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A System for Training and Evaluating Battalion Command Groups With Gaming Simulation Techniques

by

Joseph A. Olmstead, Fred K. Cleary,
Theodore R. Powers, and James A. Salter

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August 1978

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report describes research devoted to refinement and elaboration of Command Post Exercise LONGTHRUST, a gaming simulation exercise. LONGTHRUST, which is appropriate for Battalion level Command Groups, was originally developed as a scenario dependent exercise. The research involved development of simplified game rules, refinement and definition of controller roles and activities, development of a criterion-referenced critique and evaluation system, and extensive refinement and simplification of materials so that the

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20. Abstract (Continued)

revised system would be suitable for use with any combat operation or environment. The revised system, labled COMTRAIN, is appropriate for use by Army units who wish to practice tactical concepts using gaming simulation techniques.

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PREFACE

This report describes work performed by the Human Resources Research Organization (HumRRO) for a project with the overall objective of developing an improved system for training and evaluating the proficiency of battalion command groups in the performance of combat operations. The project was conducted by HumRRO for the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI).

Work on the project was begun in January 1976 and completed in August 1976 and was conducted by the staff of the Columbus Office of HumRRO's Eastern Division. Dr. Joseph A. Olmstead served as Project Director. The research staff consisted of LTC (Retired) Fred K. Cleary, Mr. Theodore R. Powers, and Mr. James A. Salter.

Dr. T. O. Jacobs, Chief, ARI Field Unit, Fort Leavenworth, Kansas, served as ARI technical monitor of the project.

The work was performed under Contract No. DAHC 19-76-C-0020, "An Improved System for Training and Evaluating Battalion Command Groups."

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A SYSTEM FOR TRAINING AND EVALUATING BATTALION COMMAND GROUPS WITH GAMING SIMULATION TECHNIQUES

INTRODUCTION

This report describes the results of a project the purpose of which was to develop an improved system for training and evaluating the proficiency of battalion command groups. The specific objectives were to modify an existing prototype system for conducting command post exercises so that it would be generally applicable for all types of scenarios, environments, and combat operations and to simplify the system for implementation by field units. Thus, the improved system would make available to field units an innovative and inexpensive but effective method for training and evaluating battalion command and staff personnel.

MILITARY PROBLEM

Traditional methods for training and evaluating battalion command and staff personnel in the performance of command and control activities have become increasingly less feasible because of constraints upon resources such as personnel, equipment, terrain, and funds. Accordingly, there is need for inexpensive, innovative methods for effectively training and evaluating battalion command groups in the performance of functions required for effective combat operations.

One planned solution to the above problem is to provide field units with combat simulations and associated training and evaluation procedures which are systematically designed to (1) challenge commanders and staffs in functional areas identified as critical for unit effectiveness, (2) achieve specific training objectives, and (3) permit evaluation and critique of group performance in the critical areas. In order for such training and evaluation systems to be readily, easily, and effectively implemented by field units, it

will be necessary to provide simulation exercises based upon clearly-defined training objectives, carefully developed and easily-used evaluation and critique procedures, and full and complete guidance for use of the prototype systems for development of own additional training and evaluation procedures.

The Army has developed a prototype simulation exercise, LONGTHRUST 75, which couples conventional command post exercise (CPX) procedures with a control system based upon two-sided gaming simulation. As currently designed, the control methodology is scenario-dependent, with instructions, rules, and gaming paraphernalia specific to the environment and operation depicted in LONGTHRUST 75 and controller instructions and rules are highly complex and, thus, difficult to implement.

The basic methodology used in LONGTHRUST 75 is a valid means for implementing command post exercises which will be challenging, interesting, and effective for training and evaluation purposes. However, there is need for a system, based upon the LONGTHRUST methodology, which will be suitable for use with many different scenarios depicting a variety of combat operations and environments and, in addition, will be less difficult to implement and more amenable to systematic training and evaluation procedures.

RESEARCH PROBLEM

Because of the need described above, the Human Resources Research Organization (HumRRO) was requested to reduce the complexity of LONGTHRUST 75 and to adapt the LONGTHRUST methodology so as to provide a system for conducting simulation exercises which would be readily adaptable to a variety of tactical situations and terrain settings. Specifically, the problem involved accomplishment of the following tasks:

Task 1 - Develop Training Objectives for Battalion Command Groups.

Design of an effective training and evaluation system will require, as a first step, development of performance objectives. Such objectives will serve as guides for development of training scenarios and as the foundation from which a detailed evaluation and critique system can be elaborated.

Task 2 - Review and Simplify Control Board Rules for LONGTHRUST 75.

Control Board rules for LONGTHRUST 75 are to be reviewed and simplified where possible. The review will encompass all game board rules, game paraphernalia, and procedures. The final product will be scenario-independent and suitable for any future scenario developed for this (LONGTHRUST) simulation system.

Task 3 - Review and Revise Controller Roles and Duties.

Controller roles and duties will be reviewed to determine if consolidation of duties will permit use of fewer controllers. The product of this task will be a document which describes the revised controller positions and duties and provides adequate instructions for performance of those duties. This product will be scenario-independent and suitable for application to any future scenario developed for this simulation system.

Task 4 - Develop a General Scheme for CPX Evaluation and Conduct of Critiques.

A general system for evaluating and conducting critiques of command group performance will be developed. The system will provide general guidelines for designing and implementing scenario-dependent

evaluation schemes and will be designed to reinforce and maximize learning indicated by the training objectives.

Task 5 - Develop a Training Document for Use by Field Units.

A document will be developed to provide guidance and information to field units concerning use of the revised system for training and evaluating command groups.

Task 6 - Adaptation of LONGTHRUST 75 Scenario and Development of a Scenario-Dependent Evaluation and Critique System.

The current scenario for LONGTHRUST 75 will be adapted for use within the general simulation system and an evaluation and critique system specific to the revised scenario will be developed. The evaluation and critique system will be designed with capabilities for use either by brigade commanders in evaluating battalion command group performance or by battalion commanders in evaluating the performance of their own command group.

Task 7 - Develop a User Feedback Questionnaire

A brief questionnaire will be developed for use in obtaining feedback from users in the field. The questionnaire will address the training effectiveness, feasibility, credibility, and realism of the CPX's and their associated evaluation of feedback systems. It will also solicit recommendations for additional materials for filling training requirements of field units with respect to the functioning of command groups.

BACKGROUND

COMMAND GROUP PERFORMANCE

The purpose of the required training and evaluation system is to provide field units with effective opportunities for learning to conduct tactical operations under the rapidly-changing conditions of modern combat environments. Effective performance under these conditions requires that a command group be proficient in (1) accurate assessment of rapidly and constantly fluctuating battlefield situations and (2) making effective decisions and communicating instructions concerning their implementation, frequently under the pressure of very short time constraints.

An explanatory model of command group performance, developed in an earlier HumRRO study,[1] is shown in Figure 1. In the model, each numbered block represents one of the following steps in the sequence of performarce:

Step 1 - At the beginning of an operation, a command group is provided a given amount of resources (personnel, units, equipment, etc.), a mission, and has available information concerning the general situation.

Step 2 - The command group collects, records, analyzes, displays, and passes on information and intelligence.

Step 3 - At all times, the group must know the current situation and current status of resources.

Step 4 - Based upon its analyses of information, intelligence, the current situation, and current status of resources,

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[1] Olmstead, Joseph A., Cleary, Fred K., and Salter, James A. Functions of Battalion Command Groups, HumRRO Final Technical Report FTR-CD(C)-75-11, November 1975, Alexandria, Virginia: Human Resources Research Organization, p. 16.

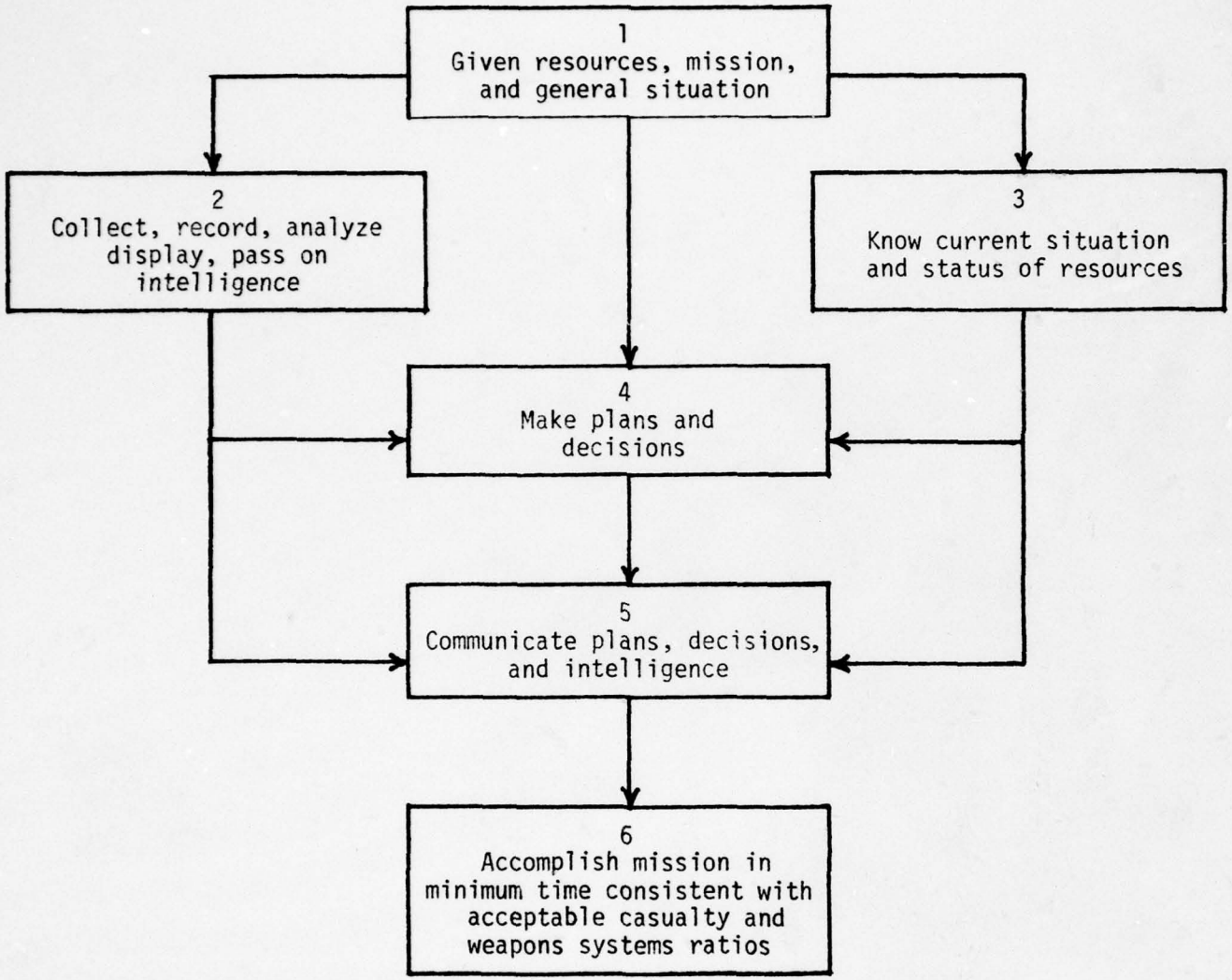

Figure 1. Explanatory Model, Command Group Performance

the command group makes plans and decisions concerning the conduct of the battalion's operations.

Step 5 - The command group communicates its plans, decisions, implementing orders, and intelligence to individuals and units as it deems appropriate.

Step 6 - If the above activities are performed effectively, the mission will be accomplished within a minimum time consistent with an acceptable ratio of friendly to enemy casualties and weapons systems losses.

Steps 1 and 6 are one-time events. Of course, Step 1 occurs only at the beginning of an operation and Step 6 is the final result. On the other hand, Steps 2, 3, 4, and 5 constitute a cycle of events which repeats itself many times as situations, missions, and resources change during the course of an operation. Accordingly, Step 6, the ultimate outcome, will be influenced, not only by single significant events, but by consistent proficiency in the many repeated performances of the cycle.

All earlier steps determine Step 6. The general situation, the nature of the assigned mission, and the amount and types of resources allocated to the battalion at the beginning of an operation (Step 1) play an important role in the ultimate outcome. However, of equal importance are the quality of the functions and activities performed during Steps 2, 3, 4, and 5. Assuming that the general situation is not overwhelming, the mission is proper within the context of the general situation, and the assigned resources are adequate, the quality of the functions and activities performed in Steps 2, 3, 4, and 5 will be the major determinants of overall effectiveness.

The model provides a convenient way of classifying and sequencing the functions performed by command groups. Furthermore, it provides a meaningful way of relating the functions to ultimate outcomes.

A significant feature of the model is its emphasis upon the functioning of battalion command groups as teams. That is, the model stresses the capabilities of such groups to operate as integrated units and results are viewed as group outcomes, as opposed to the separate products of individuals in performance of their respective command and staff roles.

In furtherance of the current emphasis upon team performance, the U.S. Army Command and General Staff College (CGSC) has identified a set of command group performance factors which have been determined to be critical for the effective leadership of battalions, or battalion-sized task forces, engaged in combat operations (Appendix A). These Battalion Command Group Critical Performances, with their associated conditions and standards, constitute the essential foundation for the development of command group training and evaluation systems. With this foundation, simulation exercises can be designed to provide training experiences that will be directly relevant for the various critical performances and evaluation and critique procedures can be designed to focus upon a command group's effectiveness in executing them. Thus, commanders can be assured that training will be directed systematically toward developing skills that have been identified as essential for effective combat performance.

REQUIREMENTS FOR EFFECTIVE TRAINING

Training that is intended to develop the types of skills discussed above must be systematically designed to provide (1) frequent opportunities for practice in assessing combat situations and in making and communicating decisions about them, (2) opportunities to observe the impact of decisions and actions upon the course of ongoing tactical operations, and (3)

information about the ultimate effectiveness of actions and of ways they might have been better executed. Such training is essentially "experiential" in nature. Learning occurs when participants experience the dynamic interaction between their decisions and actions on the one hand and a reacting environment on the other. Thus, participating personnel actually experience themselves functioning in realistic combat situations and also experience the consequences of their decisions and actions. In this way, participants "discover" the implications of various elements of the battlefield--friendly, enemy, and environmental, for combat effectiveness. "Discovery learning" is generally more meaningful, lasting, and relevant than learning acquired solely through conventional classroom instruction. Therefore, experiential training for command groups has the fundamental objectives of (1) making participants consciously aware of the implications of their decisions and actions upon the outcomes of combat operations, and (2) helping them to become skillful in assessing operational situations and acting effectively within them.

Such training is best accomplished through the use of simulations which present credible representations of the complexities of modern combat and are specifically designed to probe the activities of command groups in critical performance areas, thus insuring that the training will provide the required assessment and action experiences. However, mere participation in a simulation is not sufficient for maximal learning to occur. In addition to mere exposure to simulation experiences, participants also require knowledge of the results of their efforts provided through systematic feedback to them of data about their performance. Therefore, the most effective training systems for command groups will include, in addition to simulation

exercises, evaluation and critique procedures designed so as to readily identify significant events and actions and provide meaningful data to evaluators and participants.

THE LONGTHRUST CPX

Despite the many surface variations in the formats of CPX's, one underlying rationale applies to all. The rationale is that training and evaluation of command groups can be accomplished effectively and efficiently by placing participating personnel in simulated combat environments and exposing them to realistic situations and problems to which they must react as members of command and control teams.

In general, CPX's require command groups to interact with controllers who play the roles of commanders and staff personnel of superior, subordinate, supporting, and adjacent units. The controllers respond to participants' inquiries or instructions as if they are the occupants of the interacting positions and, thus, simulate the environments within which the command groups must function. If the environments are simulated realistically, participants experience events and practice actions similar to those which occur under actual combat conditions.

In most CPX's, controllers base their inputs and responses to participants upon preplanned scenarios which dictate the information to be provided and the general courses of events which occur during the exercise. Thus, a weakness of conventional CPX's is that outcomes are predetermined and, accordingly, controller inputs frequently create an atmosphere of artificiality which can seriously impact upon training effectiveness.

The methods used in CPX LONGTHRUST are designed to overcome some of the limitations of conventional CPX's. From the perspectives of the command

group participants, conventional and LONGTHRUST CPX's are structurally similar, in that both are conducted in three phases:

1. A preparation phase, in which the command group, under its own identity or having assumed the identity of a specified battalion, and having been placed in a simulated tactical situation and assigned a mission, develops a plan for accomplishment of the mission and issues orders intended to prepare the battalion to execute the plan. The command group's information environment is generated by documents/messages provided/inserted by controllers.

2. An execution phase, in which conduct of the operation planned by the command group is simulated. The command group's information environment is generated by messages inserted by controllers; its initial and subsequent orders are mediated by controllers representing friendly forces.

3. An evaluation/critique phase, in which the command group's performance is reviewed and assessed.

However, unlike conventional CPX's, LONGTHRUST includes representation of opposing forces played by controllers who attempt to carry out a THREAT mission and react to the friendly forces' battle actions in accordance with THREAT doctrine. Thus, the command group undergoing training is faced with an opposing force which actively attempts to defeat the friendly unit and the events and outcomes of combat actions are determined by the dynamic interplay of the opposing decisions and actions rather than the predetermined outcomes of a prepared scenario.

The most innovative and readily discernible difference between LONGTHRUST methodology and that of conventional CPX's is that the interplay between friendly and opposing force controllers is mediated by a manual two-sided gaming simulation through which the outcomes of combat actions are determined.

The forces of the U.S. battalion and the enemy forces opposing it are represented by movable unit markers located on a terrain-realistic game board and controllers, role-playing the positions of the commanders of the represented friendly and enemy units, position and maneuver these unit markers substantially as they would position and maneuver actual units on a real battlefield. In attempting to execute the missions assigned to them, the controllers apply established doctrine (friendly or enemy, as applicable) and act and react in consonance with the exigencies of the situations that develop. They are constrained by established rules, rather than by a prepared script that forces progression of the CPX in a predetermined manner. However, within the constraints of the rules, outcomes are determined by the free play of the two opposing forces, with the play of friendly forces governed by directives of the command group undergoing training or evaluation.

Other significant, though less readily apparent, differences between LONGTHRUST and a standard CPX are:

1. In the preparation phase of a LONGTHRUST CPX, the quality of the command group's information about its environment is more closely related to the quality of its intelligence acquisition and processing efforts than in a standard CPX.

2. In a LONGTHRUST CPX, any event or situation in the execution phase can be recreated at any later time and examined in detail. When conducted for training, a LONGTHRUST CPX can be halted at any point and a past event or situation recreated and, if desired, replayed. The CPX can then be resumed without detriment to training.

3. Evaluation and critique of performnace in a LONGTHRUST CPX can be more objectively based than in a standard CPX.

Of special relevance for the work reported herein is the fact that LONGTHRUST 75, the Army-developed prototype CPX using the gaming simulation methodology depicts a battalion-sized, combined arms task force engaged in an attack operation in a European environment. The game rules, gaming paraphernalia, controller role instructions, and directions for training which comprise the LONGTHRUST 75 "CPX package" are "scenario-dependent," i.e., they apply specifically to a European environment and an attack operation and, without modification, cannot be used for other environments or types of operations. Furthermore, the LONGTHRUST 75 instructions and materials are highly complex in both content and format, thus making implementation of the CPX likely to be difficult and cumbersome for field units.

Accordingly, as described in detail under the Research Problem section, the overall purposes of the project described here was to adapt the LONGTHRUST methodology and materials so that they would be generally independent of particular scenarios, environments, and operations, simplify the methodology and materials, and develop an evaluation and critique scheme based upon the critical performances identified by the Command and General Staff College.

METHODS AND RESULTS

Methods of accomplishment differed somewhat for the various tasks and were directly related to the results obtained. Accordingly, the method of approach will be described in conjunction with the results of the respective tasks.

TRAINING OBJECTIVES FOR BATTALION COMMAND GROUPS

Task 1 required the development of training objectives for battalion command groups. The purpose was to identify general training objectives which would serve as guidance for the construction of scenarios for CPX's using the LONGTHRUST methodology.

A thorough analysis of LONGTHRUST 75 was conducted to determine its advantages and constraints with respect to training performance and to identify features of its training conditions that might affect the nature of the training objectives or that might impact upon determination of their achievement. In addition, previous work by HumRRO[1] had resulted in identification of the basic functions served by battalion command groups in combat operations. These functions were examined to determine the most appropriate translation of them to training objectives within the context of LONGTHRUST CPX's.

The training objectives which resulted from this approach are shown in Appendix B. It will be noted that the Action, Conditions, and Standards portions of each objective are stated at a high level of generality. They were so designed in order that they might be equally applicable for a variety of operations and environments. The general standards were designed to

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[1] Olmstead, Joseph A., Cleary, Fred K., and Salter, James A. Functions of Battalion Command Groups, HumRRO Final Technical Report FTR-CD(C)-75-11, November 1975, Alexandria, Virginia: Human Resources Research Organization.

provide guidance for the derivation of more specific criteria pertinent to particular scenarios. Thus, the objectives were viewed as overall goals toward which developmental work would build through the appropriate design and accumulation of specifics and details pertinent to each particular CPX scenario.

Shortly after the training objectives were developed and submitted, it was learned that concurrent with, but independently of, the work on this project, the Command and General Staff College, with the assistance of an Army-wide committee, had developed the Battalion Command Group Critical Performances shown in Appendix A. These items constitute desired proficiencies to be achieved upon completion of training. Initiating conditions, tasks, and general standards were developed.

In discussion with the ARI COTR and representatives of the College, it was decided that, in the interests of uniformity, the critical performances developed by the College should govern future work on this project. Accordingly, the performances shown in Appendix A were used, where appropriate, in work on later tasks. It should be noted that no conflict exists between the objectives developed by HumRRO and the performances identified by the College. The difference is essentially one of format.

A GENERAL SYSTEM FOR CONDUCTING COMMAND POST EXERCISES

Task 2 required review and simplification of "control board rules" for LONGTHRUST 75, Task 3 stipulated review and revision of controller roles and duties, and Task 4 required development of a general scheme for evaluating and conducting critiques of command group performance. The products of these tasks were to be scenario-independent and suitable for application to a wide range of scenarios, operations, and environments.

Because of the requirement for rules, materials, controller roles, and the evaluation and critique scheme to be scenario-independent, it became apparent that what was needed was a general, scenario-independent system, based upon LONGTHRUST methodology, which could be used as the common framework upon which a variety of operation- and environment-specific CPX's could be designed. All such CPX's would be conducted in the same way, i.e., same general rules, controller roles, and general evaluation and critique scheme; but, for each, certain exclusive rules, special controller instructions, and specific evaluation standards would be superimposed upon the common framework.

Accordingly, the basic methods of LONGTHRUST were adapted to produce a basic CPX system to which was assigned the acronym COMTRAIN. The term, LONGTHRUST, was judged to possess definite scenario-specific connotations, i.e., its scenario depicts a "spoiling" attack involving a long friendly penetration, or thrust, into enemy-held territory. Therefore, to avoid scenario-specific connotations for the general system, the acronym COMTRAIN was recommended. Under this concept, LONGTHRUST would become the prototype CPX for the COMTRAIN system.

To fulfill the requirements of Tasks 2, 3, and 4 for documents that describe the revised methodology, a COMTRAIN Handbook was developed. The handbook is designed to be a single source of information concerning the methodology of the COMTRAIN system, the rules and procedures of the gaming simulation aspects of the system, and of controller roles, responsibilities, and duties. To this end, and to provide orderly treatment of subject matter, the Handbook is tabularly organized into Parts, Sections, and Subsections. This organization also facilitates extraction, reproduction, and selective

distribution of any portion. For example, it was envisioned that the tables and charts contained in Part II may be reproduced as plastic sheets, or that other sections of Part II (or of any Part) may be extracted and distributed to controllers for their ready reference.

Briefly, the organization of The COMTRAIN Handbook is:

Part I. The COMTRAIN System: A broad description and explanation of the system and its operating components.

Part II. The COMTRAIN Control Subsystem: The means by which COMTRAIN CPX's are controlled. Contains eight sections.

Part III. The COMTRAIN Data Recording Subsystem.

Part IV. The COMTRAIN Critical Performance Subsystem.

Part V. The COMTRAIN Evaluation/Critique Subsystem.

Major Modifications to the LONGTHRUST Methodology

HumRRO's analysis of the LONGTHRUST materials showed that the system for control, i.e., the gaming simulation is valid and sophisticated. It is presented, however, in an overly complex manner that tends to confuse and overwhelm controllers with 13 separate handbooks, six different combat results computers, and numerous data collection forms and other explanatory material.

The general approach was to organize the material, remove that which was redundant (e.g., each of the 13 handbooks contained many pages that were exactly the same in all), simplify that which remained, and add material as necessary.

The major modifications, simplifications, and additions actually made are identified below and the rationale for them stated. Minor changes that did not change meaning of original materials are not separately identified.

Major Changes

a. Glossary. A glossary was developed to provide a single source of definitions of the terms used in COMTRAIN. Some of these terms are stated or implied in the LONGTHRUST material; others are new, added to provide greater clarity.

b. Game Board (Control Board). No changes were made in the basic LONGTHRUST Control Board (renamed game board in COMTRAIN). Recommendations for changes are discussed below.

c. CPX and Gaming Simulation Material.

(1) Markers. Markers for obstacles, indirect fire, individual vehicles, and improved positions were mentioned in the LONGTHRUST material, but were not included nor adequately described. Precise descriptions of these markers were added as directions for their production for inclusion in COMTRAIN.

(2) Charts.

(a) The U.S. Indirect Fire Allocation Chart and the Enemy Indirect Fire Allocation Chart were combined to produce a single, more comprehensive chart containing the information in both. The new chart also corrects an error in the LONGTHRUST charts regarding illumination.

(b) Terrain Effects Chart. No changes were made in the LONGTHRUST terrain effects chart. Recommendations for changes were submitted.

(3) Probes. The "probe" system for making inputs during the exercise was introduced.

(4) Forms. No changes were made in the forms used in the LONGTHRUST system.

(5) Combat Results Tables.

(a) Mine Effects Table. The mine effects chart of the LONGTHRUST system was revised to increase the data presented and to make the data applicable to all scenarios.

(b) Close Assault Combat Results Table. With the exception of an addition recommended by CGSC, no changes were made and none were recommended.

(c) Indirect Fire Combat Results Table and Air Attack Combat Results Booklet. No changes were made or recommended.

(d) Tank Main Gun, Antitank Gun, Antitank Rocket, Antitank Guided Missile, U.S. Units Infantry Fire, and Enemy Units Infantry Fire.

1. In LONGTHRUST, the combat results tables for these weapons/types of fire are shown in hand-held manual computers, popularly called "whiz wheels." These were found to be difficult to master and slow to operate, and they are presumed to be expensive to produce. Experimentation indicated that all three of these circumstances could be alleviated by conversion of the computers to direct-read tables. This was done and the resulting tables made a part of the COMTRAIN system. Conversion included reducing the numbers of weapons/targets in some of the tables, as the need for the higher numbers (e.g., 10x10) never emerged in game play. Additional experimentation in these areas was recommended.

2. In converting the computers to direct-read tables, no changes were made in the numbers reflecting results, although some of the results shown are definitely incorrect (e.g., three targets destroyed when only two were engaged), and some of the results seem questionable (e.g., a weapon being more effective at maximum range than at less-than-maximum range). Review of weapons effects was recommended.

d. Control Group.

(1) LONGTHRUST requires 17 controllers when conducted by a battalion and 18 controllers when conducted by a brigade. The differences are:

battalion conduct requires two control board controllers, brigade conduct requires one; battalion conduct requires one enemy controller, brigade conduct requires three. No reasons for the difference are given in the LONGTHRUST materials and none are apparent. COMTRAIN standardizes the controller requirements, in both instances, and reduces the requirement to 15, with the provision that controllers may be added when required by the complexity of some aspect of a given CPX.

(a) The Assistant Brigade Controller is eliminated. Game play indicated that all brigade controller duties can be accomplished by one controller.

(b) Two Forward Observers are eliminated. Game play indicated that the limited size of the game board prevented simultaneous work by four and two could adequately perform all required duties.

(c) The number of Enemy Controllers was fixed at two, game play having shown that, although two are needed in both situations, three are not needed in either situation.

(d) The number of Game Board Controllers was fixed at two, game play having shown that two are needed in both situations.

(2) COMTRAIN specifies that position incumbents who, principally, are operating personnel in the gaming simulation be the same in both situations.

e. Rules. As simplification of rules was a major task of the research, The COMTRAIN Handbook is a major deviation from LONGTHRUST in format, although not necessarily in content. First, it was decided to include a "Rules Section" that would present specific rules covering various topics. This is not done in LONGTHRUST; the rules are scattered throughout the written material. Second, it was decided to make each rule a definite statement that can be directly applied by controllers to various situations. Again, this

type of rule rarely appears in the LONGTHRUST material. Finally, it was found that there were areas of omission or areas of extreme ambiguity in LONGTHRUST rules. To correct this, certain "new" rules were developed, although in some cases they may merely be a specification of what is implied by the LONGTHRUST designers.

Recommendations

The following recommendations identify areas in which, with a single exception, no developmental work was accomplished by HumRRO. The exception, changing the data on the whiz wheels to direct-read tables, was accomplished to partially satisfy the task of simplifying the LONGTHRUST game rules.

Each recommendation discussed here is followed by a rationale. In most cases, the rationale is based on the opinions of both military and HumRRO personnel that there is a problem in a particular area that needs to be investigated. Although these opinions were developed during extensive game play, there are no specific data available.

(1) The whiz wheels should probably be replaced by tables. However, this question should be studied further.

Rationale: The whiz wheels appear to be unnecessarily complicated and difficult to master. Also, the wheels contain more possibilities for engagement (weapons vs. targets) than are probably necessary. For these reasons, the critical information on the whiz wheels were converted to tables. However, final resolution of the question of whiz wheels vs. tables should be approached in an empirical manner by a study to identify the advantages of one mode of presentation over the other.

(2) The validity of the information on the whiz wheels should be verified.

Rationale: Computations using the whiz wheels result in certain unusual weapons effects. For example, it is often found that for a fixed number of weapons, kill efficiency decreases with increasing numbers of targets in a single hex. Also, there is a very high probability of kills at longer ranges. The HumRRO-produced tables basically reflect the existing information on the wheels. However, it is recommended that the information on the wheels be (a) compared with established weapons effects for various distances, and (b) reviewed to establish more consistency between number of targets engaged and number of kills obtained.

(3) The cardboard unit markers should undergo a human factors analysis to improve their usability.

Rationale: The LONGTHRUST unit markers are duplications of those used in some of the elementary commercial games. Although these are appropriate for that type of use, experience by both military personnel and HumRRO has indicated that there are some human factors problems. Some of these problems and possible solutions are as follows.

(a) The markers are difficult to pick up. This could be minimized by having markers made approximately twice as thick as the current ones.

(b) There are no markers indicating smoke, areas of illumination, HE, minefields, other types of obstacles, or improved positions. Markers should be developed that portray these factors.

(c) The LONGTHRUST idea of turning a marker upside down, indicating a disabled vehicle, is somewhat unsatisfactory due to problems of memory. Printing the markers on both sides with one side showing a disabled vehicle is a solution to this problem.

(d) It is sometimes difficult to find enough markers for smaller units (e.g., squad) to subdivide a larger unit (e.g., platoon) when the larger unit has suffered casualties or losses of vehicles. To solve this, each scenario should be carefully reviewed and all possible combinations of unit markers should be made available in the game package.

(e) Given the probable experience of the personnel who will normally comprise a command group, together with the documentation available in the game package (e.g., whiz wheels), it is probably unnecessary to have antipersonnel and antitank ranges printed on the bottom of markers. Ranges could be deleted and the unit symbol enlarged for easier reading. The close assault factor should be retained because this is special information.

(4) The LONGTHRUST hex system should be modified so that a square grid division can be used on the game board.

Rationale: The rectangular grid system in LONGTHRUST creates an element of artificiality that could be overcome by modifying the size of the hex. This would have to be carefully done so that such things as unit movement factors would not be adversely affected. For example, the use of a 16 x 21 mm hex will produce a square grid division. If each hex equals 200 meters, the game board will have a scale of 1/12,500 and this scale will be the same both horizontally and vertically. This would appear to be an appropriate scale for battalion-level simulation.

(5) It was recommended that the LONGTHRUST hex system be modified so that grid coordinates ending in both odd and even numbers can be used.

Rationale: Under the LONGTHRUST system, only grid coordinates ending in odd numbers can be used. The use of only odd numbers

in the grid system creates another artificial element. This should be modified if possible.

(6) The method of coloring individual hexes should be given further study.

Rationale: On the LONGTHRUST game board, some hexes have only part of their area covered by a specific type of terrain. For example, many hexes have only a small area of green indicating extent of the woods in that area. This causes problems in play. The most common problem concerns the establishment of line of sight and whether the small areas of woods obstruct vision. Another problem is that some controllers have insisted that they could hide two tank platoons in a small area of woods occupying only a corner of a hex. HumRRO solved the line of sight problem by the development of a specific rule. However, the second problem remains unresolved. One approach would be to color all of a hex the color of the predominant terrain feature. The disadvantage of this approach is that it would necessarily affect fidelity between the game board and the topographic maps used by the command groups. The problem should be approached by studying both the human factors and fidelity requirements involved in game boards that portray terrain.

(7) The symbol for Valley Crest should be deleted from the game board.

Rationale: As used in LONGTHRUST, the symbol does not affect movement, line of sight, or target disposition and thus serves no useful purpose.

(8) The special symbols for Woods on Slope, Woods on Hilltop, and Woods on Rough Ground should be deleted and this type of terrain indicated by printing green striping over the conventional topographic symbols for Slope, Hilltop, and Rough Ground.

Rationale: The creation of special symbols (colors, shapes) unnecessarily complicates the terrain effects chart. By over-printing the conventional symbols for Slope, Hilltop, and Rough Ground with green stripes, special symbols would be reduced. The different effects of presence or absence of woods would be shown only as additions to the basic symbols.

(9) The terrain effects chart should be simplified by (a) deleting the kilometer scale printed on the left, (b) deleting the printed line "Additional Obstacle Restrictions" appearing one-third down the page, and (c) the line "Woods - Terrain Restrictions" appearing two-thirds down the page.

Rationale: The above information is not required for accurate interpretation of the chart.

A General Scheme for Evaluation and Critique

As discussed in an earlier section, The Command and General Staff College has identified and delineated the critical tasks of a maneuver battalion command group under combat conditions. The identified tasks were grouped under two broad functional areas: (1) Prepare for Battle and (2) Fight the Battle. Identified tasks were further analyzed to produce a set of elements for each task and, for each task element, initiating conditions, cues, and general training/evaluation standards were specified. Since the tasks developed by CGSC apply to all combat situations, they are independent of any particular CPX scenario.

One requirement for this project was to develop a general scheme and guidelines to be used for converting the initiating conditions/cues and the training/evaluation standards from the present scenario-independent form to

evaluation and critique procedures that would be specific to any chosen scenario to be used in the COMTRAIN system.

Evaluation

The initial step in developing a general scheme for evaluation involved several decisions that would govern more specific procedural details. A first decision concerned the personnel to serve as evaluators. The COMTRAIN system provides for controllers to serve in the roles of commanders and staffs of superior, adjacent, subordinate, and support friendly units. During the course of a CPX, these controllers are in contact with the battalion command group through standard communication networks and, therefore, are in position to observe performance by the command group of the critical tasks. Experience with LONGTHRUST indicated that the personnel specified for controller roles and duties could simultaneously exercise control functions and collect and record a reasonable amount of evaluation data. Accordingly, it was concluded that the controller personnel specified for the COMTRAIN system can serve in the dual role of controller/evaluators, with one exception. A small number of the critical performances involve staff activity and interaction which is largely confined to the TOC. One person to serve solely as an evaluator located inside the TOC was judged a necessary addition to the administrative staff for the CPX.

Second, a decision was reached that the system must provide reasonable assurance that evaluations of all possible task elements will be accomplished regardless of the scenario. It was concluded that a maximally effective system should provide procedures for collecting two types of evaluations which were labeled "preplanned evaluations" and "opportunity evaluations." Preplanned evaluations for all task elements assure that each

command group will be evaluated to an equal extent within a standardized, comparable methodology. However, the semi-controlled nature of the COMTRAIN system allows for the possibility that unpredictable, but valuable, opportunities for significant judgments about performance may arise. Therefore, the evaluation system should provide for a standard set of scenario-dependent evaluations, plus opportunity for observations which may vary across different command groups.

The final decision involved the most appropriate way to design instruments to be used by evaluators in recording their observations and judgments. The most critical aspect involved selection of the best method for standardizing evaluations across evaluators and groups. The available options were identified as (1) checklists of scenario-dependent, concrete actions with a go-no go evaluation decision, (2) critical incident descriptions constructed by evaluators, (3) norm-referenced rating scales, and (4) criterion-referenced rating scales. From these options, the criterion-referenced rating scale was chosen as the most appropriate method for making evaluations.

Following the above decisions, a set of guidelines for developing scenario-dependent evaluation systems were prepared. A summary of the guidelines follows.

I. Analyze the Scenario

   A. Identify the initiating conditions/cues that will be likely to naturally occur in a particular time sample during a CPX with this scenario.

   B. Specify the initiating conditions/cues in terms of the particular scenario.

C. Determine which controllers, evaluator(s) will be in the best position to observe the command group's response to each of the initiating conditions/cues that were identified.

II. Elaborate the Scenario

A. Determine how initiating conditions/cues for task elements identified in I.B. above can be programmed into the scenario.

1. Select a method of creating initiating conditions/cues which will not materially affect the free-play characteristics of the COMTRAIN system.

2. Identify the controller in the best position to create the needed initiating conditions/cues.

3. Provide detailed guidance for the selected controller(s) to insure that the programmed inputs are made in a standardized fashion during each iteration of the scenario.

III. Define Scenario-Specific Standards

A. For each task element, identify and describe command group actions that will constitute evidence of performance on the element.

1. Determine alternative actions, both the effective and ineffective, that might be taken by a command group under the particular circumstances of the scenario.

2. Describe the alternative actions in scenario-specific terms, i.e., in terms of the units,

objectives, terrain, conditions, and other reference points modeled for the scenario.

B. Specify in quantitative, where possible, and qualitative terms what actions constitute Superior, Satisfactory, and Ineffective performance for each task element.

Analyses according to the above guidelines will result, for each scenario, in a master list of evaluation points documented according to a standard format for each task element pertinent to the scenario. Figure 2 shows an example of the proposed evaluation instrument for one task element.

The general evaluation scheme requires expert judgment in both preparation of scenario-dependent conditions and standards and in evaluation of the degree to which a command group achieves effective performance during a COMTRAIN CPX. However, the approach achieves optimum quantification of evaluation while still providing opportunity to collect qualitative data which will be essential for providing meaningful feedback to the evaluated command group.

Critique

The approach to development of a critique system was guided by a number of preliminary decisions. First, an important consideration involved the purpose of the critique, which is to provide feedback to the command group on its performance capabilities as evaluated through the COMTRAIN system and to establish guidance for future performance-oriented training. A progression within the critique from the general to the specific was judged to be the most effective technique for achieving these purposes. The "general" is represented by the two broad functional areas identified by CGSC, "Prepare

<table>
<tr><th>Task Elements</th><th>Training/Evaluation Standards</th><th>Evaluation Criteria</th></tr>
<tr>
<td><u>Element 1A</u>: Analyze mission.

Conditions/Initiating Cues

CPX Time: Start

The TF will be given oral warning order and Brigade OPORD which includes enemy and friendly situations and a spoiling attack mission.

Source of Data

Bn oral warning order and Bn OPORD.</td>
<td>CPX Time: Start + 4 hours.

Command group properly identifies specified/implied tasks; addresses those tasks in own oral warning order and/or Bn OPORD; indicates clear recognition of following tasks:

1. Cut enemy north-south lines of communication in the battalion zone.
2. Seize OBJ ORANGE.
3. Report information and intelligence of the battalion zone.
4. Destroy or capture enemy forces in the battalion zone.
5. Be prepared to assist TF 2-77 in seizure of OBJ APPLE.</td>
<td><u>Superior</u>:

Bn oral warning order and/or Bn OPORD addresses all five tasks and indicates clear recognition of implications of the five tasks for battalion and subordinate unit activities.

<u>Satisfactory</u>:

Bn oral warning order and/or Bn OPORD addresses all five tasks.

<u>Ineffective</u>:

One or more of the five tasks omitted from oral warning order or Bn OPORD.</td>
</tr>
<tr><th>Performance Rating</th><th>Evaluator's Analysis/Comments</th><th>Evaluator Identification</th></tr>
<tr>
<td>The Command Group's performance in relation to the task standard was:

___ 5. Superior
___ 4.
___ 3. Satisfactory
___ 2.
___ 1. Ineffective/Not Attempted</td>
<td></td>
<td>a. Subordinate Unit Controller:
_____X_____
b. Adjacent Unit Controller:
_____
c. Superior Unit Controller:
_____X_____
d. Supporting Unit Controller:
_____
e. TOC Evaluator:
_____X_____</td>
</tr>
</table>

Figure 2. Example of an Entry in the Master List of Preplanned Evaluations

for Battle" and "Fight the Battle." The specific level is obtained with the 58 task elements and the associated scenario-dependent evaluation. Thus, a general scheme for preparing and conducting critiques would require procedures for aggregating specific evaluation data to support conclusions concerning overall performance in the general functional areas. A scenario-dependent critique could then progress from an initial overview toward a more specific and performance/training orientation.

A second option-point concerned the degree to which the entire evaluation staff should be involved in development of the critique. It was concluded that, while the senior evaluator will have final responsibility for construction and delivery of the critique, the critique itself should be more the result of group deliberation than individual effort. Opportunity for group consideration of the evaluation data should increase the reliability, validity, and training effectiveness of the critique.

A final point concerned the optimum time lag between the command group's participation in the CPX and the receipt of a critique. It was estimated that a critique constructed on the basis of the formal evaluation data cannot be delivered to a command group earlier than 36 to 48 hours following completion of the CPX. However, some immediate feedback to the command group concerning its performance is desirable from a motivational standpoint. Therefore, the decision was made to include an immediate "Interim Critique," to be followed by a later "Formal Critique" and, finally, by a written follow-up version of the Formal Critique.

An outline for the Interim Critique follows:

I. Mission Accomplishment

A. Was the mission accomplished?

B. Evaluation of the time required to accomplish the mission.

C. Comparison of TF losses to enemy attrition (exchange ratio).

D. Preparedness of TF to continue the mission (consolidate gains, exploit early success, etc.).

II. Use of TF Resources

A. Overview of use of organic direct fire - Examples of effective and ineffective instances from the CPX.

B. Overview of use of organic and inorganic indirect fire support - Examples of effective and ineffective instances from the CPX.

III. Tactical Analysis

A. Using the game control board, recreate situations which occurred during the execution phase of the CPX; lead command group discussion of the actions they directed at that point and exploration of possible alternative actions and probable outcomes.

B. Lead command group self-analysis of its CPX performance.

IV. Summarize and inform the command group of the scheduled date, time and place for receipt of the Formal Critique.

The proposed system provides for the aggregation of data for each task element, task, and functional area. Then, all evaluators will hold a "Critique Conference" during which the data will be reviewed, differences will be resolved, and conclusions will be drawn. Members of the evaluation team will provide the Senior Evaluator with their observations about the performance of the command group under consideration. The results of the Critique Conference will be used by the Senior Evaluator to prepare for the Formal Critique.

The Formal Critique is conceived as a two-hour briefing presented to the command group by the Senior Evaluator, to be followed by submission to the battalion commander of a written version of the critique.

An outline of the Formal Critique follows:

I. Introduction

A. The critique will be focused on the functioning of the command group as a team; will be focused on attainment of the standards as a team responsibility or product; will be performance-oriented.

B. Explanation of the source and nature of the "Command Group Critical Performances."

C. The purpose of the evaluation and critique is to provide the command group with diagnostic knowledge of strengths and weaknesses; it is intended for the command group's guidance in planning and undertaking group or individual training to improve performance.

II. Overview of Command Group Performance in the Functional Areas

III. Evaluation of Task Performance

A. Identification of strong task performance.

B. Identification of marginal task performance.

C. Identification of substandard task performance; discussion of priorities for training or self-improvement efforts.

IV. Evaluation of Task Element Performance

A. Identification of substandard task element performance; discussion of performance in scenario-dependent terms.

B. Discussion of priority task elements in scenario-independent terms.

V. Feedback from Command Group

A. Determination of degree of acceptance of the evaluation results.

B. Determination of degree of commitment to training.

VI. Summary and Conclusion of Critique

Following presentation of the Oral Critique, the senior evaluator will prepare a written report for use by the battalion commander. The material presented in the Oral Critique will form one part of the report. A second part will consist of two types of recommendations. One type will be concerned with recommended changes in Battalion SOP and patterns of interaction found to be dysfunctional. The second type will involve a prioritized listing of training needs and recommendations of ways of meeting the needs.

Full details on the evaluation and critique scheme and guidance for developing scenario-specific procedures appear in Part V of The COMTRAIN Handbook. Guidance for use of the evaluation system by unit commanders is presented in the training document discussed in the following section of this report.

GUIDANCE FOR USE BY FIELD UNITS

Task 5 was concerned with development of a document which would provide guidance and information to field units concerning use of CPX's based upon the LONGTHRUST methodology for training and evaluation purposes.

In planning the document, several decisions concerning content and approach were made. First, it was decided that the document must provide guidance about use of COMTRAIN CPX's for training purposes. Here, "training" includes planning and conduct of CPX's, performance of associated evaluations to provide data for feedback and critique as a part of the training process, and

conduct of training critiques. Second, guidance was to be provided concerning use of CPX's by battalion or brigade commanders for strictly evaluation purposes, i.e., to determine proficiency levels of battalion command groups. Finally, guidance was to be provided whereby, if desired, field unit commanders can develop their own CPX's using the basic COMTRAIN system. Overall, emphasis in the document was to be upon methods for enhancing learning of command group members. Details for administration of the CPX would not appear in the training document, since they are presented in The COMTRAIN Handbook.

A document entitled "Training Battalion Command Groups with COMTRAIN Command Post Exercises" was prepared. A table of contents for the document appears in Appendix C.

ADAPTATION OF LONGTHRUST 75

One requirement (Task 6) for the project was to develop a scenario-specific evaluation system for use with LONGTHRUST 75 and adapt the LONGTHRUST scenario so that it would be compatible with both the COMTRAIN and the evaluation systems.

The first step was to identify those critical command group performances appropriate for training and evaluation with LONGTHRUST 75. Thirty-five of the task elements identified by CGSC (Appendix A) were determined to be appropriate. Those found to be appropriate for the offensive operation depicted in LONGTHRUST follow:

Number	Title
1	Relate the mission to enemy weapons systems, friendly weapons systems, terrain, time and weather.
	1A Analyze mission.
	1B Identify critical intelligence.
	1C Identify critical friendly information.
	1D Select/control key terrain.
	1E Select avenues of approach to objective.
	1H Plan use of organic/attached and non-organic fires.
	1I Determine priority of fires.
2	Initiate intelligence preparation of the battlefield (IPB).
	2A Identify critical intelligence.
	2B Gather critical intelligence.
	2C Analyze enemy.
	2D Disseminate critical intelligence.
3	Prepare and organize the battlefield.
	3A Select a course of action.
	3B Determine critical phase.
	3C Organize for combat.
	3D Select control measures.
	3E Plan organic, attached and non-organic supporting fires and determine priority.
	3F Develop a communication plan.
	3G Communicate/coordinate plans and orders.
4	Troop lead.
	4D Promote cohesion.
5	See the battlefield during the battle.
	5A Identify critical intelligence.
	5B Gather critical intelligence.
	5C Analyze enemy.
	5D Disseminate critical intelligence.
6	Control and coordinate combat operations.
	6A Modify scheme of maneuver.
	6B Coordinate/communicate changes.
	6C Supervise execution.
	6D Maintain the battlefield.

Number	Title
7	Employ fires and other combat support assets.
	7A Reassign priority of fires.
	7B Employ fires (to include organic/attached weapons systems and supporting artillery, TAC Air and Attack Helicopters).
8	Concentrate/shift combat power.
	8A Concentrate/shift combat power in the attack.
10	Secure and protect the Task Force.
	10A Defeat or suppress enemy's electromagnetic intelligence effort.
	10E Reduce vulnerability to enemy mass destruction weapons systems.
11	Troop lead.
	11A Supervise compliance with TF order.
	11B Promote cohesion.
12	React to special situations.
	12A React to enemy electronic warfare.

After identification of appropriate task elements, the scenario was adapted and the evaluation system was developed concurrently. As evaluation items were developed, the scenario was analyzed to identify conditions and initiating cues that would stimulate actions representative of the various task elements. Where the scenario did not provide initiating conditions, it was revised to insure coverage of all appropriate task elements.

Adaptation of the scenario resulted in revision, simplification, or deletion of certain LONGTHRUST materials and the addition of several documents deemed to clarify implementation procedures for field units.

Following are the documents and materials which were the products of Task 6:

1. Administrative Handbook for Chief Controller and Brigade Controller (new).

2. Situation Summary (U.S.) for U.S. Controllers (new).

3. Situation Summary (THREAT) for Enemy Controllers (new).

4. Manual of Probes to be Inserted (new).

5. Pre-CPX Briefing and Practical Exercise for Controllers (revised).

6. Set of Programmed Evaluation Forms (new).

In the course of adaptation, a number of both definite and apparent errors in LONGTHRUST materials were identified and corrected. For the most part, such errors involved incorrect coordinates, erroneously-identified units, etc.

USER FEEDBACK QUESTIONNAIRE

A final requirement (Task 7) was to develop a brief questionnaire to be used by the proponent agency for obtaining reactions and feedback from users of the COMTRAIN CPX's. It was envisioned that copies of the questionnaire would be included in each "CPX package" sent to field units. A unit would complete the questionnaire and return it to the proponent agency, thus providing feedback to the agency concerning effectiveness, feasibility, credibility, realism, etc., of the CPX's and their associated evaluation and critique systems and also provide information concerning additional training needs of field units.

The User Feedback Questionnaire that was developed is shown in Appendix D.

DISCUSSION

The research discussed in this report was devoted to refinement and elaboration of CPX LONGTHRUST, a command post exercise in which combat actions resulting from command group decisions are resolved through play of a two-sided gaming simulation. As originally designed, the LONGTHRUST methods and materials were specific to a particular scenario depicting an offensive action in a European environment. Furthermore, the documents and paraphernalia which comprised the materials used for conducting LONGTHRUST CPX's were extensive and complex, and, accordingly, made feasibility of implementation by field units highly questionable. The work performed in this project consisted of refinement and simplification of LONGTHRUST methods and materials, and elaboration of the methodology into a system suitable for use with any combat operation or environment.

The result is the COMTRAIN system for training and evaluating battalion command groups. COMTRAIN is a flexible system which can serve as a sound foundation for development of CPX's by either proponent agencies or field units. In COMTRAIN, the gaming simulation methods developed for LONGTHRUST are used as the basis for controlling participating command groups. The system consists of a set of general rules, controller roles, and guiding documents which apply equally to all CPX's. Included are a general evaluation and critique scheme from which can be developed scenario-specific procedures as required. Thus, when a CPX depicting a particular type of combat operation, tactical problem, or environment is desired, the basic COMTRAIN documents comprise the major portion of required materials. All that is required in addition is development of a game board depicting the desired

environment, a scenario for initiating CPX play, and conversion of a set of general command group critical performances and standards into scenario-specific criteria. These required activities can be accomplished (1) by a proponent agency which would prepare complete "CPX packages" for issue to field units, or (2) field units whose commanders desire to conduct CPX's based upon locally-derived problems, terrain, or environments. In either case, the COMTRAIN system and materials will serve as the foundation for development of needed CPX's.

The gaming simulation methods developed for LONGTHRUST and refined for the COMTRAIN system are an excellent means for training or evaluating command groups. The controlled free-play between U.S. and opposing forces generated by the use of gaming simulation provides a spontaneity and challenge to participating command groups not possible with the preplanned scenarios of conventional command post exercises. In COMTRAIN CPX's, there is active effort by enemy controllers to defeat U.S. forces. Thus, if enemy controllers are astute and vigorous in playing THREAT doctrine and their roles, the participating command group will have to perform effectively in order to emerge victorious. Furthermore, vigorous opposition by enemy controllers, coupled with systematic evaluation of command group performance in critical areas, will reveal performance deficiencies in a highly visible manner so that attention and remedial action can be focused upon them.

Design of COMTRAIN scenarios and their associated evaluation systems in terms of performance factors that have been identified as critical for command group effectiveness make it possible to conduct training at battalion command group levels that is directed toward specific objectives. Thus, the training of command groups will be more systematic and aimed

more toward developing proficiency in actual combat-relevant areas of performance. In addition, the use of a criterion-referenced system for evaluating performance and feeding back results will enable commanders to ascertain current proficiency levels in the critical performance areas and to conduct remedial training until desired levels are reached.

Under COMTRAIN, LONGTHRUST is the prototype CPX for the system. In addition to the materials required to conduct the CPX, the revised LONGTHRUST package contains a briefing and practical exercise for training controllers in use of the COMTRAIN system. It is recommended that field units be introduced to the COMTRAIN system through use of LONGTHRUST. After the training provided by the LONGTHRUST materials, controllers should be well-equipped to conduct any subsequent CPX's under the COMTRAIN system.

Finally, the training document developed by HumRRO appears to be a valuable document for introducing field units to all COMTRAIN CPX's. The document contains general discussion of the system and provides guidance for conducting training and evaluations. When used in conjunction with The COMTRAIN Handbook, the training document will provide all of the information and guidance required for use of the CPX's.

APPENDIX A

Battalion Command Group Critical Performances

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 1. Relate the mission to enemy weapons systems, friendly weapons systems, terrain, time and weather.	Enemy force within the task force tactical intelligence zone 2 (50 km forward) consists of two motorized regiments; his equipment includes BMP personnel carriers, T62 tanks, track mounted and suitcase saggers, ZSU-23-4 AA guns, RPG 7's, BRDM scout vehicles and 122 mm howitzers. The TF will be given oral warning and OPORD which includes enemy and friendly situations and a mission which could normally be expected in the scenario developed by the senior evaluator.	TF Command Group prepares an estimate of the situation which relates to range, accuracy and destructive effects of both friendly and enemy weapons systems; the relief, surface conditions, drainage, vegetation and manmade features of the terrain and time available. (Evaluator judgment.) (NOTE: The estimate process is a continuous one; as new data are inputted, the estimate is constantly updated. Thus the evaluation should take place throughout the unit's preparation for the given mission, but should not be completed until the mission is terminated.)
ELEMENTS Element 1A. Analyze mission.	Conditions for Task 1 apply.	Command group properly identifies specified/implied tasks; addresses those tasks in its own oral warning order or OPORD.
Element 1B. Identify critical intelligence.	Conditions for Task 1 apply.	If offense: Cmd Gp identifies avenues of approach to the objective; type size, number and location of maneuver and fire support units; units capable of reinforcing by maneuver and fire; location of obstacles. If defense: Cmd Gp identifies avenues of approach into defended area; composition and size of attacking force; enemy's scheme of maneuver and fire support. If retrograde: Cmd Gp identifies size, type and number of units in contact; enemy units which can reinforce by fire or maneuver; enemy's intention or capability to exploit; enemy reconnaissance.

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 1C. Identify critical friendly information.	Conditions for Task 1 apply.	Command group identifies location status and situation of 1. TF elements. 2. Major adjacent units and brigade reserve. 3. Supporting forces.
Element 1D. Select/control key terrain.	Conditions for Task 1 apply.	Terrain which facilitates accomplishment of the TF mission is selected/controlled by occupation or fires. (Evaluator judgment.)
Element 1E. Select avenues of approach to objective.	Conditions for Task 1 apply except that mission assigned to TF is either movement to contact, hasty attack, or deliberate attack.	Task force selects avenues of approach which 1. Provide max cover and concealment. 2. Minimize effects of obstacles. 3. Permit mutual support and overwatch. 4. Permit effective employment of weapons. 5. Facilitate control while permitting teams to deploy and maneuver. 6. Maximize TF and team mobility. 7. Capitalize on enemy vulnerabilities. 8. Minimize time for teams to close on objective.
Element 1F. Select battle positions.	Conditions for Task 1 apply except that mission assigned to TF is to defend.	TF selects battle positions which 1. Minimize vulnerabilities to enemy's frontal direct fire weapons and indirect fire weapons. 2. Maximize capabilities of own weapons; permit engagement of targets at maximum effective range. 3. Exploits and reinforces natural terrain obstacles. 4. Permits mutual support and overwatch. 5. Facilitates control while permitting teams to deploy and maneuver. 6. Maximize TF and team mobility; allows for strong, quick counterattacks. 7. Capitalize on enemy vulnerabilities.

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 1G: Select delay positions, covering force positions and routes of withdrawal.	Conditions for Task 1 apply except that mission assigned to TF is to delay.	Task force selects initial and successive battle positions which: 1. Forces enemy to deploy and concentrate forces repeatedly. 2. Minimizes vulnerability to enemy long-range observation and fires. 3. Maximizes effectiveness of own weapons. 4. Forces enemy to travel along exposed approaches. 5. Reinforces natural terrain/manmade obstacles. 6. Facilitates, as developing situation dictates, transition to limited attack, defense or withdrawal.
Element 1H: Plan use of organic/attached and non-organic fires.	Conditions for Task 1 apply.	Plan, continuously updated, provides for non-organic *supporting preplanned fires*, fires against targets of opportunity, suppression, surprise and deception, and allows TF elements to maneuver freely.
Element 1I. Determine priority of fires.	Conditions for Task 1 apply.	Priority of fires is given to TF element(s) to support the scheme of maneuver.

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 2. Initiate intelligence preparation of the battlefield (IPB).	TF receives intelligence summary from Bde (senior evaluator) keyed to the scenario developed for the exercise. The summary should be incomplete so as to require the TF command group to initiate action to gather missing information.	Cmd Gp will develop intelligence to determine significant tactical indicators and targets (enemy movement, reinforcement, artillery locations, air defense positions, assembly areas and armor) within tactical intelligence zone 2 (out to 50 km).
ELEMENTS.		
Element 2A. Identify critical intelligence.	Conditions for Task 2 apply.	Standard is the same as that for Task 1, Element 1B.
Element 2B. Gather critical intelligence.	Conditions for Task 2 apply.	Cmd Gp determines intelligence shortfalls and aggressively gathers information from all available/appropriate resources. All assigned, attached or DS assets (ELINT, UGS, GSR, Recon Units and Troops) as well as higher echelon assets (Electromagnetic, Imagery and Human Intelligence) should be considered. As a minimum, collection efforts should focus on identifying obstacles, avenues of approach, blocking positions and possible assembly areas; insuring accuracy of map grids; preparing detailed radar coverage charts; trafficability studies; and determining the most likely positions for artillery, air defense and antitank elements. These data should then be reduced to overlays.
Element 2C. Analyze enemy.	Some of the information requested by TF in the previous element is furnished to TF by Senior Evaluator. Information should be in accordance with the exercise scenario.	Command Group, based on an understanding of known enemy tactics and doctrine, will compare that with intelligence information received to predict enemy intentions.
Element 2D. Disseminate critical intelligence.	Information of varying degrees of criticality is provided to the TF by the Senior Evaluator at frequent but random intervals and will represent information from TF elements, adjacent, supporting and higher units.	Intelligence disseminated should be event oriented, rather than in periodic intelligence reports and summaries. Only intelligence usable to the recipient (TF elements, higher, adjacent and supporting units) should be disseminated. The intelligence disseminated should be accurate and timely. (Evaluator Judgment.)

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 3. Prepare and organize the battlefield.	General conditions for Tasks 1 and 2 apply. Command Group uses results generated in Tasks 1 and 2 as input for this task.	TF Command Group prepares and organizes the battlefield in such a way as to maximize chances for mission accomplishment while minimizing the effects of the enemy weapons systems.
ELEMENTS		
Element 3A. Select a course of action.	Preceding conditions apply.	Based on its analysis of the situation and mission, and the results of the intelligence provided or gathered, the command group selects a course of action which will facilitate mission accomplishment.
Element 3B. Determine critical place.	Preceding conditions apply.	Based on information available before the battle, the command group determines the place on the battlefield where the TF combat power should be concentrated. (NOTE: This determination of critical place is only for planning purposes and initial execution of the battle plan. It will be necessary for the command group to make new determinations once the battle is joined and the situation develops.)
Element 3C. Organize for combat.	Preceding conditions apply.	Command group task organizes the task force into combined arms teams. (NOTE: Unusual situations may support the employment of pure rifle or tank companies without cross-reinforcing. (Evaluator judgment)) Support (organic and non-organic) and priorities are developed. TF elements are deployed and a scheme of maneuver is developed. The result should be a plan which will apply maximum combat power at the critical place determined in the preceding element.
Element 3D. Select control measures.	Preceding conditions apply.	Command group selects control measures which support the scheme of maneuver, facilitate fire and movement by the Task Force and permit rapid changes as the battle develops. (Evaluator judgment.)
Element 3E. Plan organic, attached and non-organic supporting fires and determine priority.	Preceding conditions apply.	Fire plan is updated; standards shown for Task 1, elements 1H and 1I, apply.

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 3F. Develop a communication plan.	Preceding conditions apply.	Command group develops a communication plan which satisfies the communication requirements of the specific mission, provides for COMSEC, and specifies alternate means of communication (electronic, visual, pyrotechnic).
Element 3G. Communicate/ coordinate plans and orders	Preceding conditions apply.	Orders are coordinated with appropriate agencies. Orders are issued, usually orally, so as to allow TF elements maximum time to go through troop leading procedures. Orders are appropriate, clear, concise and contain essential information.
Element 3H. Reinforce terrain.	Preceding conditions apply.	Command group tasks TF elements or supporting engineer units to accomplish any or all of the following tasks which support the TF mission/scheme of maneuver; construct/install barriers; construct/emplace bridges; construct vehicle defilades; construct fighting positions/protective bunkers; construct aircraft facilities; construct/improve tactical routes; camouflage critical facilities; clear fields of fire; construct essential CSS facilities.
Element 3I. Employ active/ passive security measures (e.g.,camouflage, ELSEC, COMSEC, dummy positions or equipment, inoperative equipment realistically positioned and camouflaged).	Preceding conditions apply.	Enemy forces in TF areas of influence/interest are unable to determine TF strength, task organization, dispositions, vulnerabilities, capabilities, or scheme of maneuver. TF vulnerability to enemy's mass destruction weapons is minimized. Threats to TF security are detected/impeded. Deceptive measures effectively deceive enemy as to TF intentions.
Element 3J. Provide supplies.	Preceding conditions apply.	Adequate supplies (priority to critical items) are immediately available and issued to accomplish the mission and any subsequent missions.
Element 3K. Maintain equipment.	Preceding conditions apply.	Cmd Gp determines status of equipment and directs repair/evacuation of equipment critical to mission accomplishment.

MAJOR FUNCTION Prepare for Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 4. Troop lead.	Bn Task Force operations order has been given to TF elements.	Bn Cmd Gp supervises preparation for and execution of actions by TF elements required to accomplish the TF mission.
ELEMENTS Element 4A. Supervise preparations.	Preceding conditions apply.	Cmd Gp inspects preparations by TF elements, making corrections where necessary.
Element 4B. Supervise compliance with TF order.	Preceding conditions apply.	Reaction to TF order by TF elements to include supporting units, is characterized by compliance, timeliness, effectiveness and lack of confusion.
Element 4C. Conduct rehearsals.	Preceding conditions apply.	If time permits, require TF elements to rehearse their missions where increased proficiency can be gained through repetition.
Element 4D. Promote cohesion.	Preceding conditions apply.	Cmd Gp functions as a team. (Evaluator judgment.)

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 5. See the battlefield during the battle.	The TF is actively engaged in combat with elements of the enemy force described in Task 1. The Cmd Gp receives sporadic, event-oriented information from subordinate, adjacent, and higher commands (played by senior evaluator).	Cmd Gp will continue to process and update ingelligence to determine significant tactical indicators and targets (enemy movement, reinforcement, artillery locations, air defense positions, assembly areas and armor) with tactical intelligence zone 2 (out to 50 km).
ELEMENTS		
Element 5A. Identify critical intelligence.	Preceding conditions apply.	Cmd Gp identifies those areas specified in the standards for Task 1, Element 1B, plus any other areas which will give an indication of enemy intentions.
Element 5B. Gather critical intelligence.	Preceding conditions apply.	Cmd Gp determines intelligence shortfalls and aggressively gathers information from all available/ appropriate resources. All assigned, attached or DS units (ELINT, UGS, GSR, Recon units and troops) as well as higher echelon assets (Electromagnetic, Imagery and Human Intelligence) should be considered. As a minimum, collection efforts should focus on determining enemy intentions tin response to the developing situation; whether he will reinforce or withdraw; movement of units, especially armor; relocations of artillery and air defense positions.
Element 5C. Analyze enemy.	Some of the information requested by the Cmd Gp in the previous element is furnished to the TF by Senior Evaluator. Information should be in accordance with the exercise scenario.	Command group, based on an understanding of known enemy tactics and doctrine, and of the developing situation, will compare those with the information received to predict enemy intengions.
Element 5D. Disseminate critical intelligence.	Event-oriented intelligence is provided to the Command Group by the Senior Evaluator, representing information from TF elements, adjacent supporting and higher units.	Intelligence disseminated by the Cmd Gp should be event-oriented and be usable by the recipient(s). Intelligence should be accurate and disseminated in a timely manner.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 6. Control and coordinate combat operations.	General conditions for Task 5 apply.	Based on an analysis of intelligence generated in Tasks 2 and 5 and an analysis of the developing situation, Cmd Gp determines whether to modify its scheme of maneuver.
ELEMENTS		
Element 6A. Modify scheme of maneuver.	Enemy forces, by direction of senior evaluator, deploy or maneuver in such a way as to cause the TF to modify its scheme of maneuver. The enemy may reinforce, withdraw, attack an exposed flank, conduct an airmobile assault to the Task Force rear, etc.	Cmd Gp rapidly reassesses the developing situation and determines a new course of action which optimizes cover, concealment, suppression, and teamwork.
Element 6B. Coordinate/ communicate changes.	TF commander has approved the new course of action.	Cmd Gp makes essential coordination immediately; if the new course of action involves a change in the TF mission, it must be approved by Brigade. Change is then communicated to task force elements, supporting and adjacent units. Changes are communicated orally and include changed objectives, control measures and scheme of maneuver.
Element 6C. Supervise execution.	Changes have been communicated.	Cmd Gp monitors the developing battle, insuring that Task Force elements and supporting units comply with the changes. In heavy combat, the TF commander participates directly in control of combat operations. He deals personally with problems of cover, concealment, suppression and teamwork. For best results, the commander does not remain in the TF Tactical Operations Center but moves about the battlefield to personally supervise execution.
Element 6D. Maintain the battlefield.	Preceding conditions apply.	Command Group tasks TF elements or supporting engineer units to accomplish any or all of the following tasks which support the TF mission/new course of action: repair damaged roads, bridges, aircraft facilities, POL, ammo and water supply facilities, protective shelters, and camouflage systems; reseed minefields; clear or breach enemy obstacles and friendly obstacles that hinder changed plans.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 7. Employ fires and other combat support assets.	Conditions for Task 6 apply.	Cmd Gp directs the employment of all organic/attached/non-organic supporting weapons and other CSS assets to concentrate combat power at the critical place and time and to suppress enemy weapons systems which would interfere with the accomplishment of the TF mission. Cmd Gp requests additional resources if necessary.
ELEMENTS		
Element 7A. Reassign priority of fires.	Enemy forces, by direction of senior evaluator, deploy or maneuver in such a way as to cause the Task Force to assign new priorities of fire. The enemy may reinforce, withdraw, attack an exposed flank, conduct an air-mobile assault to the TF rear, etc.	Priority of fires which supports the new scheme of maneuver is immediately communicated to supporting and supported units.
Element 7B. Employ fires (to include organic/attached weapons systems and supporting artillery, TAC Air and Attack Helicopters).	Preceding conditions apply.	Fire support (1) Is applied in a timely, accurate and effective manner, at maximum range. (2) Concentrates, with maximum destruction of the enemy at critical time and place. (3) Results in maximum and timely suppression of enemy fires (direct, indirect and air defense) maneuver and control capability. (NOTE: Smoke can be used to suppress some of the enemy's weapons systems). (4) Degrades enemy's capability to reinforce, counterattack, maneuver or resupply. (5) Is aggressively and violently applied. (6) Results in efficient expenditure of tank, ATGM, and mortar ammo.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 7C. Employ other combat support assets.	Preceding conditions apply.	(1) Army and USAF electronic warfare units are tasked to jam enemy command and control communications, air defense radars and weapons systems which rely on electronic guidance or control. (2) Supporting combat engineers are tasked to: (Offense) Breach and clear minefields, obstacles, barriers and fortified positions; assist in river crossing operations; assist in forward movement of fuel and ammunition; lay mines and create obstacles to protect exposed flanks. (Defense, Retrograde) Create obstacles and minefields to reinforce defensive advantages of the terrain; block avenues of approach; stop enemy forces in the fields of fire of TF weapons systems.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 8. Concentrate/shift combat power.	Enemy forces, directed by senior evaluator, maneuvers in such a way as to present a serious threat to the Task Force or a target with vulernabilities the TF should exploit.	The command group aggressively concentrates/shifts its combat power at the decisive place and time to destroy the enemy force.
ELEMENTS		
Element 8A. Determine critical place and time.	Preceding conditions apply.	Command group rapidly and accurately reads the battlefield and determines the precise place and time where maximum combat power should be employed. (NOTE: This determination can best be evaluated by analyzing the extent of enemy casualties and the outcome of the battle.)
Element 8B. Concentrate/shift combat power in the attack.	The enemy force directed by senior evaluator, has maneuvered in such a way that he is vulnerable to exploitation by the TF.	Cmd Gp concentrates at the point where the enemy is weak; it moves forces to the critical point, while achieving surprise by careful use of terrain, camouflage, movement during periods of reduced visibility, decoys, electronic countermeasures, etc. Suppressive fires, supporting attacks, and close air support are intensified. Pressure is maintained on the enemy force. Once enemy forward combat elements have been penetrated, the command group directs TF elements to seek out the enemy rear. The concentration of combat power, usually under the personal supervision of the TF commander, should be rapid, aggressive and violent.
Element 8C. Concentrate/shift combat power in the defense or retrograde.	Enemy force, directed by senior evaluator, has maneuvered in such a way that his force ratio is greater than 3:1 and poses a serious threat to the security of the Task Force.	Cmd Gp immediately concentrates its organic/attached/DS assets according to their weapons capabilities and the movement of the enemy force. Artillery/mortar fires are increased to destroy/button up enemy tanks and preclude enemy infantry from dismounting. Cmd Gp requests attack helicopter and close air support. Cmd Gp repositions forces, to include dismounted antitank guided missile teams, and, if necessary, requests additional units from the brigade reserve. As reinforcements arrive, the Cmd Gp organizes them for combat and assigns battle positions and missions.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 8D. Protect thinly held areas.	In concentrating combat power at the critical point, the Cmd Gp has reduced combat power in other areas.	Cmd Gp directs organic/supporting forces to conduct economy of force operations in the thinly-held areas. If available, the Cmd Gp requests additional assets, such as scout or attack helicopters, to assist.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 9. Manage combat service support assets.	General conditions for Task 5 apply.	The command group orients the Task Force's CSS assets to the weapons systems insuring that the CSS effort is dedicated to arming, fueling and fixing the systems and supporting the troops who operate the systems. Evaluation of performance should be determined in terms of percentage of operating equipment and weapons in the TF.
ELEMENTS Element 9A. Arm and fuel the systems.	Preceding conditions apply. Evaluator personnel input preprogramed requests for supplies and equipment from Task Force elements.	Ammunition, POL, equipment and other supplies critical to the operability of the Task Force weapons systems are immediately available to accomplish the mission and any subsequent missions. Cmd Gp computes ammunition Required Supply Rate (RSR) and informs Task Force elements of the Controlled Supply Rate (CSR). Other requests for supplies/equipment are handled expeditiously IAW the SOP. Delivery to Task Force elements is made as far forward as deemed prudent.
Element 9B. Fix the system.	General conditions for Task 5 apply. Evaluator personnel input preprogramed requests for maintenance assistance from Task Force elements.	Cmd Gp directs maintenance and repair of its systems by organic assets. When maintenance is beyond TF capabilities, Cmd Gp arranges for contact teams in order to repair the systems as far forward as the situation permits. Battlefield cannibalization, if appropriate, is directed. When a system cannot be repaired on the battlefield, arrangements are made for recovery and evacuation.
Element 9C. Support the troops.	General conditions for Task 5 apply. Evaluator personnel input various preprogramed requests for assistance from Task Force elements.	Cmd Gp supervises the implementation of health preservation programs, the management of troop subsistence and the control and expeditious movement of replacements to points where they are needed.
Element 9D. Integrate CSS into scheme of maneuver.	General conditions for Task 5 apply.	Cmd Gp maneuvers CSS resources assigned to the TF, keeping support units in close proximity to the weapon systems they support, commensurate with the risk involved. Supplies are delivered tactically. Transportation assets are used to fit movement of CSS resources to the scheme of maneuver.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 10. Secure and protect the Task Force.	Conditions for Task 5 apply.	Cmd Gp supervises TF operations to insure the enemy's intelligence collection effort is suppressed. (NOTE: Evaluation of performance of this task is best determined by analyzing results of the enemy force's intelligence collection effort. Optimally, enemy force is unable to determine TF strength, task organization, dispositions, vulnerabilities, capabilities or intentions.)
ELEMENTS		
Element 10A. Defeat or suppress enemy's electromagnetic intelligence effort.	Preceding conditions apply.	Communications and electronic security measures are rigidly adhered to throughout the Task Force.
Element 10B. Defeat or suppress enemy's imagery intelligence effort.	Preceding conditions apply.	A rigid program of cover, concealment and camouflage discipline is enforced.
Element 10C. Defeat or suppress enemy's human intelligence effort.	Preceding conditions apply.	Appropriate and precise liaison is conducted with territorial security forces.
Element 10D. Deceive the enemy.	Preceding conditions apply.	Enemy is deceived by implementing any or all of the following: (1) Dummy equipment/positions are realistically sited and camouflaged. (2) Actual damaged equipment (not recoverable) is realistically sited and camouflaged. (3) Phantom radio nets are operated by trained intelligence units (requested of and approved by higher headquarters).
Element 10E. Reduce vulnerability to enemy mass destruction weapons systems.	Preceding conditions apply.	Except when required by mission or situation to concentrate, Task Force elements should be dispersed to the extent feasible as dictated by terrain and situation.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
Element 10F. Detect/impede threats to TF security.	Preceding conditions apply. Enemy forces (as directed by senior evaluator) maneuver in such a way to present a threat to TF security.	Command Group recognizes and assesses the threat and takes necessary action to counter it.
Element 10G. Detect/defeat enemy air assets.	Enemy aircraft attack the Task Force.	Cmd Gp confirms identification of enemy aircraft. Directs air defense fires if those fires are not already being delivered. Repositions AD assets to protect critical positions/facilities on the battlefield. Assesses and reports damage.

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 11. Troop Lead.	Conditions for Task 5 apply.	Cmd Gp supervises execution of actions by TF elements required to accomplish the TF mission.
ELEMENTS Element 11A. Supervise compliance with TF order.	Preceding conditions apply.	Cmd Gp supervises the execution of the TF order by TF elements and supporting units, making corrections as necessary. TF commander moves about the battlefield, personally directing the battle at the critical time and place.
Element 11B. Promote cohesion.	Preceding conditions apply.	Cmd Gp functions as a team (Evaluator judgment).

MAJOR FUNCTION Fight the Battle

TASK/ELEMENTS	CONDITIONS/INITIATING CUES	TRAINING/EVALUATION STANDARDS
TASK 12. React to special situations. ELEMENTS	See below.	See below.
Element 12A. React to enemy electronic warfare.	Task Force is performing assigned mission. Enemy jams TF nets and sends imitative messages to various TF stations. (Electronic warfare is conducted at any time during the preparation for battle and fighting the battle phases.)	Cmd Gp recognizes enemy jamming activities and continues operation in normal manner, without revealing effectiveness of the jamming activity. Reports are sent to higher headquarters using alternate means of communication, if available. Directs switch to alternate frequency using proper authentication techniques (NOTE: evaluators may interject various conditions requiring frequency shift, e.g., lost CEOI, lost radio). Cmd Gp detects imitative messages and insures that no TF element responds to them. TF continues mission.
Element 12B. React to enemy CBR activity.	TF elements report an attack by a chemical agent.	Cmd Gp receives/verifies reports and directs the implementation of CBR defensive measures IAW SOP. Directs Relays report to adjacent, supporting, and higher headquarters. Directs continuous monitoring and decontamination when clear.

APPENDIX B

TRAINING OBJECTIVES FOR THE COMMAND GROUP OF A MECHANIZED INFANTRY BATTALION IN A COMBAT ENVIRONMENT

TRAINING OBJECTIVE 1

Action

Collect information and intelligence of opposing forces, friendly forces, terrain, weather, and other factors bearing on the planning and execution of an assigned mission.

Conditions

1. Opportunity to become familiar with the prior activities, current status, and established procedures of the unit and of higher, adjacent, supporting, and subordinate units is provided.
2. Warning and operation orders directing accomplishment of a mission are provided,
3. Unsolicited information and intelligence are received from outside agencies.
4. Responses to requests for information and intelligence collected by outside agencies are received.
5. Information and intelligence gathering agencies organic to and under operational control of the unit may be employed.
6. Communication capabilities normal for the unit are provided.

Standard

The Command Group will collect all available information and intelligence of opposing forces, friendly forces, terrain, weather, and other factors bearing on the planning and execution of the assigned mission by:

1. Extracting information and intelligence contained in the intelligence material available at the onset of the operation.
2. Extracting information and intelligence from the warning and operation orders received.
3. Extracting information and intelligence from unsolicited information and intelligence received from outside agencies.
4. Employing outside agencies to obtain information and intelligence.
5. Employing organic agencies and agencies under operational control of the battalion to obtain information.

Reference

PURFECT Function 1: Collect information and intelligence.

TRAINING OBJECTIVE 2

Action

Process information and intelligence.

Conditions

1. Means for recording, displaying, and retaining information and intelligence are provided.
2. Information received can be evaluated for pertinence, reliability, and accuracy.
3. Information received at any given time can be interpreted for significance relative to previously available information and intelligence.

Standard

The Command Group will process information and intelligence by:

1. Recording all information and intelligence received in a systematic manner.
2. Determining the pertinence, reliability, and accuracy of all information received.
3. Determining the significance of information received relative to information and intelligence previously received.
4. Displaying information and intelligence of immediate interest for quick visual inspection.
5. Retaining for ready retrieval all information and intelligence of importance.

Reference

PURFECT Function 2: Process information and intelligence.

PURFECT Function 3: Analyze information and intelligence.

TRAINING OBJECTIVE 3

Action

Disseminate information and intelligence.

Conditions

1. Face-to-face communication between members of the Command Group is possible.
2. Communication capabilities normal for the unit are provided.
3. Opportunity to become familiar with SOP pertaining to dissemination of intelligence is provided.
4. Requests for information and intelligence are received from outside agencies.

Standard

The Command Group will disseminate information and intelligence by accurate and timely communication of pertinent information and intelligence to:

1. Members of the Command Group.
2. Higher headquarters.
3. Adjacent headquarters.
4. Supporting units.
5. Subordinate units.

Reference

PURFECT Function 5: Disseminate information and intelligence.

TRAINING OBJECTIVE 4

Action

Stay abreast of the enemy situation.

Conditions

1. Enemy strength, disposition of forces, resources, and capabilities are subject to rapid, complex changes which create the potential for time pressure and work overload.

2. Circumstances arise in which assessments of enemy strength, disposition of forces, resources, capabilities, or intentions are critical.

3. All information and intelligence of the enemy known at any given time, and relevant to the situation at that time, is available.

Standard

The Command Group will stay abreast of the enemy situation by maintaining a continuous, valid assessment of enemy strength, disposition of forces, resources, capabilities, and intentions.

Reference

PURFECT Function 6: Stay abreast of the situation.

TRAINING OBJECTIVE 5

Action

Stay abreast of the friendly situation.

Conditions

1. Friendly strength, disposition of forces, resources, and capabilities are subject to rapid, complex changes which create the potential for time pressure and work overload.

2. Circumstances arise in which assessments of friendly strength, disposition of forces, resources, capabilities, or intentions are critical.

3. All information and intelligence of friendly forces known at any given time, and relevant to the situation at that time, are available.

Standard

The Command Group will stay abreast of the friendly situation by maintaining a continuous, valid assessment of friendly strength, disposition of forces, resources, capabilities, and intentions.

Reference

PURFECT Function 6: Stay abreast of the situation.

TRAINING OBJECTIVE 6

Action

Develop a scheme of maneuver for an operation.

Conditions

1. Battalion receives brigade warning order alerting it for an operation to be conducted.
2. Battalion receives brigade operation order containing all information of task organization, situation, mission, execution, service support, and command and signal relevant to conduct of the operation to be conducted.
3. Warning and operation orders are received sufficiently in advance of the time(s) specified in them to provide the Command Group adequate time to plan and prepare for the operation.
4. Face-to-face, radio, or telephone communication between members of the Command Group is possible at all times.
5. Brigade will respond to reasonable requests for clarification of the warning and operation orders.

Standard

The Command Group will develop a scheme of maneuver which provides for accomplishment of all missions specified and implied in the brigade order by:

1. Identifying all missions specified and implied in the brigade order.
2. Specifying the course of action which, in light of known circumstances, offers the greatest probability of success.
3. Establishing the task organization which best provides for execution of the selected course of action.
4. Specifying the security measures needed in addition to those provided by higher headquarters.

5. Specifying the tactical control measures needed in addition to those specified by higher headquarters.

6. Developing the obstacle/antiarmor plan which best supports the selected course of action.

Reference

PURFECT Function 7: Develop scheme of maneuver for operation.

TRAINING OBJECTIVE 7

Action

Supervise execution of the scheme of maneuver.

Conditions

1. An initial scheme of maneuver has been developed by the Command Group.
2. Anticipated events may not occur.
3. Anticipated events may not occur in the manner expected.
4. Unanticipated events may occur.

Standard

The Command Group will supervise execution of the scheme of maneuver by:

1. Approving/modifying/disapproving subordinates' activities in executing the scheme of maneuver.
2. Changing the announced scheme of maneuver in the manner which will best exploit or counter anticipated or unanticipated changes in the situation successfully.
3. Changing task organization in manner which will best exploit or counter anticipated or unanticipated changes in the situation.
4. Enforcing/changing/cancelling specified security measures as necessary to facilitate execution of the scheme of maneuver.
5. Enforcing/changing/cancelling specified tactical control measures as necessary to facilitate execution of the scheme of maneuver.

Reference

PURFECT Function 8: Supervise execution of scheme of maneuver.

TRAINING OBJECTIVE 8

Action

Develop a plan of fire support for an operation.

Conditions

1. Full information of organic fire support is available.
2. Full information of non-organic fire support is available.
3. Companies respond to the Command Group's announced requirements for submission of heavy mortar target lists.
4. Companies respond to the Command Group's announced requirements for submission of plans for employment of their crewserved weapons.
5. Nonorganic fire support agencies respond to efforts by the Command Group and the companies to coordinate arrangements for the fire support they desire.

Standard

The Command Group will develop a plan of fire support which, in light of known circumstances, offers the greatest probability of close, continuous, overwhelming, and timely support for the maneuver elements of the battalion and interdiction and the addition of depth to the battlefield by:

1. Identifying the targets whose attack by fire, within the constraints of the fire support coordinating and limiting measures specified by higher headquarters, is possible and is either necessary or desirable for execution of the scheme of maneuver.

2. Establishing the additional fire support coordinating and limiting measures required for execution of the scheme of maneuver.
3. Identifying the targets which can be adequately attacked with available organic means.
4. Identifying the targets whose adequate attack requires non-organic means.
5. Allocating available organic and nonorganic fire support to best provide for attack of targets with the most appropriate weapon system or combination of systems.

Reference

PURFECT Function 9: Develop plan of fire support.

TRAINING OBJECTIVE 9

Action

Supervise delivery of fire support.

Conditions

1. Changes in the situation may indicate the necessity or the desirability for changing the announced plan of fire support.
2. Organic and nonorganic fire support agencies respond to efforts by the Command Group and the companies to coordinate changes in the announced plan of fire support.

Standard

The Command Group will supervise delivery of fire support to best provide close, continuous, overwhelming, and timely support for the maneuver elements of the battalion and interdiction and the addition of depth to the battlefield throughout conduct of the operation by:

1. Approving/modifying/cancelling delivery of prearranged fire support.
2. Requesting/approving/modifying/disapproving delivery of unplanned fire support.
3. Changing/requesting change of priorities of fires.
4. Enforcing/changing/cancelling established fire support coordinating and limiting measures.

Reference

PURFECT Function 10: Supervise delivery of prearranged fire support.

PURFECT Function 11: Supervise/request delivery of unplanned fire support.

TRAINING OBJECTIVE 10

Action

Develop, initiate, and supervise execution of a counterintelligence plan.

Conditions

1. Full information of personnel, equipment, and facilities available for counterintelligence activities is provided.
2. All known information and intelligence of the enemy's intelligence capabilities and activities is available.
3. Opportunity to become familiar with deception and denial measures established by own or higher unit SOP is provided.

Standard

The Command Group will develop, initiate, and supervise execution of a counterintelligence plan which neutralizes or destroys the effectiveness of the enemy's intelligence efforts, relative to the operation, by:

1. Identifying, directing the initiation of, and supervising the execution of deception measures.
2. Identifying, directing the initiation of, and supervising the execution of denial measures.

Reference

PURFECT Function 12: Direct counterintelligence activities.

TRAINING OBJECTIVE 11

Action

Communicate plans and decisions to subordinate commanders.

Conditions

1. Initiation and conduct of the operation requires that subordinate commanders be informed of the plans and decisions of the commander that are relevant to their roles in the operation.
2. Face-to-face issuance of warning and operation orders to subordinate commanders is possible.

Standard

The Command Group will accurately inform subordinates of plans and decisions relevant to their roles in the operation by:

1. Issuing clear, concise, and timely warning and operation orders which accurately reflect the commander's plans and decisions.
2. Issuing clear, concise, and timely fragmentary orders which accurately reflect the commander's plans and decisions for reacting to changes in the situation.

Reference

PURFECT Function 13: Issue orders.

TRAINING OBJECTIVE 12

Action

Supervise execution of orders.

Conditions

1. Subordinates are normally willing to comply with the intent of orders, as they understand this intent, to the best of their ability.
2. Subordinates may question certain orders for the purpose of gaining greater understanding and may request change in certain orders.
3. The chain of command may become disrupted by developments occurring during the course of the operation.
4. Brigade and battalion SOP established at the onset of the operation will be followed unless specifically changed during the course of the operation.

Standard

The Command Group will supervise the execution of orders throughout the conduct of the operation by:

1. Evaluating the degree to which the time, location and/or nature of planned or completed actions by subordinates comply with the specified and implied objectives of orders.
2. Determining the causes of subordinates' failure to plan or act in compliance with the objectives of orders.

3. Taking corrective action as necessary to insure timely achievement of the objectives of orders.

Reference

PURFECT Function 14: Supervise execution of orders.

TRAINING OBJECTIVE 13

Action

Maintain communications capability.

Conditions

1. Establishment of the radio, wire, and messenger systems normal for the battalion is possible.
2. The enemy has the capability to join or enter radio nets; to cut, tap, or enter wire nets; and to capture messengers.
3. Normal communications maintenance means are available.

Standard

The Command Group will maintain the battalion's communications capability by:

1. Establishing appropriate primary means of communication with higher, adjacent, supporting, and subordinate headquarters.
2. Establishing appropriate alternate means of communication with higher, adjacent, supporting, and subordinate headquarters.
3. Acting promptly and decisively to restore communication in the event of jamming or other interference with, disruption of, or loss of communication.

Reference

PURFECT Function 15: Maintain communications capability.

TRAINING OBJECTIVE 14

Action

Maintain communications flow.

Conditions

1. At the onset of the operation, the radio-telephone procedures employed by personnel of higher, adjacent, subordinate, and supporting units are those they have customarily employed in the past.
2. Information about developments in the tactical situation which may be of varying significance to higher, adjacent, subordinate, and supporting headquarters is contained in transmissions to the Command Group during the operation.

Standard

The Command Group will maintain communications flow by:

1. Requiring subordinates to employ approved radio-telephone procedures.
2. Where appropriate, reporting non-adherence to approved radio-telephone procedures to the proper authority.
3. Restricting own radio and telephone traffic, and that of subordinates, to essential transmissions.
4. Continually develop subordinates' ability to differentiate between essential and non-essential transmissions.
5. Reporting significant developments in the tactical situation to higher, adjacent, subordinate, and supporting headquarters.

Reference

PURFECT Function 16: Maintain communications flow.

APPENDIX C

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COMTRAIN COMMAND POST EXERCISES"

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APPENDIX D

USER FEEDBACK QUESTIONNAIRE

User Feedback Questionnaire

CPX LONGTHRUST

Administrative Instructions: This questionnaire is to be completed by all personnel at the completion of the exercise. Please answer all questions to the best of your ability and knowledge. No personal identifying information is required.

1. Does the Army have a need for agency designed CPX's such as LONGTHRUST? (Check one)

   ____ Yes

   ____ No

   ____ No Opinion

2. CPX LONGTHRUST in its current configuration and state of development is most appropriate for (Check one)

   ____ Training of the battalion staff

   ____ Evaluation of the battalion staff

   ____ Both training and evaluation of the battalion staff

3. CPX LONGTHRUST in its current configuration and state of development is most appropriate for use by (Check one)

   ____ Battalion staffs in FORSCOM Units

   ____ Battalion staffs in Reserve/National Guard Units.

   ____ Students at Combat Arms Service Schools

   ____ Students at the Command and General Staff College

   ____ A combination of the above. (Write-in) _____

4. CPX LONGTHRUST offers unique training capabilities in (Check one)

   ____ Simulation of a specific environment

   ____ Realistic staff interaction

   ____ Practicing of tactical concepts

   ____ Other. (Write-in) _____

   ____ Does not offer unique training capabilities.

5. Due to increasing costs of actual field training, problems with environmental contamination, and political problems in using certain foreign training areas, do you feel that large scale tactical simulation (in whatever form) is (Check one)

____ Our only major alternative for maintaining and improving combat effectiveness

____ A desirable alternative to supplement actual field training

____ A generally unacceptable alternative that should be used only when absolutely required.

6. Has your exposure to CPX LONGTHRUST made a significant change in your attitude about tactical simulation? (Check one)

____ Yes, a positive change

____ Yes, a negative change

____ No

7. It has been stated that the basic variables in tactical operations are to SHOOT, MOVE, and COMMUNICATE. In your opinion, how does CPX LONGTHRUST simulate these three general variables? (Mark one point on the scale)

a. SHOOT

1	2	3	4	5
Is Completely Unrealistic		Acceptable Realism		Approaches Combat Realism

(If your rating was 1 or 2, please describe what caused the lack of realism.)

_____

_____

_____

b. MOVE

1	2	3	4	5
Is Completely Unrealistic		Acceptable Realism		Approaches Combat Realism

(If your rating was 1 or 2, please describe what caused the lack of realism.)

_____

_____

_____

c. COMMUNICATE

1	2	3	4	5
Is Completely Unrealistic		Acceptable Realism		Approaches Combat Realism

(If your rating was 1 or 2, please describe what caused the lack of realism.)

_____

_____

_____

8. During the CPX, were the following force and force mixes realistically simulated?

Infantry	____ Yes	____ No
Armor	____ Yes	____ No
Artillery	____ Yes	____ No
Infantry and Armor	____ Yes	____ No
Combined Arms	____ Yes	____ No

9. During the CPX, were you able to employ various tactical techniques? (Mark one point on the scale.)

1	2	3	4	5
Very Restricted & Inadequate Range of Techniques		Adequate Range of Techniques		Unlimited Range of Techniques

10. Does the CPX offer feedback as to the consequences of tactical decisions? (Mark one point on the scale.)

1	2	3	4	5
No Feedback		Adequate Feedback		Complete Feedback

11. Do you feel that the CPX offered realistic staff interaction? (Check one)

____ Yes

____ No

(If no, please list the reasons for lack of realism.)

_____

_____

_____

12. Due to the structure of LONGTHRUST, is there any specific job (e.g., Bn S2) within the Command Group that does not get to realistically participate in the CPX? (Check one)

____ Yes

____ No

(If yes, please identify the specific position and give reasons for lack of job realism.)

_____

_____

_____

13. The critique and evaluation system used for LONGTHRUST is (check one)

____ The best way to assess the capabilities of the Command Group

____ A valid way to assess the capabilities of the Command Group although minor improvement could be made by (write-in)

_____

_____

_____

____ A poor way to assess the capabilities of the Command Group. A better system would involve (write-in brief description)

_____

_____

_____

14. A CPX, such as LONGTHRUST, is a type of tactical simulation. Considering your mission as a whole, what other types of tactical simulations would aid in the training of your unit and what knowledges, skills, and procedures should these simulations address?

Other types of simulations (write-in) _____

_____

_____

_____

_____

_____

Knowledges, Skills, and Procedures to be practiced (write-in)

_____

_____

_____

_____

_____

_____

15. What are the three most significant training needs of your unit?

(1) _____

_____

_____

_____

(2) _____

_____

_____

_____

(3) _____

_____

_____

_____

16. What types of new or innovative training methods should be provided to your unit to help you solve these needs?

_____

_____

_____

_____

_____