systems and procedures for employment of mission command systems.

Decision criteria. Every Army unit faces resource and time constraints due to operational tempo, mandatory training, and deployments and both are insufficient to train on
everything that requires improvement. It is important to train on multiple mission command system because units may not know which systems they will be equipped with. Therefore the quantity of mission command systems used or employed affects decision making and the systems need to be trained on in order to facility the commander’s rapid decision making.

It is also important for a unit to train on how they will employ their mission command systems, no matter which ones they utilize, so the commander can understand the layout and systems within the layout and systems within the command post. The commander can then make rapid decisions with the understanding of the correct data sources. Therefore, in order to reduce the scope of the problem and identify which variable was having the most significant effect on the company commander’s decision making, the researcher built a decision support matrix found in Figure 15 below. This decision support matrix weighs the two variables based on criterion that was built from feedback and responses from the survey. This matrix allows company commanders, along with their superiors and subordinates, to understand which aspect of mission command systems have the greater impact and should therefore be the focus of their training.

Table 2. Decision Criteria for Training on Number of Systems or Architecture

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Train on all available systems to employ in any architecture</th>
<th>Train on employing systems in one architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time required to train is low</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Resources required to train is low</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Required to win in combat</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Improves the ability of leaders in the unit</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td><strong>10</strong></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>
**Findings.** The researched found a negative correlation between both the quantity of mission command systems and the efficiency of the communications architecture in relation to the company commander’s ability to make decisions in a tactical environment. As the quantity of mission command systems increased, so did the inability of the company commander to make decisions. Additionally, the greater the number of mission command systems in the company commander’s communications architecture, the less effective that commander was at rapidly making decisions in the tactical environment.

**Conclusions**

**Data interpretation.** The findings from the analyzed primary data in the previous paragraphs reiterate the negative correlation the quantity of mission command systems and the variables of both the ability to make decisions and the ability to employ an effective communications architecture. These findings are further compounded by two of the open-ended responses from the anonymous survey.

One respondent (Anonymous, 2016) stated that “The greatest challenge to the CO CDR that is geographically separated from the higher headquarters (HHQ) is the maintenance to the common operation picture (COP); should be mirrored at all CPs, but rarely is. Which prevents anticipation at the Company level.” The COP is a product of a well-built communications architecture. All the voice or digital communications that come through the mission command systems are carried over to the COP to show updates and current situations of the ongoing mission. This respondent’s comment supports the findings that the communications architecture is a critical component to tactical decision making. Additionally, if there is a larger quantity of
mission command systems, the communications architecture is degraded which in turn can degrade the COP; all resulting in a lesser ability to make decisions.

Another respondent (Anonymous, 2016) stated that “Not all units are skilled in updating JCR overlays, sending JCR operations orders (OPORDs), or finding ways to print updated paper products for wide dissemination.” This respondent’s comments relate back to Figure 4 in Chapter 4 because the data showed that 75% of the company command posts used the JCR for the system to receive information from their superior (battalion) headquarters. The JCR was clearly the primary mission command system to receive information, but the respondent shows that units are not trained effectively on using this primary system. This data point is what drove the researcher to build the decision matrix in Table 2 above to determine if it was more critical for the unit to train on a larger number of systems or focus on just building the critical communications architecture in order to improve decision making ability.

**Recommendations**

**Link to data.** The critical primary data was compiled and analyzed in Figures 7, 9 and 13 to show that more mission command systems do not relate to more effective decision making. Additionally, the primary data from Figures 8, 10, and 14 show that the communications architecture is a critical component for tactical decision making, but more systems within the architecture also does not lead to more effective decision making. This data analysis leads the researcher to recommend the unit place a heavier emphasis on training operators and leaders on their mission command systems early and part of a weekly routine to increase competency in the systems. Just as the data showed that more systems does not equal better decision making, the other recommendation is for units to carefully pick and choose which systems they will use to communicate in a tactical environment and come to a command decision that identifies the
fewest number of systems possible that will be incorporated into their communications architecture.

**Link to literature.** The reviewed literature from Chapter 2 of this report correspond with the findings of data analysis in Chapter 4 and recommendations on what units should train on, as listed in the previous paragraph. Specifically, just as Professor Daniel Power (2008) demonstrated that software systems dating back to 1963 have assisted decision making, it was how the person visualized the output of the software that facilitated decision making. The software is useless if the person or commander is not building their architecture in a way that helps them visualize the problem and make informed decision.

Additionally, Neilson, Corbin, and Barron (2015) highlight the importance of accounting for the enemy, but not necessarily incorporating more systems to assist in this aspect of building the communications architecture. Simple analog enemy charts can be incorporated to show enemy information that was communicated via voice or digital systems and emplaced within the company command post that allow commanders to visualize the threat and make informed decisions quicker.

**Action plan**

When Army units are not fighting, they are training. Therefore it is reasonable to recommend that units can improve their ability to make decisions with their mission command systems through training. However, the difficult part is carving out the time to train when synchronizing with all other competing events and picking the correct objectives or subject areas to train on.

There are many cyclical activities in the U.S. Army, and one of those activities is maintenance of the unit’s equipment. If a unit is not conducting training in the field, they
conduct maintenance to start the duty week. Commanders need to incorporate and place focus on their communications systems during the maintenance day instead of just focusing on vehicles and weapons. This would force the individual communications operators to increase competence on this systems and identify which ones work better than the others. Then the commander could receive recommendations on which systems are performing the best and begin selecting those systems to be the framework for the unit’s communications architecture.

It is imperative to do these activities with a unit’s communications equipment as part of an already established procedure like maintenance at the beginning of a duty week because personnel and leadership changeover is inevitable in military units and new leadership could quickly dismiss this idea if does not become a routine activity. Once a commander has successfully identified the unit’s preferred systems, the next step is begin physically establishing the command post weekly as part of the maintenance day. Again, maintenance is not just for vehicles and weapons, so building the routine habit of putting up the command tent and plugging in all the mission command systems that were decide up can effectively be incorporated the unit’s maintenance day.

These actions will build a unit that executes routine things routinely. The same way units conduct vehicle and weapons maintenance at the start of every week or conduct physical training every morning, they will now train routinely on their mission command systems which builds muscle memory for not just the operators, but the entire unit. While the U.S. Army’s primary mission is to “organize, train, and equip forces to conduct prompt and sustained land combat operations and perform such other duties, not otherwise assigned by law, as may be prescribed by the President or the Secretary of Defense (Headquarters, Department of the Army, 2011, pp.
1-7),” it cannot execute that mission if it cannot communicate effectively over its assigned mission command systems.
Definition of Terms

1. **Mission Command Systems.** These are communications systems that U.S. Army units use in a tactical environment to communicate plans, direction, guidance, or orders to adjacent, superior, or subordinate units. They range anywhere from a simple frequency modulation (FM) radio to a sophisticated computer system on secure network based on satellite and/or terrestrial feeds.

2. **Unified Land Operations (ULO).** Describes how the Army seizes, retains, and exploits the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create the conditions for favorable conflict resolution.

3. **The Joint Readiness Training Center (JRTC).** The JRTC is located at Fort Polk, LA and is one of three combat training centers (CTC) used primarily by the U.S. Army to train and evaluate brigade combat teams (BCT) on their assigned mission in order to gauge the training readiness and deploy-ability. Army Regulation 350-50, Combat Training Center Program (2013), defines the JRTC at Fort Polk, LA (and the NTC at Fort Irwin, CA) as being the the center to train Army BCTs by conducting force-on-force and live-fire training in a Joint scenario across the range of conflict using a live-virtual-constructive (LVC) training model as portrayed by a professional opposing forces (OPFOR) and controlled by an expert and experienced Operations Group.

4. **Operational Environment (OE).** An operational environment is the composite of conditions, circumstances, and influence that affect the employment of capabilities and bear on the decisions of commanders (JP 3-0, 2011)
5. Decisive Action Training Environment (DATE). The DATE is a term used in the U.S. Army to describe the current environment that the Army is preparing to fight and win wars in. The purpose of the governing DATE document from The U.S. Army Training and Doctrine Command (TRADOC) is to provide the U.S. Army community with a detailed description of the conditions of five operational environments (OEs) in the Caucasus region (TRADOC G2, 2014).
References


http://search.proquest.com.cmich.idm.oclc.org/docview/214125171?accountid=10181


http://search.proquest.com.cmich.idm.oclc.org/docview/201696065?accountid=10181


http://dx.doi.org.cmich.idm.oclc.org/10.1108/13673270910931242


Appendix A

Permission Letter

MEMORANDUM FOR RECORD

SUBJECT: Permission to conduct research on mission command systems effects on company level decision making while conducting training at the JRTC

1. I have reviewed your request to conduct a correlation study on mission command systems and their effect on company level decision making while conducting training in a tactical environment at the JRTC. This research will be beneficial to OC/TS assigned to Operations Group as well as all U.S. Army units.

2. The only constraints are that the unit and their Soldiers that you are researching will remain 100% anonymous. In your research you will not identify the unit, anyone currently serving in the unit, or the OC/TS names that are serving alongside the training unit.

3. You have my permission to conduct this study within the time frame below.
   a. Removed to protect date of training and unit
   b. Researcher = Major Dan Stuewe
   c. 7260 Alabama Ave, Fort Polk, LA 71459

   3. POC for this memorandum is S3, Operations Group, MAJ Dan Stuewe at 337-531-5731 or daniel.r.stuewe.mil@mail.mil

CHRISTOPHER C. LANEVE
COL, IN
Commanding
MEMORANDUM FOR RESEARCH RESPONDENTS

SUBJECT: Consent to conduct survey in support of correlation study on mission command systems and their effects on decision-making

1. Introduction. My name is Major Dan Stuewe and I am a graduate student at the Central Michigan University. As part of my research, I am examining the effects that mission command systems at the battalion have on the company commander's ability to rapidly make decisions in the tactical environment. Because you are all intimately familiar with mission command systems and their effects on companies conducting training at the Joint Readiness Training Center (JRTC), I am asking for your participation by completing an online survey for the infantry battalions and companies conducting training in May 2016.

2. Purpose of the research study. The purpose of this study is to gather data about the effects mission command systems at the battalion have on the company commander to receive information that facilitates rapid decision making. The output of this research will serve to give battalion and company level leaders a better understanding of how the mission command systems are effecting company commanders and their operations.

   a. If you consent to this study, you will open an online survey found at the end of this document and take a short survey that should take no more than 15 minutes of your time. All answers are completely anonymous. There are no names, duty positions, or unit affiliation tied to any of the questions.

   b. The survey will take you approximately 15 minutes and requires no preparation. The survey can be conducted at any time upon receipt of this consent memorandum, but the ideal timeframe to take the survey is after the rotation is completed for the unit.

   c. Although we all serve in the same organization, I do not directly supervise any of you and I also will have no way of knowing if you participate and/or know what questions each participant answered. Additionally, participation is completely voluntary and will have no effect on you.

   d. The benefit of participating in this survey is that you are assisting in our continuous endeavor to make each unit and leader better that trains at the JRTC. Mission command systems are a constant focus point for every unit's training readiness and this research will further the knowledge of trying to solve this problem.
Appendix B

Consent Form page 2

ATZL-JRD-A
SUBJECT: Consent to conduct survey in support of correlation study on mission command systems and their effects on decision-making

e. As stated earlier, this survey is completely anonymous. I will see each survey but I will have no way of knowing who completed it. The project will be shared with my faculty mentor and the data will be compiled in my research project for potential use in future evaluations and after-action reviews of units training at the JRTC.

f. There is no compensation for this survey. Participation is voluntary.

3. For more information about this study, you can contact the researcher listed in the final paragraph or you may email the project advisor, Dr. Bob Weltzer at weltz1re@cmich.edu.

4. You are free to refuse participation in this study or withdraw consent at any time without penalty. Your decision on participation will not affect your relationship with Central Michigan University or this organization.

5. Please note that if you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you chose) any complaints to the MSA Program by calling 989-774-5525 or addressing a letter to the MSA Program, Rowe 222, Central Michigan University, Mt. Pleasant, MI 48859.

6. The survey is located at: link to be determined

7. PCC for this below at 337-531-5731 or daniel.r.stuewe.mil@mail.mil.

DANIEL R. STUEWE
MAJ, IN
S3 Operations Officer
MEMORANDUM FOR RESEARCH RESPONDENTS

SUBJECT: Survey on mission command systems at the battalion level and their effects on company level decision-making

1. What is your current duty position
   - Battalion level OC/T
   - Company level OC/T
   - Platoon level OC/T

2. How long have you served in your current duty position?
   - Less than 6 months
   - Between 6 & 12 months
   - Over 12 months

3. How long have you served in the U.S. Army
   - Less than 4 years
   - Between 4 & 8 years
   - Over 8 years

4. How many digital mission command systems were used at the company command post (CP)?
   - 0
   - 1
   - 2
   - 3
Appendix C

Survey page 2

ATZL-JRD-A
SUBJECT: Consent to conduct survey in support of correlation study on mission command systems and their effects on decision-making

○ 4
○ 5
○ More than 5
○ I don’t know

5. What mission command system was the company primarily receiving information from the battalion?
○ FM radio
○ JCR messages
○ Face to face meetings/briefings
○ Other:__________________

6. What mission command system did the company commander primarily use to communicate information to the platoons?
○ FM radio
○ JCR messages
○ Face to face meetings/briefings
○ Other:__________________

7. Did the company commander have a battle rhythm nested with the battalion?
○ Yes
○ No
○ I don’t know

8. The company commander built a communications architecture within the CP to facilitate rapid decision making?
○ Strongly disagree
Appendix C

Survey page 3

ATZL-JRD-A
SUBJECT: Consent to conduct survey in support of correlation study on mission command systems and their effects on decision-making

○ Disagree
○ Neutral
○ Agree
○ Strongly Agree

9. The company commander used the company’s mission command systems effectively to receive information and make decisions.

○ Strongly disagree
○ Disagree
○ Neutral
○ Agree
○ Strongly Agree

10. The company commander was overwhelmed with information being disseminated by the battalion.

○ Strongly disagree
○ Disagree
○ Neutral
○ Agree
○ Strongly Agree

11. The company commander needs more mission command systems in the company command post (CP) to make decisions faster.

○ Strongly disagree
○ Disagree
○ Neutral
Appendix C

Survey page 4

ATZL-JRD-A
SUBJECT: Consent to conduct survey in support of correlation study on mission command systems and their effects on decision-making

- Agree
- Strongly Agree

12. The physical layout of the company communications architecture is important in allowing the company commander to make rapid decisions.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

13. In a company command post, mission command system operators do not need to be well trained on the systems in order to improve the flow of information required for decision making.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

14. The battalion’s mission command systems improved the flow of information to the company.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
15. It was obvious that the company commander fully understood the battalion commander’s orders and instructions that were communicated over mission command systems.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

16. What challenges did you observe in the company commander’s ability to receive information and rapidly make decisions?
Appendix D

Anonymous answers to open-ended survey questions (Question #16)

1. The greatest challenge to the CO CDR that is geographically separated from the HHQ is the maintenance to the COP; should be mirrored at all CPs, but rarely is. Which prevents anticipation at the Company Level.

2. The ability to refine products over time. Not all units are skilled in updating JCR overlays, sending JCR OPORDs, or finding ways to print updated paper products for wide dissemination.

3. Additionally, the templates (or formats) which are used for things such as Information Collection Plans are not the same at Troop/SQDN level. Because different echelons use different formats, some information falls through the gaps or is not properly received.

4. BCTs and Battalions have access to Near-Real time information. As a result, some units attempt to make dynamic changes to plans that have already begun execution based off of changes on the battlefield. This will often unravel a plan, lead to mass confusion, and create plans that do not have staff analysis or War Fighting Function support.

5. Restrictions in time and resources, unclear guidance and/or intent and restrictions imposed to mitigate risk.

6. Company Commander’s not taking the initiative to pull information from higher headquarters. Message sent VIA MC systems doesn't mean message received; two way communications are not facilitated by digital mission command systems. Companies are not equipped or trained to use upper-TI mission command systems, therefore the battalion staff is not able to communicate directly using upper-TI systems.
### Appendix E

#### Raw Data Results from Survey – page 1

<table>
<thead>
<tr>
<th>What is your current duty position?</th>
<th>Battalion</th>
<th>Company</th>
<th>Platoon level OC/T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How long have you served in your current duty position?</th>
<th>Less than</th>
<th>Between</th>
<th>Over 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How long have you served in the U.S. Army?</th>
<th>Less than</th>
<th>Between</th>
<th>Over 8 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On average, how many digital mission command systems have you observed being employed at the company command post (CP)?</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>More than</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What mission command system have you observed at the company that was primarily receiving information from the battalion?</th>
<th>FM Radio</th>
<th>JCR/BFT</th>
<th>Face-to-face</th>
<th>Other (Please Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>9</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What mission command system have you observed that the company CP primarily use to communicate information to the platoons?</th>
<th>FM Radio</th>
<th>JCR/BFT</th>
<th>Face-to-face</th>
<th>Other (Please Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
On average, did the company commander have a battle rhythm nested with the battalion?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

On average, the company commander built a communications architecture within the CP to facilitate rapid decision making.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

On average, the company commander used the company's mission command systems effectively to receive information and make decisions.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

On average, the company commander was overwhelmed with information being disseminated by the battalion.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

The company commander needs more mission command systems in the company command post (CP) to make decisions faster.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

The physical layout of the company communications architecture is important in allowing the company commander to make rapid decisions.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Appendix E
### Raw Data Results from Survey – page 3

In a company command post, mission command system operators do not need to be well trained on the systems in order to improve the flow of information required for decision making.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

On average, the battalion's mission command systems helped the company to have increased situational awareness.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

It was obvious that the company commander fully understood the battalion commander's orders and instructions that were communicated over mission command systems.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>