IMPROVED UNDERSTANDING OF OPERATIONS ORDERS THROUGH MESSAGE CONVERSION INTO TEXT OR MULTIMEDIA

THESIS

Presented in Partial Fulfillment of the Requirements for
the Degree Master of Science in the Graduate
School of the Ohio State University

By
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* * * *

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ABSTRACT

In the United States military, Operations Orders (OPORDs) are well-structured text documents used to describe mission objectives and details on the plan to accomplish the mission (Bower and Smith, 2005).

A recent study by Bower and Smith (2005), described how the Collaborative SLide ANnotation Tool (CSLANT), can be used to create richer messages that can more effectively communicate the commander’s intent and increase understanding and recall of the message.

To further study the impacts of using multimedia messages for asynchronous communication, this project used the new version of CSLANT, called C-MRE, to study the impact of transforming a message from one medium to another (e.g. text to multimedia), as opposed to using the same medium (e.g. text to text).

It is hypothesized that the multimedia group will perform better on an understanding and recall questionnaire due to the deeper level of processing required for translating a message from one medium into another.
ACKNOWLEDGEMENTS

My thanks go to Professor Philip J. Smith for his help, guidance, and patience in helping me with this project. I am also grateful to Dr. Emily S. Patterson for her support and her participation in my thesis committee.

I would also like to acknowledge the 53 participants in this study that were willing to volunteer up to 2 hours of their time.

Finally, this research would not have been possible without funding from the Advanced Decision Architectural Consortium of the Army Research Lab.
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CHAPTER 1

INTRODUCTION

In the United States military, Operations Orders (OPORDs) are well-structured text documents used to describe mission objectives and details on the plan to accomplish the mission (Bower and Smith, 2005). Disregarding differences between OPORDs intended for specific echelons, OPORDs generally follow this format:

1. Situation
   a. Enemy
      i. Weather
      ii. Terrain
      iii. Enemy Forces
   b. Friendly
   c. Attachments and Detachments

2. Mission

3. Execution
   a. Concept of the Operation
   b. Specific tasks to subordinate units
   c. Coordinating instructions
4. Service Support
   a. General
   b. Material and Services
   c. Medical evacuation and treatment
   d. Personnel
   e. Miscellaneous

5. Command and Signal
   a. Command
   b. Signal

6. POC (Point of Contact)

Typically, OPORDs are presented either in live briefings or through text and static graphics. Following the initial presentation, subordinates are given a chance to ask questions in a back-briefing. This is the time when any misunderstandings are clarified.

In a recent study (Bower and Smith, 2005), it was hypothesized that

“the current text-oriented communication of Operations Orders makes it difficult to effectively asynchronously communicate content to subordinate leaders that has important dynamic visual dimensions, making it more difficult to establish common ground (Clark and Brennan, 1991) and to thus ensure an understanding of the situation and the commander’s intent and orders.”

This study further described how the Collaborative SLide ANnotation Tool (CSLANT), a communication tool that supports asynchronous communication by allowing a user to create a multimedia presentation by recording voice and screen
annotations, can be used to create richer messages that can more effectively communicate the commander’s intent and increase understanding and recall of the message.

To further study the impacts of using multimedia messages for asynchronous communication, this project used the new version of CSLANT, called C-MRE (Collaborative Multimedia Recording Environment) to study the impact of transforming a message from one medium to another (e.g. text to multimedia), as opposed to using to the same medium (e.g. text to text). The effect was evaluated with a questionnaire aimed at assessing the understanding and recall of the message creator.

For the purpose of this study, “multimedia” refers to a rich message recording that includes a combination of images, written words, spoken words, and graphical annotations (such as arrows and lines) drawn on the screen.

It is hypothesized that the group that must create a multimedia message will perform better on the understanding and recall questionnaire due to the deeper level of processing required for translating a message from one medium into another.

**Rationale**

The Bower and Smith (2005) study also indicates that “a complete understanding of the commander’s intent is critical...as is a shared mental model of the enemy situation and the operation (Bower and Smith, 2005).” Thus, there is a need to study ways in which all levels of leadership can more effectively understand and communicate the commander’s intent.
By studying how the act of transforming a message from one medium into another affects the understanding and recall of the author of the message, we aim to propose a format for creating OPORDs that incorporates both multimedia and text to better communicate the commander’s intent.

**Objective**

The objective of this project is to determine if the act of changing the medium when creating a message based on a Company OPORD leads to better understanding and recall of the mission-critical tasks by the person who transforms the message. Based on the results of this study, a recommendation can be made to the Army regarding the use of C-MRE to create multimedia presentations of certain parts of an Operations Order.
CHAPTER 2
REVIEW OF TECHNICAL LITERATURE

In 1956, Benjamin Bloom developed a classification of levels of intellectual stimulation that is needed in learning, now known as Bloom’s Taxonomy (OfficePort Educational Site, Northern Illinois University). This characterization is often used in education and teaching practices and is represented as follows:

The pyramid is arranged with the most broad and lowest-level cognitive skills at the bottom, and with the higher levels of cognitive processing towards the top. The classifications are defined as follows:

- Knowledge
- Understanding
- Application
- Analysis
- Synthesis
- Evaluation
“1. **Knowledge** – arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce, state

2. **Comprehension** – classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate

3. **Application** – apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write

4. **Analysis** – analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test

5. **Synthesis** – arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write

6. **Evaluation** – appraise, argue, assess, attach, choose, compare, defend, estimate, judge, predict, rate, select, support, value, evaluate” (OfficePort Educational Site, Northern Illinois University)

By asking participants to convert a message from a text medium into a multimedia medium, we hypothesize that cognitive processes as high as the Synthesis level will be invoked, resulting in a deeper comprehension of the message on part of the author. It is also hypothesized that not changing mediums (text to text group) will only evoke a cognitive process at the Knowledge level, since the task can essentially be performed as a mere duplication of the original.
Furthermore, research on memory and depth of processing by Craik and Lockhart (1972) concluded that “memory performance is a positive function of the level of processing required (Craik and Lockhart, 1972)” and that “if stimuli are only partially analyzed, or processed only at peripheral levels, their record in memory is extremely fleeting (Criak and Lockhart, 1972).” Since the text group’s task can be performed at a lower level of processing, it is thus suspected that the content of the OPORD in their memory will indeed be fleeting. Conversely, due to the additional processing required to understand the OPORD well enough to be able to show and explain it in a multimedia presentation, we believe that the OPORD will be remembered in more detail.

The Dual Coding Theory of Allan Paivio (1991) proposes that visual and verbal information is processed by different channels in the human mind, thus creating separate – yet interconnected - representations of the information in the mind. The verbal channel processes and stores linguistic information, while the visual channel processes and stores information as “picture-like” representations (Bauer and Smith, 2005). Because the two channels are interconnected, cueing from one channel to the other occurs, and recall of information about the environment is increased (Rieber, 1994; Simpson, 1995). This further supports the hypothesis that the multimedia group will process the information at a deeper cognitive and memory level, since not only are the message creators speaking, pointing, and drawing on the screen, but they are also playing back and watching their message to make sure that they are satisfied with it. While the text group also may review their product, the fact that it is only performed in the visual channel indicates that there is no cueing and thus results in a lower recall.
In the book *Multimedia Learning* by Richard Mayer (2001), the Dual Coding Theory of Allan Paivio is alluded to in making the case for multimedia learning: “the rationale for multimedia presentations…is that it takes advantage of the full capacity of humans for processing information (Mayer 2001, p. 4).” Chapters 4 through 9 of the book discuss design principles for creating good multimedia messages for learning. The findings of these chapters are that watching well-designed multimedia messages “results in students’ remembering more of the conceptually important information…(Mayer 2001, p. 163).” This is consistent with the hypothesis that the multimedia group benefits not only from creating a multimedia message, but also from watching the message that they created when reviewing their product.
CHAPTER 3

METHODS

In order to test whether the act of converting a message from text to multimedia has an impact on understanding and recall, two separate treatment groups were created: a multimedia group that converted a message from a text medium to a multimedia medium, and a text group that did not change mediums (text to text). Each group contained 20 people, for a total of 40 participants in the experiment.

The activities of both groups in the experiment are detailed below:

Multimedia Group

1. Signing consent forms (see Appendix A).
2. Filling out Background Information (see Appendix B).

Each person was assigned a letter-number combination that was listed on a sticky note attached to the computer screen. All multimedia groups’ numbers started with the letter ‘M,” and numbers ranged between 1 and 24 (participants M5, M7, M8, M9 were eliminated due to concerns about their specialized backgrounds).

3. Presentation of C-MRE and specific techniques (Annotating, Recording, Creating multiple messages in parts).
First, each function shown above in Figure 2 was demonstrated while being projected on a big screen for the entire group to view. Then the participants were asked to perform the action along with the instructor.

4. Practice using C-MRE.

A map overlay of the Columbus, OH region was given to the participants in a JPEG format (see Appendix J). The participants were asked to practice creating messages in C-MRE using the map as a background for their presentations. They were given 10 minutes to get familiar with the software.

5. General presentation of the OPORD and its organization.

The structure of an OPORD and a general description about what goes into each section was explained based on the document in Appendix E. No specific information about the OPORD to be used in the test was given in order to avoid any effects due to prior exposure.

6. Study of the OPORD

The participants were given 20 minutes to study the OPORD included in
Appendix D, with the goal of communicating certain parts of the OPORD to someone as effectively as possible. The OPORD given to the participants was “translated,” meaning that Military-specific acronyms have been removed or paraphrased, and parts of the OPORD that may be overwhelming for a civilian reader have been either modified or removed. The original OPORD is included in Appendix C.

7. Document preparation based on OPORD

The participants were asked to prepare a C-MRE presentation based on the OPORD. The instructions were projected on a screen (see Appendix G).

8. Recall Test (see Appendix H)

The participants had up to 35 minutes to complete their C-MRE presentations. However, if they finished early, they were asked to raise their hands so that they may move on to answering the recall/understanding questions (see Appendix H). Each participant was asked to close all materials and the OPORD was collected. They were then given the Recall Test (see Appendix H) to complete. This was done immediately after each person had finished the multimedia presentation in order to eliminate any effects that elapsed time between task completion and testing would have on memory.

Text Group

1. Signing consent forms (see Appendix A)

2. Filling out Background Information (see Appendix B).

Each person was assigned a letter-number combination that was listed on a sticky
note attached to the computer screen. All text groups’ number started with the letter “T,” and numbers ranged between 1 and 20.

3. *General presentation of the OPORD and its organization (see Appendix E).*

   Same as Multimedia group.

4. *Study of the OPORD.*

   Same as Multimedia group.

5. *Document preparation based on OPORD*

   The OPORD as well as the instructions were brought up on the screen of each participant’s computer, as seen in Figure 3 below. Participants were specifically told that they may refer to the Operations Overlay (the map at the end of the OPORD) in their document, as well as write on it.
The participants were asked to write the goal and specific tasks for each of the platoons (see Appendix F).

6. *Recall Test (see Appendix H)*

The participants had up to 35 minutes to complete their task. However, if they finished early, they were asked to raise their hands so that they may move on to answering the recall/understanding questions (see Appendix H).

Each participant was asked to close all materials and the OPORD was collected. Then, they were then given a Recall Test (see Appendix H) to complete. This was done immediately after each person had finished the task in order to eliminate...
any effects that elapsed time between task completion and testing would have on memory.

Handling of Personal Information

In order to keep track of the materials created and the corresponding answers to the questions, each participant was assigned a letter-number combination that they were required to add to the work they produced. This number was used to correlate between the work produced by participants and some biographical data. The biographical data will aid in determining if there is any outlier data due to personal factors, such as previous exposure to OPORDS from an ROTC or Military training program. See Appendix B for the Background Information sheet used.

Preparation for the Experiment

It was determined that the OPORD that was initially going to be used was too unorganized and difficult to understand in a reasonable time (see Appendix C). As a result, the OPORD was modified into a version easier for a civilian reader to understand (see Appendix D).

It was also decided that the text group would not be taught C-MRE and then given a task to perform with it. Despite the risk of higher fatigue in the multimedia group due to having more activities, this was decided because, based on the hypothesis that message creation in C-MRE triggers a different thought process, teaching the text group C-MRE may influence their thought process as well as the information they include in their
document. For example, learning C-MRE may prompt the text group to use the map overlay to give more details about the operation.

Resources

The key resources required for this project were students who are moderate-to-expert computer users. This is necessary in order to more efficiently train the participants in creating a multimedia message.

In exchange for their time, participants were paid $20.

The experiment also required the use of computers with C-MRE 1.0.4.2 installed, as well as a room with a projector.

Expected Outcome

The intended result of this project was to determine whether the act of extracting and transforming a message from one medium into another results in better understanding and recall of the original message on the part of the message creator than if the message is kept in the same medium (e.g. text to text). It is hypothesized that this is indeed the case. More specifically, it is expected that

- Converting from text to multimedia will result in better understanding and recall due to the fact that the person must think about how to represent the message in a visual format. A sample cognitive task analysis of the ideal goal-task hierarchies for the multimedia group is shown in Figure 4 below.

As can be seen, the process of creating a multimedia presentation requires
breaking down and then showing each item that needs to be included in the presentation.

Figure 4: Multimedia Group’s Cognitive Task Analysis for Creating the Multimedia Presentation for the Goal & Specific Tasks for Platoon 3

- Converting into the same medium (text to text) is not as effective because it can be done at a superficial level (e.g. selecting and copying relevant parts without really processing what is being read). A sample cognitive task analysis of the goal-task hierarchies for the text group is shown in Figure 5 below. Essentially, the task of the text group can be accomplished by a search-identify-duplicate technique. As can be seen, this is much less detailed than the cognitive task analysis for the multimedia group.
Figure 5: Text Group’s Cognitive Task Analysis for Writing the Goal & Specific Task of Platoon 1
CHAPTER 4
RESULTS

Overall, the results reject the hypothesis that there is NO difference between changing mediums and creating a message in the same medium: message conversion from the text medium into the multimedia medium results in better understanding and recall.

The participants in the experiment ranged in age between 18 and 40, with diverse majors such as Welding Engineering, Biology, Industrial Systems Engineering, Accounting, History, Psychology, Zoology, Marketing, Film Production, Mathematics, Mechanical Engineering, and Accounting. Most indicated “Average” computer experience, with three indicating “Novice” and seven indicating “Advanced.” All three “Novice” participants were in the multimedia group; while four of the “Advanced” participants were in the text group and three were in the multimedia group.

Only one participant indicated experience with software packages such as Camtasia and with some military experience. However, since his performance was not exceptional (his recall test scores were high, but not the highest), his results were not considered to be an outlier.
Grading the Recall Test

For the purpose of analyzing the answers to the questions, answers to questions 1 and 4 were broken up into several specific elements that comprised a correct answer. For question 1, a correct answer needed to include the following elements:

**Platoon 1**

- Move to TAA Buckeye (encoded as “1 P1 TAA”)
- Move to battle position C1 (encoded as “1 P1 C1”)
- Engage the enemy in EA Cannon (encoded as “1 P1 EA Cannon”)
- Assist the withdrawal of Platoon 3 (encoded as “1 P1 withdrawal”)

**Platoon 2**

- Move to TAA Buckeye (encoded as “1 P2 TAA”)
- Move to battle position C2 (encoded as “1 P2 C2”)
- Engage the enemy in EA Cannon (encoded as “1 P2 EA Cannon”)
- Set up anti-tank/anti-personnel wire obstacles (encoded as “1 P2 Wire Obstacles”)

**Platoon 3**

- Move to TAA Buckeye (encoded as “1 P3 TAA”)
- Move to battle position C3 (encoded as “1 P3 C3”)
- Withdraw to an alternative battle position between C1 and C3 if the enemy moves past battle position C3 (encoded as “1 P3 Alt”)

For question 4, battle position C1 for Platoon 1 was encoded as 4a, battle position C2 for Platoon 2 was encoded as 4b, battle position C3 for Platoon 3 was encoded as 4c, and the alternative battle position for Platoon 3 was encoded as 4d.
The remainder of the questions each had only a one part answer. The questions and the correct answers are shown in Appendix H, and the scoring of the questions by group are shown in Appendix I.

Data Analysis

As a group, the multimedia participants scored 75.8%, while the text group scored 57.1%.

The p-value for the independent two-sample t-test with equal sample sizes and two tails is 0.014. This Attained Significance (p-value) represents the probability that these results would be obtained if the null hypothesis (that there is no difference between text and multimedia) were true. Since this p-value is below 0.05, we can reject the null hypothesis.

Figure 6: Percentage of Questions Answered Correctly by the Groups
Furthermore, the multimedia group performed better on all individual questions except one. Figure 7 below shows the number of people in each group who answered each question correctly, while Figure 8 shows the percentage of people who answered each question correctly.

Figure 7: Number of People Who Answered Correctly by Group
As can be seen, the multimedia group answered all but one element of question 1 better than the text group. More people in the text group remembered to include the detail that Platoon 2 must set up anti-tank/anti-personnel minefields in EA Cannon. However, summing the elements of question 1 together, 66.8% of the multimedia group included all elements of question 1, while only 51.8% of the text group included all elements, as can be seen in Figure 9 below.
Based on Bloom’s taxonomy, question 1 can be considered different than questions 2-6. Question 1 is at the comprehension level, while questions 2-6 are at the knowledge level. Figure 10 below shows the percentage of people who answered each group of questions correctly.
Table 1 below shows which group performed better on each individual question, the Attained Significance Level (p-value) from the t-test, and Fisher’s Exact Test p-value (computed using the online calculator found at http://www.langsrud.com/fisher.htm). Fisher’s Exact Test gives the exact probability of observing results at least as extreme as those observed in this experiment, assuming the null hypothesis is true.
Aside from analyzing the data of the results, it is also interesting to look at the multimedia messages created by the participants. The time, in seconds, for each message for Platoon 1, Platoon 2, and Platoon 3 were measured. Figure 11 below shows the average time for each message, and Table 2 shows the range for each message. Figure 12 shows a histogram of frequencies for a range of times.

### Table 1: Confidence Levels for the Result of Each Question

<table>
<thead>
<tr>
<th>Question</th>
<th>Multimedia Correct</th>
<th>Text Correct</th>
<th>Fisher's Exact Test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 P1 TAA</td>
<td>75%</td>
<td>50%</td>
<td>0.191</td>
</tr>
<tr>
<td>1 P1 C1</td>
<td>75%</td>
<td>70%</td>
<td>1</td>
</tr>
<tr>
<td>1 P1 EA Cannon</td>
<td>55%</td>
<td>35%</td>
<td>0.341</td>
</tr>
<tr>
<td>1 P1 withdrawal</td>
<td>50%</td>
<td>30%</td>
<td>0.333</td>
</tr>
<tr>
<td>1 P2 TAA</td>
<td>75%</td>
<td>50%</td>
<td>0.191</td>
</tr>
<tr>
<td>1 P2 C2</td>
<td>85%</td>
<td>70%</td>
<td>0.451</td>
</tr>
<tr>
<td>1 P2 EA Cannon</td>
<td>50%</td>
<td>40%</td>
<td>0.751</td>
</tr>
<tr>
<td>1 P2 Wire obstacles</td>
<td>50%</td>
<td>60%</td>
<td>0.751</td>
</tr>
<tr>
<td>1 P3 TAA</td>
<td>75%</td>
<td>50%</td>
<td>0.191</td>
</tr>
<tr>
<td>1 P3 C3</td>
<td>80%</td>
<td>65%</td>
<td>0.48</td>
</tr>
<tr>
<td>1 P3 Alt</td>
<td>65%</td>
<td>50%</td>
<td>0.532</td>
</tr>
<tr>
<td>2</td>
<td>90%</td>
<td>85%</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>95%</td>
<td>75%</td>
<td>0.181</td>
</tr>
<tr>
<td>4 C1</td>
<td>90%</td>
<td>70%</td>
<td>0.235</td>
</tr>
<tr>
<td>4 C2</td>
<td>95%</td>
<td>55%</td>
<td>0.008</td>
</tr>
<tr>
<td>4 C3</td>
<td>95%</td>
<td>65%</td>
<td>0.436</td>
</tr>
<tr>
<td>4 Alt</td>
<td>80%</td>
<td>50%</td>
<td>0.096</td>
</tr>
<tr>
<td>5</td>
<td>75%</td>
<td>70%</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>85%</td>
<td>45%</td>
<td>0.019</td>
</tr>
</tbody>
</table>

Table 1: Confidence Levels for the Result of Each Question

### Table 2: Range of Times, in Seconds, for Each Message

<table>
<thead>
<tr>
<th>Message</th>
<th>Range (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platoon 1</td>
<td>18 to 118</td>
</tr>
<tr>
<td>Platoon 2</td>
<td>27 to 102</td>
</tr>
<tr>
<td>Platoon 3</td>
<td>7 to 125</td>
</tr>
</tbody>
</table>

Table 2: Range of Times, in Seconds, for Each Message
Figure 11: Average Message Length in Seconds

Figure 12: Histogram
CHAPTER 5
CONCLUSIONS

Summary

This study was intended to determine whether message conversion from the text medium into the multimedia medium increases understanding and recall for the message author. The experiment undertaken has shown that this is indeed the case.

Recommendations

Based on the findings from this and previous studies, we can recommend that the Army consider the use of multimedia software to produce multimedia presentations of parts of an OPORD that show troop movements and locations on a map when asynchronous communication is necessary. Specifically, the sections of an OPORD that would most benefit from message conversion from text to multimedia using C-MRE are:

• Enemy Forces – showing the location of the enemy
• Friendly Forces – showing the location of yourself and your allies
• Execution – showing how the mission will be carried out
  o Concept of the Operation
  o Specific tasks to subordinate units
  o Coordinating instructions
The Bower and Smith (2005) study showed that watching such presentations helps to better establish common ground. This study further supports the use of C-MRE for creating OPORDs and shows that doing so also ensures that common ground is established (for example, the higher echelon commander can watch the presentation created by the lower echelon commander), and furthermore increases the understanding and recall of the message’s author.

Further Study

As indicated in this study, using multimedia to present parts of OPORDs that detail movements and positions increases understanding and recall of the message’s content by the message creator. To further investigate the benefits of using C-MRE for creation of multimedia messages, a similar experiment can be undertaken in which experts evaluate the quality of the message content. This study would aim to determine whether message conversion from text to multimedia also results in a better message than if the message was kept in the same medium.

A similar study could also be done using ROTC or Military-trained individuals. In this study, the participants would be trained in techniques for creating good multimedia presentations, and the effect of creating those presentations on understanding and recall could be analyzed.

As mentioned in this paper, we aimed to identify parts of an OPORD that would be best to create in multimedia. Since this experiment did not specifically compare individual parts of an OPORD created in text or multimedia, a study to identify which parts of an OPORD are best communicated in multimedia and which parts are best left in
text is a natural extension of the experiment described in this paper. Based on the findings of such a study, a specific new format for creating OPORDs and the associated processes that combine text and multimedia could be recommended. Furthermore, such a study could be extended to generalize the findings to other settings beyond a Military context.

Finally, as indicated in the Bower and Smith (2005) paper, a study investigating the benefits of two-way asynchronous communication would be beneficial. From the Bower and Smith (2005) and this study, we have learned that using C-MRE for creating multimedia messages increases shared situational awareness of those watching the message, and increases the understanding and recall of those creating the message in one-way asynchronous communication. It would be interesting to study whether these same benefits can be observed in two-way asynchronous communication.
BIBLIOGRAPHY


<http://officeport.com/edu/blooms.htm>


CONSENT FOR PARTICIPATION IN RESEARCH

I consent to participating in research entitled: Improved Understanding of Operations Orders through Message Conversion into Text or Multimedia.

Philip J. Smith, Principal Investigator, or his/her authorized representative, Miruna Tecuci, has explained the purpose of the study, the procedures to be followed, and the expected duration of my participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ________________________________  Signed: ________________________________
      (Participant)

Signed: ________________________________
      (Principal Investigator or his/her authorized representative)

Signed: ________________________________
      (Person authorized to consent for participant, if required)

Witness: ________________________________________________
APPENDIX B
Background Information Document

Number __________

Background Information

Age __________

Major ____________________________________________________________

Computer Experience (circle one):  Novice    Average    Advanced

Do you have any experience with multimedia software packages such as Camtasia or Captivate (circle one)?  Yes    No

Do you have any Military training (circle one)?  Yes    No
APPENDIX C
Original OPORD Document

The time is now 221800 JUL 2003

OPERATIONS ORDER C-CO
References: Bn OPORD 1-03
West Point and Vicinity, New York V821S; Scale 1:25,000

Time Zone Used Throughout the Order: Romeo

Task Organization

1/C/1-327  2/C/1-327  3/C/1-327  Co HQ  1/1/A/44 EN  AT Sect
FIST

60mm Mortars

1. SITUATION.

A. Enemy Forces.

(1) Disposition, Composition, and Strength

(a) Disposition. U.S. Forces are opposed by the Caquetan Palace Brigade currently located 200 miles south of Highland Falls. The enemy has capitalized on the introduction of U.S. forces into the country to rally support for their cause. Their regular forces are now augmented with recent inductees who are poorly trained. Palace Brigade forces are expected to conduct reconnaissance operations to locate U.S. forces and identify vulnerabilities.

(b) Composition. The Bde we are facing is composed of a mix of six light infantry companies and three mech infantry companies (equipped with Bradley Fighting Vehicles captured from government forces). They use their mechanized forces as a reserve. Each of the light infantry companies has two rifle plts and one plt of augmentees. The Caquetan regular light infantry plts are equipped with standard U.S. military equipment and include light mortar sections (two 60MM mortars) in each. Their light infantry is also equipped with modified civilian pick-up trucks. At full strength, each Caquetan regular rifle plt will have approximately 34 soldiers equipped with a mix of M-16 rifles, M-
249 style LMGs, M-60 style MGs, AT-4s, and 40 MM grenade launchers. Enemy recon elements are equipped with state of the art night vision capability. Augmentee plts are not all outfitted in uniforms, but they are fully equipped with weapons. The mech companies have three plts with four M-2 BIFVs per plt and two M-2 BIFVs in the Co Hqs. The Caquetan logistics structure does not support the anti-tank capability of the BIFV, but they do have limited quantities of ammo for the 25 MM chain-gun and a M-240 type coaxial machine gun. They have no tanks, no artillery, no ADA, and no aviation.

(c) Strength. The enemy is estimated to be at approximately 75% personnel and 75% in equipment.

(2) Capabilities. The Palace Bde is capable of massing company-sized light-infantry elements in less than 90 minutes (once their forces have entered our AO) to seize opportunities to destroy vulnerable forces. These light infantry forces are highly mobile, making use of modified civilian pick-up trucks-- In fighting with government forces to date, they have been reluctant to dismount until absolutely necessary. They have also employed their mech reserves against the government forces to reinforce the success of committed light infantry units. In each case, they achieved overwhelming superiority to destroy the government forces and then quickly withdrew. They are expected to operate in small unit recon patrols of 4 to 9 men in order to gain intelligence on concentrations of U.S. forces. The morale of recent inductees ranges from fully supportive converts to the cause to those who were involuntarily impressed into service. With the introduction of U.S. forces into their country, their regular forces are more committed than ever to the overthrow of the present government.

(3) Enemy Most Probable Course of Action. The Caquetan Palace Bde Commander has repeatedly vowed that, if U.S. forces were introduced, he would immediately move to inflict maximum U.S. casualties. He expects that by doing so, he will gain popular support that will increase his recruitment effort and propel him into the domestic political forefront. The Bde is in the process of moving from their current stronghold 200 miles to our south. Their lead elements could enter our AO as early as midnight tonight. These elements are expected to probe our forward units to develop an estimate of our composition, disposition and strength. Though their primary mission is recon, if possible, they will infiltrate to sabotage critical C2 and logistics nodes within the U.S. lodgment area in Newburgh (30 miles to our north). The enemy will follow their recon elements with attacks by pick-up truck mounted light infantry forces to destroy vulnerable U.S. elements.

(4) Enemy Most Dangerous Course of Action. The enemy attacks with a light infantry company to clear the SW-NE road network adjacent to Stony Lonesome Brook and then reinforces that attack with their three mech infantry companies.

B. Friendly Forces.
Higher Unit’s Mission. 1-327 IN defends in sector from PL Ohio to PL Texas NLT 241800JUL2003 with Alpha Company forward and Charlie and Bravo Companies abreast in depth, in order to deny infiltration of enemy recon patrols, destroy enemy forces, and allow time for friendly mech forces to prepare for offensive operations. The Bn Commander’s intent is to destroy enemy recon elements forward in sector. That is why A Company is to our front. B Company will defend forward in sector to deny enemy access to Highland Falls. The high ground in the western most part of our sector must also be denied to the enemy, shaping enemy efforts into the Stony Lonesome corridor, where C Company will destroy them in EA CANNON. The battalion reserve, Co Team Alpha, will be committed only to complete the destruction of enemy mech forces.

Left Unit’s Mission. B Company defends in sector to our left from PL Iowa to PL Maine. They have been directed to defend forward to deny enemy light infantry access to Highland Falls.

Right Unit’s Mission. Our sister battalion, 2-327 IN, defends in sector to our right from PL Ohio to PL Texas. They have the responsibility for the Hwy 293 corridor.

Front Unit’s Mission.

(c) A Company screens our front from PL Ohio to PL Iowa to identify and destroy enemy recon elements and deny enemy use of Hwy 9W.
(b) Bn Scout Platoon screens forward of A Co to provide early warning. They will withdraw on order through B Co sector.

Rear Unit’s Mission. Bn maintains Co Team Alpha (12 M1A2 Tanks and 5 BFVs) in reserve initially vic TAA BUCKEYE. Co Tm Alpha prepares to attack along Axis Gray to destroy enemy mech forces in EA CANNON or along Axis Scarlet to destroy enemy mech forces in EA ROCKET.


MISSION. C Co defends in sector from PL Iowa [WA 859806 to WA 843817] to PL Maine [WA 864822 to WA 853828] NTL 241800JUL2003 to deny infiltration of enemy recon elements, destroy light infantry forces, and if necessary, to defeat the enemy mech infantry battalion.

EXECUTION.

Commander’s Intent. My intent is to move to our defensive positions ASAP, allowing maximum time for on-site preparation. We will aggressively patrol forward in sector to identify and destroy enemy recon elements. We will deny the enemy the use of the dismounted avenue of approach on the high ground in the western part of our sector, turning the enemy into the Stony Lonesome corridor. The concentrated fires of 1st and 2nd platoons will destroy the enemy in EA CANNON. This will allow time for friendly mech forces to prepare for offensive operations.

A. Concept of Operation. We will defend with one platoon forward to deny enemy recon and prevent the envelopment of our main effort, and two platoons oriented on EA CANNON.
B. **Maneuver.** Within 20 minutes of completion of this OPORD, we will initiate movement by dismounted tactical road march into our defensive sector approximately 3KM southwest of our current location. 3rd Platoon, a supporting effort, defends from BP C3 vic WA 85758215 NLT 241800JUL2003 to deny enemy recon and prevent the envelopment of the company main effort. 1st platoon, the main effort, defends from BP C1 vic WA 85588230 NLT 241800JUL2003 to destroy the enemy in EA CANNON. 2nd platoon, a supporting effort, defends from BP C2 vic WA 85958230 NLT 241800JUL2003 to destroy enemy recon efforts and assist in the destruction of the enemy in EA CANNON.

C. **Fires.** 1/41 FA is DS to the Bn. A Co has priority of fires initially. 81mm mortar platoon priority of fires is our 3rd platoon initially, on order to our 1st platoon. 2nd platoon is allocated the 81mm FPF. Our 60mm mortar section will assist in fixing and destroying the enemy in EA CANNON. Priority of 60mm fires and FPF is to 1st platoon. Platoons may submit a maximum of two pre-planned targets to support their fire plan.

D. **Mobility/ Counter-Mobility/ Survivability.** 1st platoon has priority of engineer effort initially, then 2nd.

E. **Tasks to Maneuver Units.**

1. **1st Plt. Main Effort.** Occupy TAA vic WA 86358250. Occupy and defend from BP C1 vic WA 85588240 (see ops overlay) NLT 241800JUL2003. Be prepared to support the withdrawal of 3rd Platoon and re-orient the defense of BP C1 to retain the high ground VICT WA 85368240 to prevent envelopment of company right flank from the south. Ensure you maintain contact with 3rd Platoon north-to-south along the western salient.

2. **2nd Plt.** Occupy TAA vic WA 86128245. Occupy and defend from BP C2 vic WA 85958230 (see ops overlay) NLT 241800JUL2003. Provide a fire team to assist the engineers from 0700-1900 in putting in the AT/AP minefields and wire obstacles in EA CANNON.

3. **3rd Plt.** Occupy TAA vic WA 85958190. Occupy and defend from BP C3 vic WA 85758215 (see ops overlay) NLT 241800JUL2003. Ensure you maintain contact with A Co to our front and are tied in with 2-327 IN BN on our right flank. Trigger to withdraw to alternate BP C31 is penetration of one enemy squad past hilltop vic WA 85208230.

F. **Tasks to Combat Support Units.**

1. **60mm Mortar Section.** OPCON to 1st platoon.
2. **Anti-armor Section.** OPCON to 1st platoon.
3. 1/1/A 44 EN
   (a) Emplace AT mine obstacles along western boundary of EA CANNON (unimproved road network) and on Stony Lonesome Road.
   (b) Emplace a 100m AT/AP minefield in front of 1st Plt, vic WA 85488212.
(c) Provide all log cutting equipment to 3rd Plt for use in preparing overhead cover.

G. Coordinating Instructions.

(1) Co guides will assist each Plt into the TAAs. Order of march is 3rd, HQ, 1st, 2nd.
(2) Submit request for planned targets to the Command Post NLT 231200JUL2003.
(3) PLs will each back brief me prior to issuing your OPORDs. Include your plans for counter-recon patrols and other countermeasures. Plan 15 minutes for your back brief.
(4) All Plt sector sketches will be forwarded to Co CP NLT 1200 tomorrow.
(5) Priorities of Work
   (a) 3rd and 2nd Plts get LP/OPs out with eyes on Hwy 9W.
   (b) Develop the obstacles and fire plan for EA CANNON.
   (c) Counter-Recon Patrols
(6) 3rd and 1st Plts conduct counter-recon patrols beginning 1900 tomorrow.
(7) PIR: Enemy Mortar Section locations, Enemy BFV locations in any number (even 1).
(8) Engagement criteria. M-60s hold fire against recon elements unless friendly positions are in threat of being destroyed. In EA CANNON: 3rd platoon engages targets on Stony Lonesome Road and south. 1st platoon engages targets from north to south. Priority of AT fires to C2 vehicles.
(9) ADA weapons status: Tight, Hold.
(10) Timeline:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co OPORD</td>
<td>221800 JUL 2003</td>
</tr>
<tr>
<td>Initiate foot march to TAAs</td>
<td>221900 JUL 2003</td>
</tr>
<tr>
<td>Initial PL Back-briefs</td>
<td>222000 JUL 2003</td>
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<tr>
<td>PLT BPs occupied</td>
<td>230330 JUL 2003</td>
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<td>PLT Sector Sketches complete</td>
<td>231300 JUL 2003</td>
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<tr>
<td>Company Rehearsal</td>
<td>231300 JUL 2003</td>
</tr>
<tr>
<td>B/P to Defend NLT</td>
<td>241800 JUL 2003</td>
</tr>
</tbody>
</table>

4. SERVICE AND SUPPORT.

A. General. Combat Trains vic WA 85958170. Field Trains vic WA 86348236.
B. Material and Services.

(1) Class I. MREs and water resupply will be pushed to PLT TAAs. Ration cycle is MRE, T, MRE.
(2) Class IV. In-country supplies of concertina wire are limited and lumber is non-existent.
(3) Class V. Request resupply of M16, M249, smoke grenades and star clusters to restore basic loads. Twice basic loads for M-60s and frag grenades. Ammo resupply will be pushed to PLT BPs. Each Plt will also be pushed 30 M18 Claymore Mines and 8 AT-4s to Plt BPs. AT and AP mines will be pushed to BP A2 for use in EA Lance. 60mm HE will be pushed to BP A1.
(4) Class IX. Submit requests to restore battery basic loads per TACSOP.
C. Medical.
   (1) Co CCP located vic Co CP.
   (2) Establish Plt CCPs and report locations to the Co CP NLT 231300JUL2003. Priority cases evacuated by helicopter if possible.

D. Co EPW Collection Point located vic WA 85728240. Processing and evacuation per Bn SOP.

E. Bn Chaplain will be circulating within BPs A1 and A2 from 0600 to 0830 tomorrow.

F. Civil-Military Cooperation. Curfew for all civilians is at 1900.

5. COMMAND AND SIGNAL.

A. Command.
   (1) BN TAC located initially vic WA 86008209. BN TOC co-located within combat trains.
   (2) Company CP located vic WA 85728240.
   (3) Succession of command: XO, 1st PL, 2nd PL, 3rd PL, 1SG, 1st PSG.

B. Signal.
   (1) Current SOI in effect. Daily change at 2400.
   (2) Running password for returning patrols and OPs is BRUTUS. That will also be the password A Co and the Scouts will use if they need to exfiltrate through our sector.
   (3) Radio listening silence until enemy contact. Wire is the primary means of communication.

The time is now 221820 JUL 2003. I will be leaving in my HMMWV in 10 minutes to recon our sector. I have space for 1 of you from each platoon.
Figure A.1 Static Graphics Overlay
APPENDIX D
Translated OPORD Used in Experiment Document

The time is now 1800 22 JUL 2003

OPERATIONS ORDER FOR C COMPANY
References: Battalion OPORD 1-03
West Point and Vicinity, New York V821S; Scale 1:25,000

1. SITUATION.

A. Enemy Forces.

(1) Disposition, Composition, and Strength

(d) Disposition. U.S. Forces are opposed by the enemy forces (the Caquetan Palace Brigade), which are currently located 200 miles south of Highland Brook. Enemy forces are expected to conduct reconnaissance operations to locate U.S. forces and identify vulnerabilities.

(e) Composition. The Brigade we are facing is composed of a mix of six light infantry companies and three mechanized infantry companies (equipped with Bradley fighting vehicles captured from government forces). They use their mechanized forces as a reserve. They have no tanks, no artillery, no air defense artillery, and no aviation.

(f) Strength. The enemy is estimated to be at approximately 75% personnel and 75% in equipment.

(5) Capabilities. The enemy (Palace Brigade) is capable of massing company-sized light-infantry elements in less than 90 minutes (once their forces have entered our area of operations) to seize opportunities to destroy vulnerable forces. These light infantry forces are highly mobile, making use of modified civilian pick-up trucks. They are expected to operate in small unit reconnaissance patrols of 4 to 9 men in order to gain intelligence on concentrations of U.S. forces. The morale of recent...
inductees ranges from fully supportive converts to the cause to those who were involuntarily impressed into service.

(6) Enemy Most Probable Course of Action. The enemy’s Commander has repeatedly vowed that, if U.S. forces were introduced, he would immediately move to inflict maximum U.S. casualties.

The enemy Brigade is in the process of moving from their current stronghold 200 miles to our south. The enemy's primary mission is reconnaissance. Their lead elements are expected to probe our forward units to develop an estimate of our composition, disposition and strength. The enemy will follow their reconnaissance elements with attacks by pick-up truck mounted light infantry forces to destroy vulnerable U.S. elements.

We expect the enemy to attack with a light infantry company to clear the Southwest-Northeast area adjacent to Stony Lonesome Brook and then reinforce that attack with their three mechanized infantry companies.

(7) Enemy Most Dangerous Course of Action. The enemy moves around C Company on the west in order to encircle C Company.

D. Friendly Forces.

(1) Higher Unit’s Mission. Our Battalion, the 1-327 Infantry, which includes A, B and C Companies, defends the area from Phase Line Ohio to Phase Line Texas no later than 1800 24 JUL2003. The goal is to deny infiltration of enemy reconnaissance patrols, destroy enemy forces, and allow time for friendly mechanized forces to prepare for offensive operations.

Our Battalion Commander’s intent is to destroy enemy reconnaissance elements before they pass Phase Line Iowa. That is why A Company is to our front (south).

B Company will help A Company by denying the enemy access to the area along the east end of Highland Brook.

The area between Battle Position C1 and Battle Position C3 must also be protected from the enemy. This will force the enemy to travel along the Stony Lonesome Brook, allowing for C Company to destroy the enemy in Engagement Area CANNON.

(2) Left Unit’s Mission. B Company defends to our left (east) from Phase Line Iowa to Phase Line Maine. They have been directed to deny the enemy access to the area along the east end of Highland Brook.

(3) Right Unit’s Mission. Our sister battalion, the 2-327 Infantry, defends to our right (west) from Phase Line Ohio to Phase Line Texas. They have the responsibility for the area to the west of our company (C Company).

(4) Front Unit’s Mission. A Company screens our front (south) from Phase Line Ohio to Phase Line Iowa to identify and destroy enemy reconnaissance elements.
3. MISSION. C Company defends from Phase Line Iowa to Phase Line Maine no later than 1800 24 JUL2003 to deny infiltration of enemy reconnaissance elements coming from the south, destroy light infantry forces, and if necessary, to defeat the enemy mechanized infantry battalion.

3. EXECUTION.

C Company Commander's Intent. My intent is to move to our defensive positions (C1, C2, and C3) ASAP, allowing maximum time for on-site preparation. We will aggressively patrol forward in our sector to identify and destroy enemy reconnaissance elements coming from the south. We will deny the enemy the use of the avenue of approach on the west side of C Company. This will force the enemy to travel along the Stony Lonesome Brook corridor. The concentrated fires of 1st and 2nd platoons of C Company will destroy the enemy in Engagement Area CANNON. This will allow time for our mechanized forces to prepare for offensive operations.

H. Concept of Operation. We will deny the enemy the use of the avenue of approach on the west side C Company, defending this area by placing Platoon 3 of C Company at Battle Position C3, which is forward (south) and to the west of Platoon 1 at Battle Position C1. Thus, Platoon 3 of C Company will deny enemy reconnaissance to the west of Engagement Area (EA) Cannon, and prevent the enemy from moving around C Company to the west in order to flank C Company. The other two platoons (Platoons 1 and 2 of C Company) will be oriented on Engagement Area (EA) Cannon in order to destroy the enemy as it is forced to travel north along the Stony Lonesome Brook corridor into Engagement Area (EA) Cannon.

I. Maneuver. Within 20 minutes of completion of this OPORD, we will move C Company by dismounted tactical road march into our defensive sector, Tactical Assembly Area TAA Buckeye.

The 1st platoon of C Company, the main effort, will move from TAA Buckeye to Battle Position C1 no later than 1800 24 JUL2003, and will be prepared to defend that position and destroy the enemy in Engagement Area Cannon.

The 2nd platoon of C Company, a supporting effort, will move from TAA Buckeye to Battle Position C2 no later than 1800 24 JUL2003, will defend it, will deny enemy reconnaissance efforts in the area, and will assist in the destruction of the enemy in Engagement Area Cannon.

The 3rd platoon of C Company, a supporting effort, will move from TAA Buckeye to Battle Position C3 no later than 1800 24 JUL2003, will defend it, will deny enemy reconnaissance in the area, and will prevent the enemy from encircling the 1st platoon in a flanking operation from the west.

C. Tasks to Maneuver Units.

(4) 1st Platoon (Main Effort). The goal of the 1st platoon is to defend Battle Position C1 and to help prevent the enemy from flanking C Company on the west. The 1st platoon will initially move to Tactical Assembly Area (TAA) Buckeye. It will then move to Battle Position C1 no later than 1800 24
The 1st platoon will destroy the enemy as it travels north along the Stony Lonesome Brook corridor into Engagement Area (EA) Cannon. If, instead of moving north into Engagement Area (EA) Cannon, the enemy moves further west past Battle Position C3 in order to encircle C Company on the right side, the 1st platoon will support the withdrawal of the 3rd Platoon toward Battle Position C1 and re-orient the defense of Battle Position C1 to the west/southwest.

(5) 2nd Platoon. The goal of the 2nd platoon of C Company is to assist in the destruction of the enemy in Engagement Area (EA) Cannon. First, the 2nd platoon will move to Tactical Assembly Area (TAA) Buckeye. Then it will move to Battle Position C2 no later than 1800 24 JUL2003 in order to defend that position and assist in the destruction of the enemy in Engagement Area (EA) Cannon. In addition, from 0700-1900, the 2nd platoon will provide a fire team to assist the engineers in setting up the anti-tank/anti-personnel minefields and wire obstacles in Engagement Area (EA) Cannon.

(6) 3rd Platoon. The goal of the 3rd platoon of C Company is to deny enemy reconnaissance and to prevent the encircling of the 1st Platoon on the right side. First, the 3rd platoon will move to Tactical Assembly Area (TAA) Buckeye. Then, it will move to Battle Position C3 no later than 1800 24 JUL2003 in order to occupy and defend that position from the enemy. If the enemy begins to penetrate that position, then the 3rd platoon will withdraw to an alternative Battle Position between C3 and C1.
Figure A.1 Static Graphics Overlay
The time is now 1800 22 JUL 2003

OPERATIONS ORDER FOR C COMPANY
References: Battalion OPORD 1-03
West Point and Vicinity, New York V821S; Scale 1:25,000

1. SITUATION. - Provides information essential to subordinate leader's understanding of the situation.

A. Enemy Forces.

Provides information about the enemy:
- What does he look like?
- What can he do to me?
- What can I do to him?

(1) Disposition, Composition, and Strength

(g) Disposition.
- What you currently know about the enemy, his general intent and capability
- Location(s): Known and suspected
- Activity of the enemy (are they attacking, retreating, defending, patrolling, etc.?)

(h) Composition.
- What organic, supporting, and reinforcing assets are available to the enemy?
- Identification of enemy forces (Is he armored, mechanized, motorized, or light? What does that mean to the operation?)

(i) Strength.
- How will the numbers of vehicles, troops, and systems stated above be impacted by battle loss or enemy adjustment to the situation at the time you will fight him?
- Strength (squad, platoon, or company strength),
- Morale (hi or low?)
- Equipment (crew-served weapons, machine guns, anti-tank weapons?)

(8) Capabilities.
- What actions can the enemy take, e.g. “They are capable of reinforcing with a platoon in 30 minutes”
- Significant weapons/systems capabilities pertinent to the situation
- What weaknesses can you exploit?
- What are the enemy’s vulnerabilities?

Probable course(s) of action when enemy is contacted (Will they fight, disperse, retreat, attack?):

(9) Enemy Most Probable Course of Action.
- Actions that the enemy will likely take in sequence
- Paint a visual picture of the enemy’s fight

(10) Enemy Most Dangerous Course of Action.
- Actions that the enemy can reasonably take but is not likely to take
- Normally requires a contingency plan

E. Friendly Forces. - Provides information about yourself and your allies

(1) Higher Unit’s Mission.
Verbatim statement of the higher unit commander’s Mission Statement and Intent Statement. Also includes a verbatim or concise paraphrase of the higher unit Commander’s Concept.

(2) Left Unit’s Mission – Mission essential task and purpose of the unit to the immediate left and any other unit to the left during the operation whose task and purpose will have a direct impact on your mission.

(3) Right Unit’s Mission
4. MISSION
   This is a clear, concise statement of the unit's task(s) to be accomplished and the purpose for doing it (who, what, when, where, why, and how).

3. EXECUTION - How the mission will be executed
   Commander’s Intent.
   - A stated vision that defines the purpose of the operation
   - What the force must do to succeed with respect to the enemy, terrain, time, and desired end state.

   A. Concept of Operation.
   - This paragraph describes, in general terms, how the unit will accomplish its task(s) from start to finish. It should identify all mission essential tasks, the decisive points of action, and the main effort.
   - Here is where you tell a quick, general story about how you envision the mission step-by-step from the Assembly Area, to the Objective Rally Point, then to the Objective, and back to the Objective Rally Point.

   B. Maneuver.
   - This paragraph addresses, in detail, the mechanics of the operation
   - Identifies the main effort and mission-essential tasks and purposes for the subordinate maneuver elements
   - All subordinate units and their tasks related to the main effort are identified

   C. Tasks to Maneuver Units.
   - The specific tasks that the lower echelon must complete in order to accomplish the mission
   - Details for each unit’s mission-essential task(s)

   (1) 1st Platoon
   (2) 2nd Platoon
   (3) 3rd Platoon
APPENDIX F
Instructions to Text Group

Number:

Imagine that you are communicating this OPORD to the Platoons of C Company.

Please write goal and specific tasks for the 2nd Platoon:

Write the goal and specific tasks for the 1st Platoon:

Write the goal and specific tasks for the 3rd Platoon:
APPENDIX G
Instructions to Multimedia Group

Imagine that you are communicating this OPORD to the Platoons of C Company.

Please create a C-MRE presentation detailing the goal and specific tasks for the 2nd Platoon:

Create a C-MRE presentation detailing the goal and specific tasks for the 1st Platoon:

Create a C-MRE presentation detailing the goal and specific tasks for the 3rd Platoon:
APPENDIX H
Recall Test with Correct Answers Document
1. As completely as possible, describe in detail what you remember regarding what Platoons 1, 2 and 3 must do.

1st Platoon (Main Effort). The goal of the 1st platoon is to defend Battle Position C1 and to help prevent the enemy from flanking C Company on the west. The 1st platoon will initially move to Tactical Assembly Area (TAA) Buckeye. It will then move to Battle Position C1 no later than 1800 24 JUL2003. The 1st platoon will destroy the enemy as it travels north along the Stony Lonesome Brook corridor into Engagement Area (EA) Cannon. If, instead of moving north into Engagement Area (EA) Cannon, the enemy moves further west past Battle Position C3 in order to encircle C Company on the right side, the 1st platoon will support the withdrawal of the 3rd Platoon toward Battle Position C1 and re-orient the defense of Battle Position C1 to the west/ southwest.

2nd Platoon. The goal of the 2nd platoon of C Company is to assist in the destruction of the enemy in Engagement Area (EA) Cannon. First, the 2nd platoon will move to Tactical Assembly Area (TAA) Buckeye. Then it will move to Battle Position C2 no later than 1800 24 JUL2003 in order to defend that position and assist in the destruction of the enemy in Engagement Area (EA) Cannon. In addition, from 0700-1900, the 2nd platoon will provide a fire team to assist the engineers in setting up the anti-tank/anti-personnel minefields and wire obstacles in Engagement Area (EA) Cannon.

3rd Platoon. The goal of the 3rd platoon of C Company is to deny enemy reconnaissance and to prevent the encircling of the 1st Platoon on the right side. First, the 3rd platoon will move to Tactical Assembly Area (TAA) Buckeye. Then, it will move to Battle Position C3 no later than 1800 24 JUL2003 in order to occupy and defend that position from the enemy. If the enemy begins to penetrate that position, then the 3rd platoon will withdraw to an alternative Battle Position between C3 and C1.
2. On the map below, indicate where the enemy is coming from.

3. On the map below, indicate the area that all Platoons of C Company will move to first.
4. On the map below, indicate where Platoon 1, Platoon 2, and Platoon 3 must occupy and defend from. Also indicate where the alternative Battle Position for the 3rd Platoon is located. Label each as appropriate (e.g. Platoon 1, Platoon 2, Platoon 3, Alternative position for Platoon 3).

5. On the map below, indicate with an arrow the movement of the enemy that Platoon 3 and Platoon 1 must prevent.
6. On the map below, indicate where the engineers should put the anti-tank/anti-personnel minefields and wire obstacles?
APPENDIX I
Sample Recall Test Question Without Answers, Blank Map Document

Questions 2 through 6 from Appendix H used the same blank map as shown below.

2. On the map below, indicate where the enemy is coming from.
# APPENDIX J

Data for Multimedia and Text Group Scores on the Recall Test

## Figure 13: Multimedia Group Scores on Recall Test

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APPENDIX K
Map for Practice Using C-MRE

Figure 15: Map Graphic for Practice Using C-MRE