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Technical Paper 385

INFORMATION SUMMARIZATION IN A CORPS-LEVEL SCENARIO

Ralph E. Geiselman and Michael G. Samet
Perceptronics, Inc.

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October 1979

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This research obtained data to develop guidelines for summarizing TOS message content, particularly tactical intelligence data. Sixteen staff officers were asked to read a description of a tactical scenario and to examine 30 enemy situation data (ESD) messages describing the beginning of an enemy border crossing and attack. Each officer's task was to summarize the tactical information contained in the messages in preparation for a 3-minute briefing of the G2. The 16 handwritten summaries were typed and evaluated by five military raters. →

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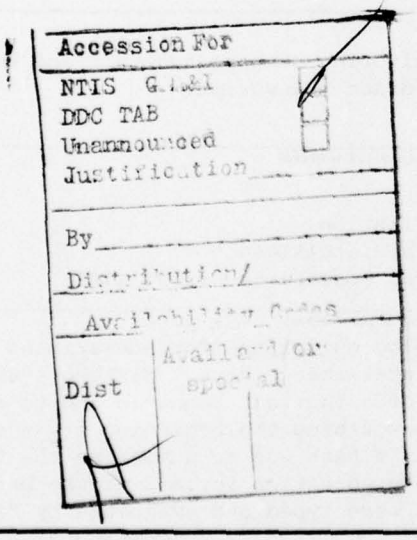
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Item 20 (Continued)

Collectively, the raters felt that a "good" summary of intelligence information should give hard facts in conversational style and an interpretation of the intelligence information. In terms of a general outline for summarization (i.e., the schema), summaries judged "good" by the raters tended to first describe the engagement of enemy forces along the border, then unit movement both near and behind the border. Following this summary of the dynamic aspects of the enemy situation, the locations of key support units were noted, often in conjunction with a statement concerning the location of the second echelon. Finally, another inference was made regarding the probable point of main thrust by the enemy. It was suggested that these prescriptive norms can be translated into guidelines for staff officers to enable them to produce more useful and effective intelligence-message summaries.



Technical Paper 385

INFORMATION SUMMARIZATION IN A CORPS-LEVEL SCENARIO

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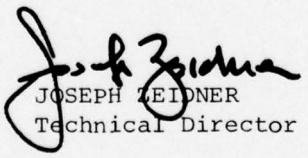
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FOREWORD

The Human Factors Technical Area is concerned with the demands of the future battlefields for increased man-machine complexity to acquire, transmit, process, disseminate, and utilize information. Research is focused on the interface problems and interactions within command and control centers and is concerned with such areas as topographic products and procedures, tactical symbology, user-oriented systems, information management, staff operations and procedures, and sensor systems integration and utilization.

An area of special interest is managing the flow of information on the battlefield. Research results are used in defining preferred staff operations and procedures to enable users to derive maximal benefit from automated information systems. The present publication describes research on how critical intelligence data should be summarized. If valid summarization guidelines can be developed, the flow of useful information can be greatly enhanced without increasing the load on users, the system, or communications channels. The present results indicate some degree of consensus on the characteristics of a "good" summary and provide direction for further research to develop operational guidelines.

Research in the area of information management is conducted as an in-house effort augmented through contracts with organizations selected for their unique capabilities and facilities for research in this area. The present study was conducted by personnel from Perceptronics, Inc., under a subcontract with Vector Research Inc., contract DAHC 19-78-C-0027 with program direction from Dr. Edgar M. Johnson. This effort is responsive to requirements of Army Project 2Q163743A774 and of the Combined Arms Combat Development Activity, Fort Leavenworth, Kans. Special requirements are contained in Human Resource Need 79-109 (Information Management with the Tactical Operations System--TOS).



JOSEPH ZEIDNER
Technical Director

INFORMATION SUMMARIZATION IN A CORPS-LEVEL SCENARIO

BRIEF

Requirement:

To obtain initial data to help develop useful guidelines for summarizing military message content, particularly for tactical intelligence data. Automated information systems are capable of supplying intelligence from a battlefield faster than the staff of a command and control center can organize and use the data. Results of research on managing this flow of information can enable users to derive maximum benefit from automated systems.

Procedure:

Sixteen Army staff officers were asked to read a description of a tactical scenario and to examine 30 enemy situation data messages. The messages, presented in computer printout format, described the beginning of an enemy border crossing and attack. The officers' task was to rate each message in terms of its importance to the understanding of the situation and to summarize the tactical information provided in preparation for a 3-minute briefing to the Corps G2. The 16 summaries were rated by five military raters in terms of content, accuracy, and organization. Each summary received an overall numerical evaluation and also specific critical comments.

Findings:

Although the raters disagreed on the rankings of individual summaries, they rated six summaries as receiving the highest overall evaluations. These "good" summaries were used to derive a general suggested outline for describing message content.

Authors of the good summaries tended first to describe the engagement of enemy forces along the border and then to describe unit movement near and behind the border. Following this summary of the dynamic enemy situation, these authors noted the locations of key support units and often also stated the inferred location of the second echelon. Finally, they inferred the probable point of main thrust by the enemy.

Collectively, raters felt that a good summary of intelligence information should include the facts and an interpretation of the facts. Specifically, raters valued the interpretation of intelligence data as indicative of the point of main thrust and the location of the second echelon.

Preferred summaries were conversational in style and organized by zone, sector, or area of enemy concentration; they included dynamic tactical data, such as the speed and direction of enemy movement; they noted gaps of key information; and, where appropriate, they estimated the reliability of intelligence information. In general, the good summaries were seen as more straightforward, systematic, accurate, and informative than the poor summaries.

Utilization of Findings:

The results provide insight into how to prepare effective summaries that accurately communicate information from messages on enemy activity. Such prescriptive norms for summaries can be translated into guidelines, and possibly formats and field procedures, to help staff officers produce more useful and effective summaries of intelligence messages.

INFORMATION SUMMARIZATION IN A CORPS-LEVEL SCENARIO

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INTRODUCTION

Summarization involves the condensation or reorganization of information. Within the Army's Tactical Operations System (TOS), information summarization can be expected to fulfill multiple purposes. For example, summarization procedures can be employed to enhance the efficiency of data utilization when the system is operating well, to prevent overloads on the TOS hardware and software, and to provide hardcopy backup information if the computer-based system should go down. These kinds of information reduction functions have a very simple rationale behind them; namely, to reduce user cognitive load, to reduce system load, or both. Whatever the motivation, however, alternative approaches to summarizing information are possible and their potential effectiveness requires thoughtful analysis.

Although the effects of information overload on decision performance are not fully understood, there is a general concensus that if too much information is presented, meaningful data interpretation and effective decision making are retarded. The potential problem of information overload is especially evident in TOS, where the technical capability of the system will most likely increase the density of intelligence information to the point where it will overwhelm the users. Therefore, appropriate summarization procedures must be developed for use within the TOS framework to condense and to organize the volume of information about the enemy into a form that can be used efficiently and utilized effectively. Given the apparent diversity of style across military commanders, however, the development of guidelines for summarization should be approached with extreme care to insure the practicality and validity of the guidelines as well as user acceptance.

With the recent refinement of "schema theory" within the domain of cognitive psychology, it is theoretically possible to describe underlying logical structures for intelligence information, from which

guidelines for summarizing the information can be developed. Schema theory holds that the comprehension of any type of meaningful information proceeds not only as a data-driven process, but also as a conceptually-driven process. That is, matching the perceived material with a structured mental representation of the learner's general knowledge of a topic is an integral part of the comprehension process (Rumelhart and Ortony, 1976).

To the extent that an intelligence analyst is familiar with the underlying structure of a certain class of tactical situations, intelligence information of that type will be easier to comprehend, summarize, and reproduce. This is because this analyst has at least some knowledge of the events that typically occur in such situations and the order in which they take place. The underlying logical structure, or "schema" as it has been called by Bartlett (1932), representing a person's general knowledge of a topic, provides a mental outline for the learner onto which the appropriate elements from the material to be learned can be "attached." Thus, a schema constitutes a basis for categorization, selection, deletion, abstraction, consolidation and organization of information. An analyst who is unfamiliar with the general type of tactical situation at hand would, of course, need to learn the overall structure of the events as well as the specific information received. Once learned, the schema could be used to understand other situations with a similar underlying structure (Thorndyke, 1977).

An investigation of the role of schemata in learning from textual materials was conducted recently by Kintsch and van Dijk (1975) using narratives (see also Kintsch, 1978). Kintsch and van Dijk asked college subjects to read either an 1800-word story from Boccaccio's Decameron or an Apache Indian folktale of comparable length. Then, each reader was instructed to write a 60- to 80-word summary of the story that he or

she had read. Each episode in the story from the Decameron involved the complication-resolution principle (the hero runs into trouble, the hero gets out of trouble), which is familiar to most American college students. The Indian folktale, on the other hand, was structured in a way that was unfamiliar to most of the subjects (e.g., the events were not always causally related). As one might expect, there was general agreement among the readers of the story from the Decameron as to what should be included in the story summary. However, there was little such agreement among readers of the Apache Indian folktale. Since the story schema for the folktale was not apparent to the subjects, it was difficult for them to determine an underlying structure for the material. As a consequence, their summaries, which should reflect a schema, were inconsistent with one another.

To further demonstrate the influence of an underlying schema on the production of a summary, Kintsch and van Dijk presented the narrative from the Decameron to some subjects with the paragraphs rearranged. In spite of this dramatic alteration of the materials, judges could not distinguish the summaries produced by these subjects from those written by subjects who had read the paragraphs in their natural order. More time was taken to read the disorganized version, but the final representation of the story in memory was the same. Hence, the narrative schema, with its complication-resolution property, is so familiar and informative that a good story summary could be written even from a disorganized set of materials.

It is conceivable that a small set of schemata exist for the comprehension of certain types of military data by highly skilled staff officers. These underlying logical structures would necessarily be independent of the specific surface contents involved, but could be used reliably to organize the contents in a meaningful way. Schemata, then,

could provide part of the basis for developing guidelines for the summarization of military information. It is the derivation of these "templates" that is a challenge for research.

Thus, to obtain data to support the development of useful guidelines for the summarization of military message content, particularly tactical intelligence data, an initial experimental investigation was conducted. The approach taken was "product-oriented" rather than "process-oriented." That is, the focus of the study was not on how summaries of intelligence data are generated; instead, an attempt was made to first identify "good" summaries and then to analyze their properties and structural characteristics. In this manner, the essence of what makes an effective summary will be used to suggest guidelines for summarizing one form of tactical data.

METHOD

Participants

The participants were 16 staff officers, with a minimum rank of major, at the Command and General Staff College at Fort Leavenworth. The primary specialties of the participants were varied as follows: infantry (8), armor (2), field artillery (2), tactical/strategic intelligence (1), combat communications (1), engineering (1), and traffic management (1). Three additional participants were eliminated from the data set because it was strongly suspected that their performance was based upon previous familiarity with the scenario from which the present materials were drawn, rather than upon the subset of materials actually used (i.e., map coordinates and events were mentioned that did not appear in the subset of information given to the participants).

Materials and Procedure

In a classroom setting, the participants were given a booklet that contained a short tactical scenario in which Warsaw Pact forces were said to be initiating an attack against U.S. forces in Germany. This scenario, which was exerpted from materials used in a standard course ("Forward Deployed Force Operations") at the Command and General Staff College, included a description of (a) the strategic environment (with a background map), (b) stragetic developments during the 13 days immediately preceeding the day at hand, (c) the known composition and positions of friendly and enemy forces at the Corps level at the beginning of the day at hand (with a tactical situation map), and (d) task instructions. These materials are presented in Appendix A-1. The participants were told that,

> *"The general purpose of this study is to determine plausible ways of summarizing battlefield intelligence information, such that the important aspects of the current situation can be understood by a Corps commander within a very brief period of time. Later on, our procedure will be to have you role-play the G2 section TOC duty officer of the 10th Corps."*

After having sufficient time to review the scenario and the task requirements, each participant was given 45 minutes to study a set of 30 enemy situation data (ESD) messages. These messages were obtained by a random selection from a much larger catalog of ESD messages (those used in the Corps TOS simulation at Lt. Leavenworth) according to the following two criteria: (a) the messages were to have been received by the Corps command between 0400 and 0430 hours (the enemy attack began at 0400 hours), and (b) the messages were to refer to events occurring in the general vicinity of the sector assigned to the Corps. Each message was typed on a separate sheet of paper and was presented in the latest version of the TOS message format. In addition to the messages, each participant was given

a key to terms used in the TOS ESD format, and a key to abbreviations used in the messages. These keys, along with the instructions and messages, are presented as a message booklet in Appendix A-2.

As the participants studied the messages, they rated how essential each message was to the understanding of the entire tactical picture. These ratings were based upon the following 1-5 scale, which was used for a similar task by Coates and McCourt (1976):

5 - essential
4 - important
3 - useful
2 - of some use
1 - of little use

For each message, the subject placed his rating in a blank box provided below the message text. In addition, the subjects were told that,

> *"As you work, please bear in mind that you may be subsequently called upon to summarize the enemy situation data at the Corps level."*

In the third phase of the procedure, the participants were instructed to compose a summary of the 30 messages within 20 minutes in preparation for a three-minute briefing of the G2. The rationale given for the summary task was that the G2 and Corps commander had been absent during the half-hour period when the 30 messages had arrived. The purpose of the summary was to inform the G2 of the enemy situation, rather than to make tactical recommendations regarding possible courses of action. They were asked not to draw pictures as part of their summaries, but they were allowed to refer to map coordinates. In brief, they were to write their summaries as they would say them, given only three minutes with the G2. After 20 minutes, all materials were collected from the participants except their summaries, and they were then asked to re-copy them in a legible

form. Appendix A-3 gives the instructions for this summarization phase of the experimental session.

Evaluation

The first step in analyzing the summaries was to obtain ratings of the quality of the summaries from knowledgeable military personnel so as to identify "good" and "poor" summaries. Five highly qualified judges were used for the evaluation task. With Army ranks ranging from Major to Colonel, their careers represent more than 75 years of combined experience covering various combat specialty areas including tactics, intelligence and operations. All the raters were thoroughly familiar with the doctrinal procedures taught at the Command and General Staff College, with the developing TOS, and with the objectives of this study of summarization as well as the specific tactical scenario and message file employed. Each rater received the evaluation package by mail and returned the completed material within about a week.

Each rater was provided the tactical scenario, the 30 ESD messages with accompanying keys, a detailed description of the instructions given to the participants, and the 16 summaries generated by the participants. The summaries were typed on separate sheets of paper with a structured rating sheet attached to each one. A copy of this rating sheet, along with the instructions given to the raters, is provided in Appendix B. The raters were asked to first review the scenario and messages, and then to read through all 16 summaries. When fully familiar with these materials, the raters were to rate the quality of each summary on each of three dimensions using the following 1-5 scale:

5 - very good
4 - good
3 - borderline
2 - poor
1 - very poor

The three evaluative dimensions were: (a) content (to what degree does the summary include what the G2 should know, yet exclude what the G2 does not need to know?); (b) accuracy (how true or plausible is the information presented in the summary in light of the detailed message content?); (c) organization (to what extent is the important information presented in an order that would facilitate understanding of the tactical situation?). In addition to these ratings, the raters were asked to make critical comments regarding specific aspects of each summary. It was requested that at least one positive and one negative quality be listed for each summary. Finally, a single numerical rating (on a 0-to-100 scale) was to be given as the overall quality assessment for each summary.

Analysis

Following the work of Kintsch and others (e.g., Kintsch, 1978; Kintsch, Kozminsky, Streby, McKoon and Keenan, 1975; Thorndyke, 1976, 1977), it was assumed that a summary is representative of the summarizer's derived underlying structure (i.e., the schema) for the message content. Consequently, a major analytical task toward the generation of summarization guidelines was to extract the schema that was applied successfully to the messages by the staff officers in generating "good" summaries. The "good" summaries were identified from the raters' overall evaluations.

Operationally, a schema can be defined as a two-dimensional, or hierarchical outline with the dimensions being subordination and sequential order. Subordination has typically been determined using derivational rules applied directly to the full text, but this procedure is time-consuming and is often highly subjective. Fortunately, the subordination of information based upon derivational rules has been found to be correlated with the likelihood that a reader will include the information in a summary of the full text (Thorndyke, 1977). Therefore, in the present experiment, subordination could be determined for each message in terms of the

percentage of the staff officers that included some aspect of that message in their summaries. That is, a message with a higher inclusion percentage is assigned a higher position in the structure.

Sequential order was assessed by deriving an output-position percentile (Bjork and Whitten, 1974) for each message included in each staff officer's summary, which allowed for the median output-position percentile for each message to be computed across summarizers. The output-position percentile [(sequential position of a message in a summary/total number of messages included in the summary) X 100] is a measure of output position where the derived value is standardized with respect to the number of elements in the respective output. Once the two-dimensional underlying structure was characterized in terms of the messages, the discriminable components of the structure (message clusters) were labeled, in terms of their general content, as nodes in the schema.

Since a major portion of some summaries could be based upon inferences drawn from the messages, or upon different aspects of the same messages, the analysis just described was seen as informative, but not sufficient for the development of guidelines for summarization. To allow for an interpretation of the intelligence information to be identified and included in the schema, a separate analysis was conducted based upon the content of the summaries irrespective of the content of the messages. First, a list of general topics was extracted systematically from the "good" summaries such that the list exhausted the summary contents. The topics were identified by noting the authors' syntactical divisions (e.g., paragraphs, listings) and transitions in subject matter within these divisions. The topic labels were then taken verbatim from the identified summary segments. In this manner, a particular message could support one topic in one summary and an entirely different topic in another summary. To derive a schema, a median output-position percentile was computed for each topic that was included in at least one of the "good" summaries,

and the subordination dimension was scaled as before in terms of the percentage of staff officers including a given topic in their summaries. Thus, the derived schema was again hierarchical in form.

In addition to these two procedures designed to extract an underlying schema from the "good" summaries, several other analyses of the data were conducted to facilitate the development of summarization guidelines. Specifically, these analyses addressed the question of what attributes discriminate "good" summaries from "poor" summaries.

RESULTS AND DISCUSSION

Judges' Ratings of the Summaries

The average interjudge correlations for the ratings made on the three qualitative dimensions and on the overall evaluation scale were: .07 (content), .20 (accuracy), .14 (organization), and .17 (overall evaluation). Hence, there was considerable disagreement among the raters with respect to which summaries are judged "good" and which summaries are judged "poor." Apparently, the raters viewed the summaries from somewhat different perspectives.

To examine the overall evaluations of the summaries more closely, the ratings made by each of the five raters on each of the four scales were standardized and three beta weights were obtained from a regression of the three qualitative dimensions on the overall evaluation ratings. These beta weights, along with those obtained using the standardized average ratings of the summaries on the four scales, are shown in Table 1. In assigning the overall evaluations, it appears from Table 1 that different raters found the summaries to be uniquely discriminable on the basis of different aspects of the summaries; but each of the three

TABLE 1

BETA WEIGHTS OBTAINED FROM THE JUDGES' STANDARDIZED RATINGS

RATER	CONTENT	ACCURACY	ORGANIZATION
A	+ .32	+ .43	+ .47
B	+ .55	- .16	+ .56
C	+ .19	+ .45	+ .61
D	+ .67	+ .10	+ .32
E	+ .49	+ .27	+ .38
AVERAGE RATINGS	+ .43	+ .36	+ .43

qualitative dimensions accounted for comparable amounts of unique variability in the overall evaluations averaged across raters. Thus, even though each rater judged the summaries with different standards (i.e., weighed the evaluation dimensions differently), when the ratings were averaged across raters, content, accuracy, and organization were seen to contribute nearly equally to the overall evaluations.

Although the raters typically did not agree upon which summaries should be rated higher than others, each individual rater did perceive the summaries to represent a wide range of quality. The mean, median, standard deviation and range of the overall evaluations given by each rater, as well as the corresponding values for the average overall evaluations, are presented in Table 2. For objective analysis, the six summaries with the highest average overall evaluations (78.8, 71.6, 69.0, 65.5, 65.6 and 59.2) were considered "good," whereas the six summaries with the lowest average overall evaluations (47.8, 45.6, 44.4, 41.0, 38.0 and 37.4) were considered "poor." The remaining four summaries were considered to be "borderline," with average overall evaluations of 54.4, 53.0, 50.0 and 49.0. These latter four summaries were excluded from further examination. All 16 summaries are presented in Appendix C.

"Good" Versus "Poor" Summaries

Four separate analyses were conducted to identify attributes that can discriminate the generation of "good" summaries from "poor" summaries. These analyses, which are discussed in turn, examine (a) the perceived essentiality of the messages, (b) the inclusion of the messages in the summaries, (c) the summarizers' ability to include what they consider to be important in their summaries, and (d) the order of presentation of the messages in the summaries.

TABLE 2

DESCRIPTIVE STATISTICS FOR THE JUDGES' OVERALL EVALUATIONS

RATER	MEAN	MEDIAN	STANDARD DEVIATION	RANGE
A	50.3	47.5	20.9	20 - 95
B	52.7	50.0	24.8	24 - 100
C	53.0	57.0	26.0	0 - 98
D	66.0	70.0	19.0	30 - 96
E	50.0	50.0	18.6	20 - 95
AVERAGE RATINGS	54.4	51.5	12.6	37.4 - 78.8

First, it is possible that staff officers who generate "good" versus "poor" summaries differ in terms of which messages they consider to contain important information. Therefore, an analysis of variance was conducted on the participants' ratings of essentially for the 30 messages. For this analysis, the six "good" and six "poor" summaries identified above were used. The design for the analysis constituted a 2 (Summary Quality: "Good" or "Poor") by 30 (Message: 1-30) array, where the message factor was a within-subject factor. Neither the main effect of summary quality ("good" versus "poor") nor the Summary Quality X Message interaction effect was significant, with $F < 1$ and F (29, 290) = 1.01, respectively. Thus, the two groups did not differ in terms of their overall perception of the importance of the messages, nor in terms of which messages they perceived to be most important. This suggests that the Army is imparting a common core of knowledge to its officers about the need for information of various types, and that this effect is not overwhelmed by individual differences among the officers.

The only significant source of variation was the main effect of message [F (29, 290) = 4.39, $p < .001$], indicating that certain messages were seen as more essential across participants than others. The messages that were considered most essential were three messages that referred to border engagements with the enemy (messages 1, 2, and 4), one message regarding 31 artillery positions (message 16), one message reporting the location of a regimental command post (message 19) and one message reporting the location of a FROG battery (message 21). The latter message is apparently judged important because it suggests a nuclear capability.

Second, regardless of whether "good" and "poor" summarizers differ on which messages they consider to be important, they may ultimately choose to include different subsets of the messages in their summaries. To assess this possibility, a second analysis of variance was carried out, identical to the first, except that the dependent variable was

whether or not some aspect of a given message was included in a summary (yes = 1, no = 0). A message was considered to be included when a statement in the summary contained a direct reference to information or combinations of information specific to that message (e.g., grid coordinates, time of occurrence, subject matter, direction of movement, intelligence source). The extent of detail was not considered as a criterion for inclusion; and therefore, some statements were seen to constitute the inclusion of a group of messages (e.g., the statement "radar has located several SA8 locations" accounted for the inclusion of three messages which referred to SA8 locations).

The main effect of summary quality ("good" and "poor") was not significant ($F < 1$), indicating that the "good" and "poor" summaries did not differ reliably in the overall number of messages utilized (15.9 versus 18.0). The density of information content, as defined by the number of messages referenced per line of type, was somewhat less for the "good" summaries (1.00 versus 1.56), suggesting that the important intelligence information was presented in a less abbreviated manner in the "good" summaries. However, this difference was also not statistically significant, $t(10) = 1.78$, $p > .10$. The Summary Quality X Message interaction effect was significant [$F\ (29, 290) = 1.78$, $p < .025$]. Thus, the two groups of summaries did differ with respect to which messages were included. The "good" summaries included more messages reporting the movement of units (messages 10, 15, 18, and 28), whereas the "poor" summaries included more information regarding the positions of static enemy units (message 3 - a radar site; messages 19, 27, and 30 - regimental command posts; and messages 21, 24, and 26 - rocket installations). Thus, one major difference between the "good" and "poor" summaries appears to be the dynamic portrayal of the enemy situation by the good summarizers versus the static portrayal of the enemy situation by the poor summarizers.

Third, for each participant, a point-biserial correlation coefficient was computed between the ratings of essentiality and whether or not each message was included in the summary (yes = 1, no = 0). This was done to determine whether the "good" and "poor" summarizers differed in their ability to incorporate what they considered to be important in their summaries. Two aspects of the results were surprising: the average correlation (obtained following a Fisher's Z transformation of the data) was rather small for both groups of summaries, and the average correlation for the "poor" summaries (.46) was significantly greater than the average correlation for the "good" summaries (.39), t (10) = 2.57, $p < .05$. In other words, the "poor" summarizers were more likely to include what they considered to be essential than were the "good" summarizers. Perhaps the "good" summaries were constructed with a global model (schema) in mind, as opposed to construction based upon the perceived importance of each message in isolation.

Fourth, a median output-position percentile was computed for each of the 27 messages that were included by at least one participant in each of the "good" and "poor" summarizer groups. This was done to determine the extent to which these two groups of summarizers agreed on the order of presentation of the messages in their summaries. The correlation between the two sets of 27 median output-position percentiles was + .55, $p < .01$. Thus, the authors of the "good" and "poor" summaries showed substantial agreement on output order. The major point of disagreement involved the relative positions in the summary of a description of unit movement on the border (nonengaged) versus a description of unit movement behind the border. The experts favored summaries where units moving behind the border were discussed as possible reinforcements for units already engaged. This then was followed by a discussion of unit movement on the border where no engagement had yet occurred. The authors of the "poor" summaries, on the other hand, chose to order the reports of unit movement solely on the basis of proximity

to the border. Of course, this approach entails less interpretation of the data by the summarizer.

Derivation of a Schema

As described in the analysis section, two analyses were carried out toward the derivation on a schema for summarizing the intelligence information. In the first analysis, a schema was derived from the six "good" summaries in terms of the 30 ESD messages. In the second analysis, a schema was derived from the content of the summaries irrespective of the content of the messages. The latter analysis was conducted to allow for an abstract interpretation of the intelligence data to be included in the schema.

The initial step in the first analysis was to compute, for each message, the proportion of the six "good" summarizers that included some aspect of that message in their summaries (the inclusion percentage). This value was taken to represent subordinate position in that message's contents in the hierarchical structure. With respect to sequential order, a median output-position percentile was also computed from the six "good" summaries for each of the messages. Subsequently, 30 message numbers representing the 30 ESD messages were plotted along the two dimensions (subordination and sequential order), and the resulting configuration is shown in Figure 1. In Figure 1, messages in relatively close proximity that contain a common subject matter have been designated as clusters, and these clusters have been given general verbal labels. Also, the centroid of each of these clusters has been located and denoted with a small cross.

Only one of the messages shown in Figure 1 (message 15, referring to enemy vehicular movement behind the order) appears to be segregated from messages with a similar content. One plausible explanation of this apparent anomaly is that message 15 contained prose remarks from the intelligence source, whereas other messages regarding the movement of vehicles behind the border did not. It is possible that these remarks

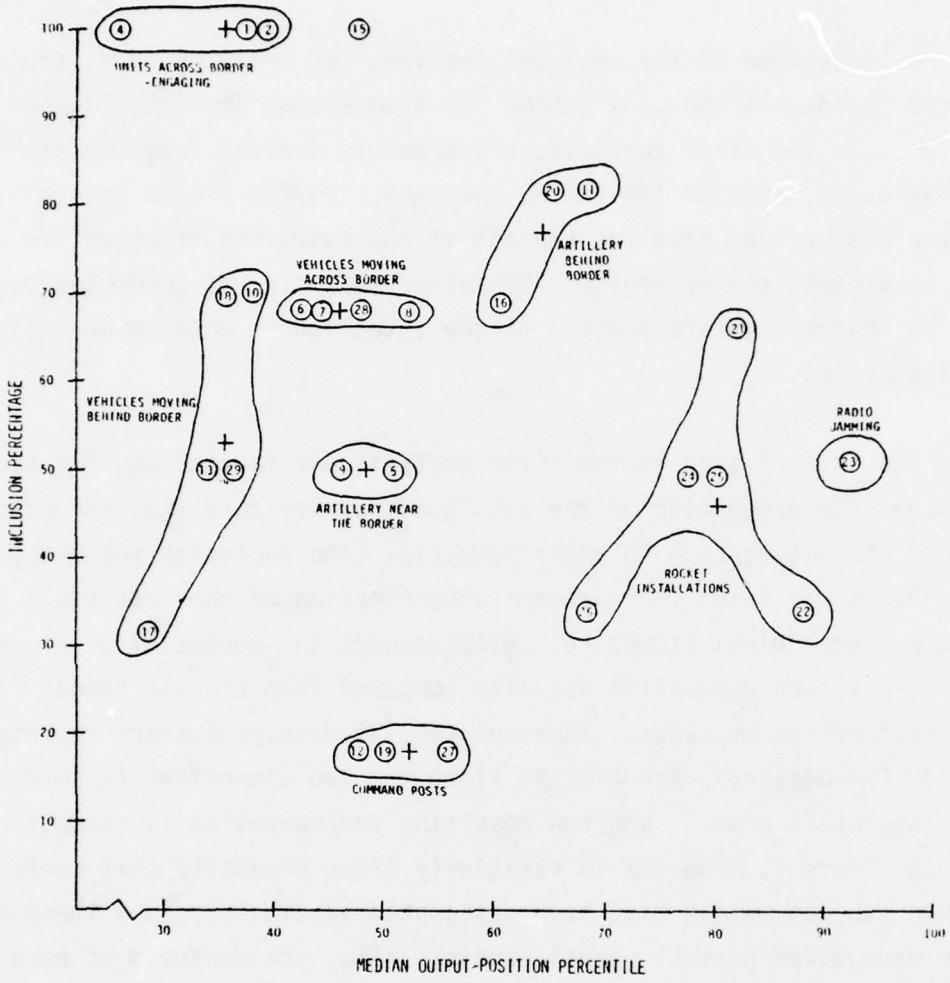


FIGURE 1.
A SCHEMA OF THE ESD MESSAGES BASED UPON THE SIX "GOOD" SUMMARIES. [MESSAGES 3 (RADAR SITE), 14 (COMMAND POST), AND 30 (COMMAND POST) WERE NOT INCLUDED IN ANY OF THE "GOOD" SUMMARIES, AND DO NOT APPEAR IN THIS PLOT. CLUSTERING IS BY SUBJECT MATTER; THE CROSSES DESIGNATE CLUSTER CENTROIDS.]

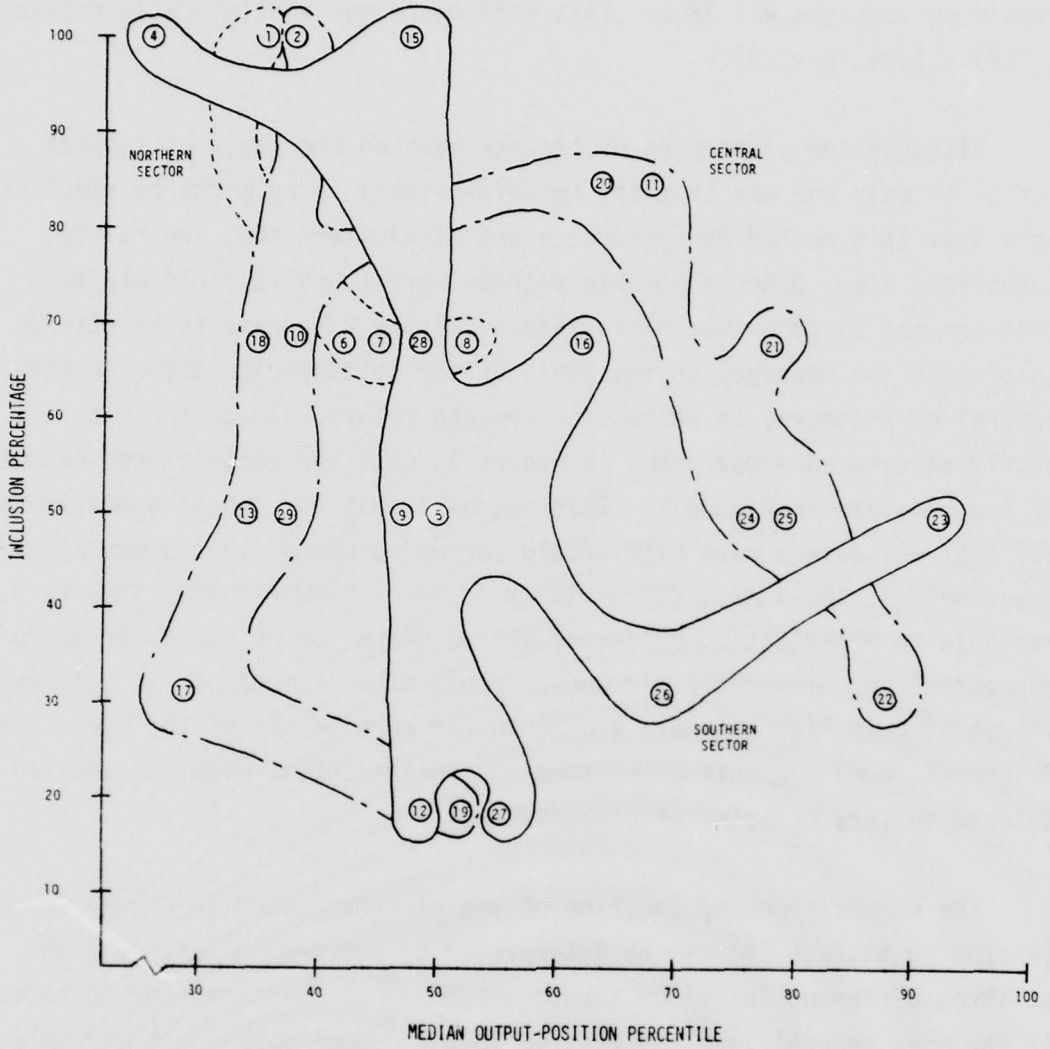


FIGURE 2.
THE SAME MESSAGE CONFIGURATION SHOWN IN
FIGURE 1 WITH CLUSTERING BY BATTLEFIELD SECTOR.

enhanced the apparent importance of message 15. In support of this hypothesis, the average inclusion percentage for messages that contained remarks was 69.3, whereas the average inclusion percentage for the remaining messages was 38.3. This difference was statistically reliable, t (28) = 3.35, $p < .01$.

Although the clustering of the messages on the basis of subject matter is only one way that the two-dimensional array might be simplified, note that this method did produce a set of clusters that are fairly cohesive. Also, other plausible methods were found to yield clusters that are not as cohesive. For example, Figure 2 represents an attempt to cluster the messages on the basis of the battlefield sector (northern, central or southern) to which each message refers. In contrast to the highly structured array shown in Figure 1, note the unstructured nature of the clusters in Figure 2. This suggests that the "good" summarizers did not rely solely upon battlefield sector to summarize the messages. Nevertheless, the raters often stated in their comments that they were amenable to organization by sector of the Corps, or by points of enemy concentration. Therefore, it would appear that if much of the information illustrated in Figure 1 were available for each sector of the Corps, or points of enemy concentration, then the entire schema might be applied to each sector, or point of concentration.

The composition and location of the clusters noted in Figure 1 (excluding message 15) can be interpreted by proceeding left to right at three different levels of subordination or abstraction (top to bottom). At the most general level of abstraction, a "good" summary should only describe current engagements with the enemy. At the next discriminable level of abstraction, a "good" summary should also include a discussion of (a) unit movement across the border (nonengaged) and (b) artillery positions behind the border (fire support). At a third level of abstraction, a "good" summary should further include a description of (a) unit

movement behind the border (indicating possible reinforcements for engaged units), (b) artillery positions near the border (indicating, in conjunction with unit movement on the border, possible points of major thrust), (c) rocket installations (surface to air and FROG) and (d) instances of radio jamming. Additional detail could be added by noting intelligence data regarding the location of command posts. However, the most desirable position of this type of information, relative to the other types of information in the summary, cannot be determined with reasonable certainty since only one of the six "good" summaries contained references to command posts.

For purposes of comparison, a schema of the 30 ESD messages was derived based upon the six "poor" summaries, and this schema is portrayed in Figure 3. The message clusters shown in Figure 3 are in general less cohesive than those shown in Figure 1. This indicates greater variability in structure among the "poor" summaries, which implies that the underlying rules used to generate them were more varied. Nevertheless, there are a number of interesting comparisons that can be made between the schemata represented in Figures 1 and 3.

As was found in an earlier analysis, the messages that pertain to unit movement were, in general, not included in as many "poor" summaries as "good" summaries. Note, for example, the low priority given to the cluster of messages regarding "vehicles moving behind the border." In addition, the "poor" summaries were more likely to include several of the messages pertaining to the static positions of rear elements, e.g., artillery behind the border, command posts, rocket installations, and a radar site. Further, the authors of "poor" summaries did not integrate the intelligence information in the manner seen in the "good" summaries. Whereas the "good" summarizers discussed unit movement behind the border in terms of reinforcements for engaged enemy units, the "poor summarizers

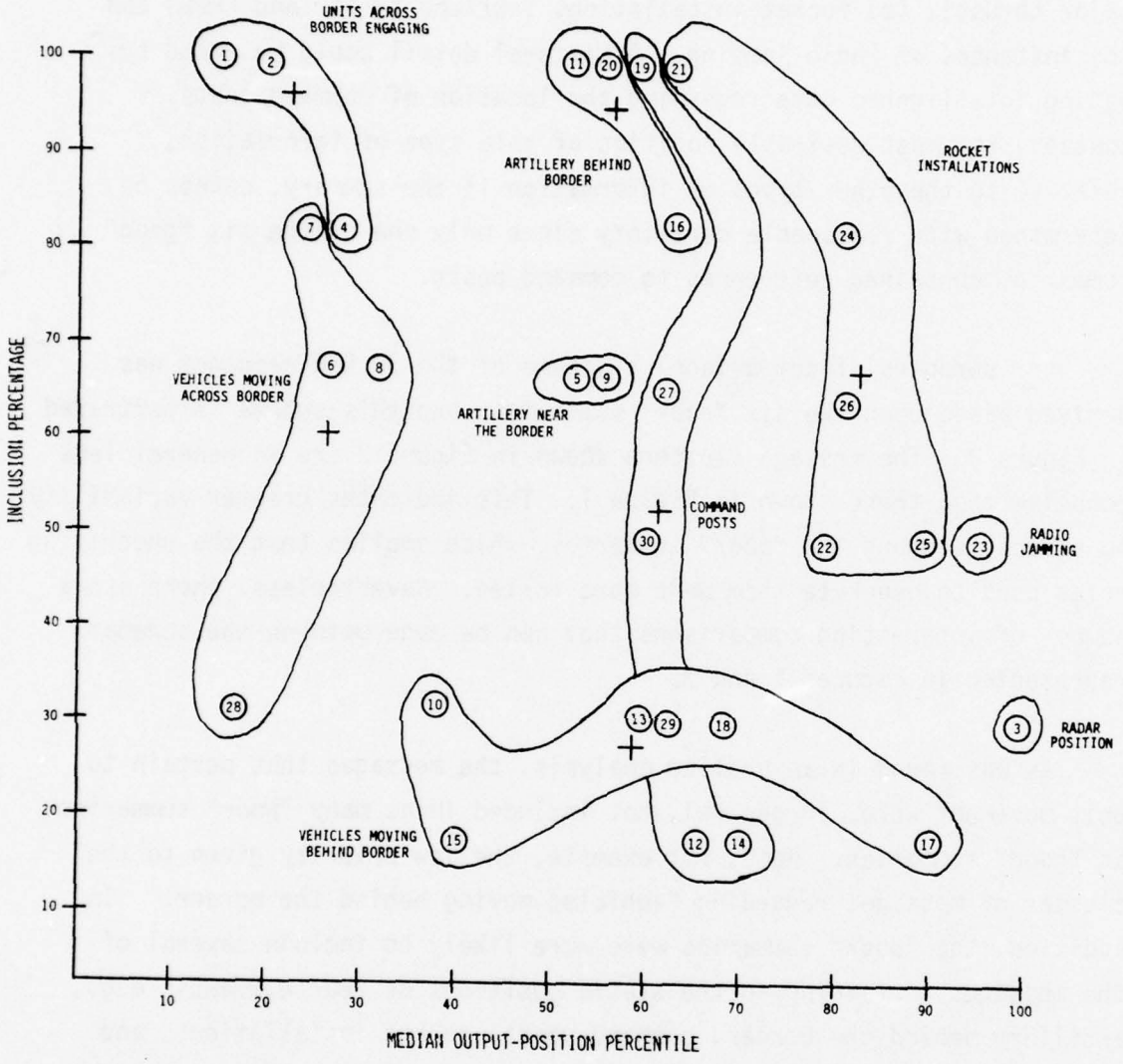


FIGURE 3.
A SCHEMA OF THE ESD MESSAGES BASED UPON THE SIX "POOR" SUMMARIES. CLUSTERING IS BY SUBJECT MATTER; THE CROSSES DESIGNATE CLUSTER CENTROIDS.

discussed enemy unit movement simply in terms of proximity to the border, in the context of other rear-element positions. Whereas the "good" summarizers discussed artillery positions near the border in conjunction with unit movement on the border, the "poor" summarizers tended to discuss all artillery positions together, at relatively the same point in the summary (artillery positions near the border were less likely to be included). Thus, the summaries rated "poor" by the raters contained less emphasis on unit movement and less meaningful information integration.

In the second analysis, a schema was derived solely in terms of the content of the "good" summaries, irrespective of the content of the 30 ESD messages. For this derivation, a list of topics included in the "good" summaries was generated to replace the 30 messages as the units of analysis. The topics were extracted systematically from the summaries such that all components of all of the "good" summaries were represented in the list. The verbal labels for the topics were taken directly from the summaries.

Only five general topics were necessary to describe all of the content of the six "good" summaries. These five topics are plotted in Figure 4, as a function of inclusion percentage and median output-position percentile. As was seen in the first analysis, discussions of the border attack, unit movement and fire support elements (e.g., DAG, RAG, FROG, ADA) were considered pertinent in the "good" summaries. In addition, this analysis revealed that two major inferences were made in the form of concluding statements: one regarding the probable point of main thrust, and another regarding the probable location of the second echelon. Thus, the raters approved of summaries where some attempt was made to infer the intent of the enemy beyond the immediate situation.

For the purposes of comparison, a schema was derived based upon topics included in the six "poor" summaries, and this schema is portrayed in

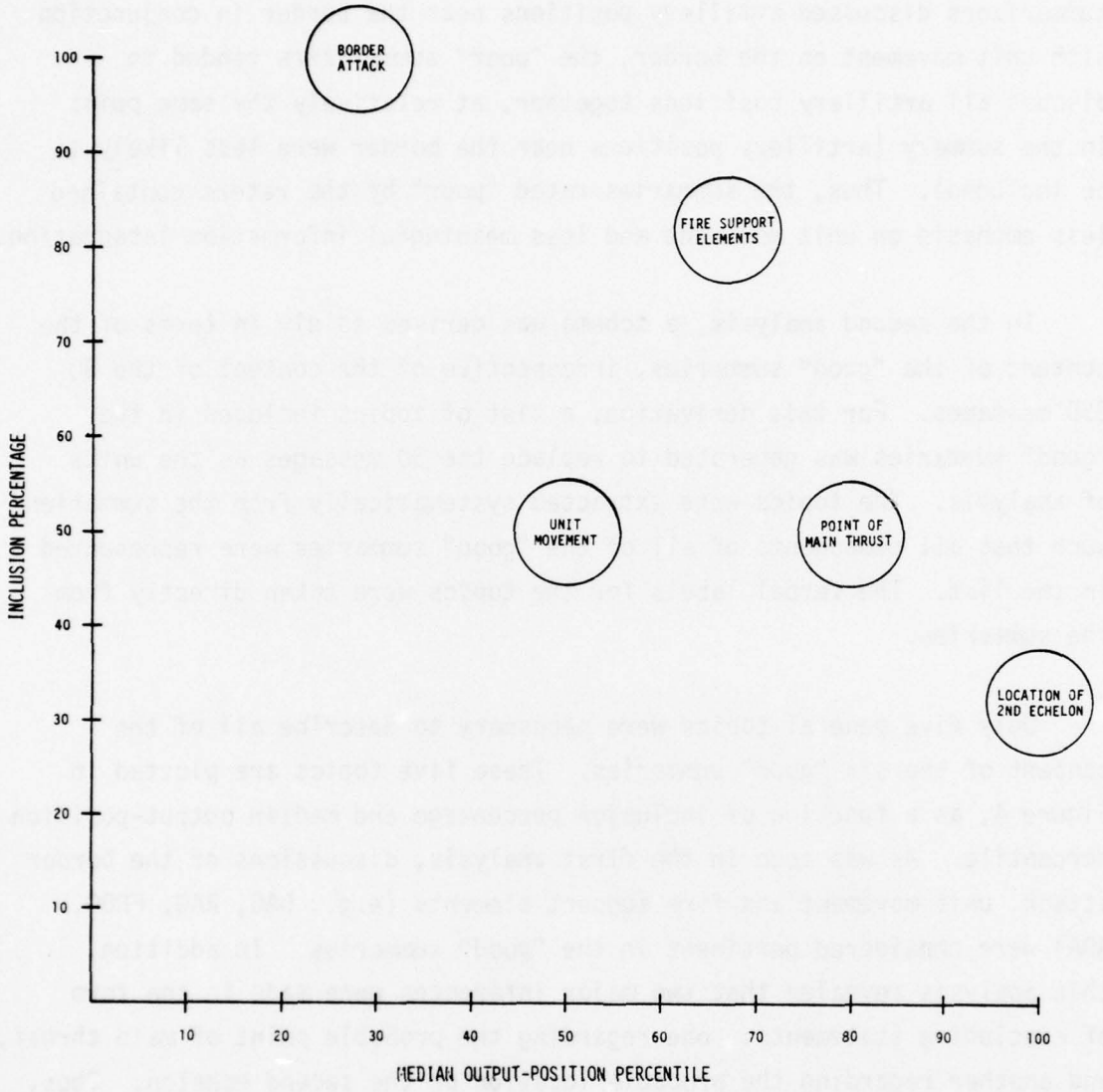


FIGURE 4.
A SCHEMA OF GENERAL TOPICS INCLUDED IN
THE SIX "GOOD" SUMMARIES.

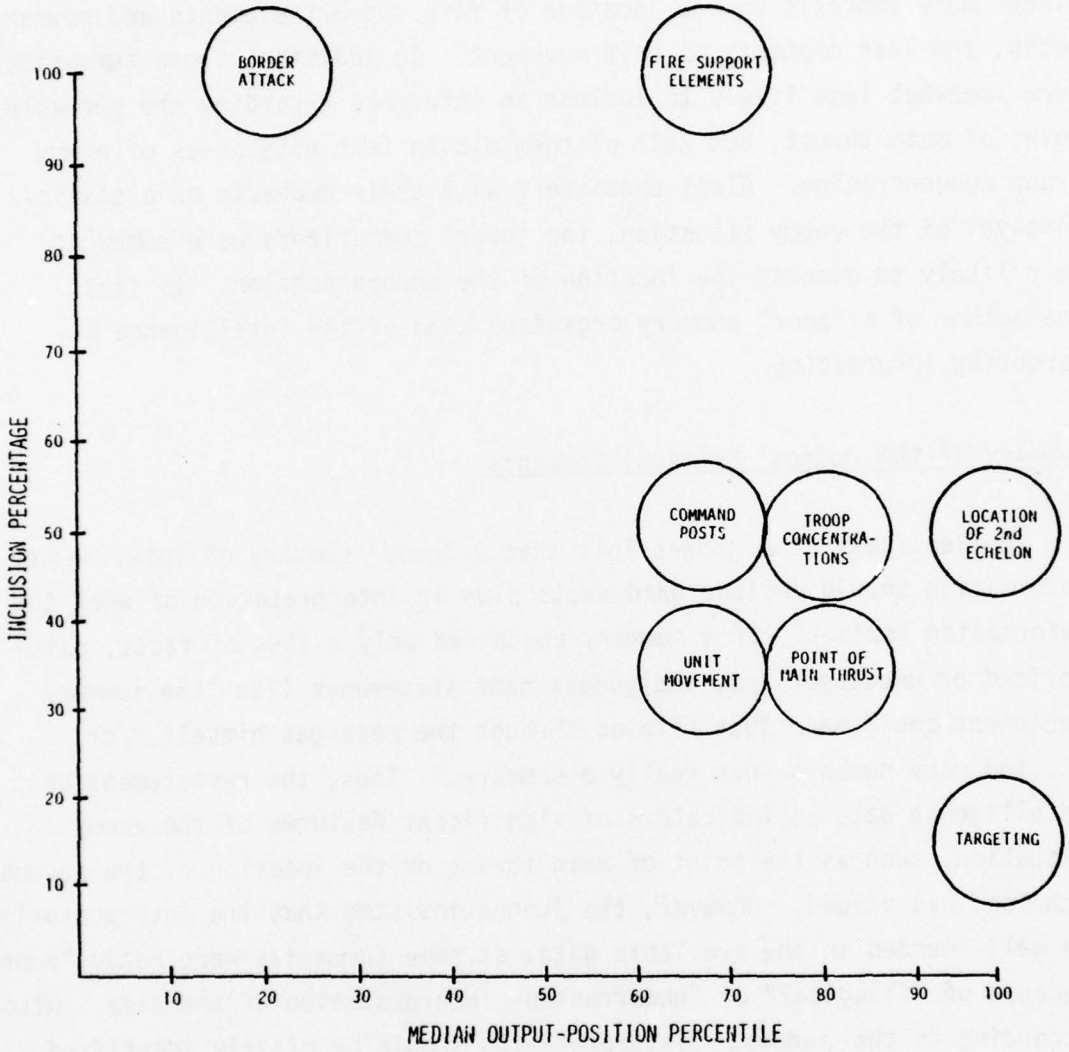


FIGURE 5.
A SCHEMA OF GENERAL TOPICS INCLUDED IN
THE SIX "POOR" SUMMARIES.

Figure 5. The "poor" summaries were more varied in structure than the "good" summaries; and consequently, a greater number of topics were identified in accounting for their contents. A comparison of Figures 4 and 5 illustrates once again that the authors of the "poor" summaries placed more emphasis on the location of fire support elements and comman posts, and less emphasis on unit movement. In addition, these summarize were somewhat less likely to include an inference regarding the probable point of main thrust, but half of them did in fact note areas of enemy troop concentration. Also, consistent with their emphasis on a static portayal of the enemy situation, the "poor" summarizers were somewhat more likely to discuss the location of the second echelon. In fact, one author of a "poor" summary organized some of the intelligence as targeting information.

Summary of the Judges' Critical Comments

Collectively, the judges felt that a "good" summary of intelligence information should include hard facts plus an interpretation of what the information implies. If a summary contained only a list of facts, categorized or uncategorized, the judges made statements like "the summary recipient could have just flipped through the messages himself," or "...too many numbers--not really a summary." Thus, the restatement of intelligence data as indicators of significant features of the enemy situation, such as the point of main thrust or the location of the second echelon, was valued. However, the judges insisted that the interpretation be well-founded in the available data, as some summaries were rated "poor" because of "illogical" or "unwarranted" interpretation of the data. Also, according to the judges, "interpretation should be clearly identified from fact."

With respect to other attributes of the summaries, the majority of the judges commented that they preferred summaries that: (a) were

"conversational" in style; (b) were organized by zone, sector of the Corps, or area of enemy concentration (though this should not be the sole criterion for organization); (c) included dynamic aspects of the tactical situation, such as information regarding the speed and direction of movement of enemy maneuver units; (d) stated what key information is not known (i.e., the summary did not leave gaps in the schema because of missing information); and (e) provided estimates of confirmation (reliability) of the intelligence information where appropriate. In general, the "better" summaries were seen as more straightforward, systematic, accurate and informative than the "poorer" summaries.

CONCLUSIONS AND IMPLICATIONS

The quality of the summaries observed in this study cannot be taken as a reflection of the potential quality of work by expert U.S. Army intelligence specialists, since the 16 participants cannot be categorized as such. In addition, only 16 staff officers generated the summaries and only 5 experienced military personnel evaluated their quality. Nevertheless, the present results provide valuable insight concerning the content and structure of those summaries which are likely to be judged most effective in the communication of information contained in a file of messages about enemy offensive activity. Such prescriptive norms for "good" summaries can be translated into guidelines, and possibly formats, for staff officers to enable them to produce more useful and effective intelligence message summaries.

Toward Guidelines for Summarization

It was clear from the analyses of the contents of the summaries, as well as from the judges' critical comments, that for the given tactical scenario--a dynamic view of the enemy situation should be

portrayed. The size, speed, and direction of enemy maneuver units (engaged and nonengaged) were labeled as essential information by the judges; whereas detailed information regarding static positions of elements was seen as less important.

The degree of detail to be included in a summary is, of course, dependent upon the user and upon the time available for intelligence analysis. Three levels of detail were extracted from the schema portrayed in Figure 1; namely, one referring to the most important and threatening tactical elements (current engagements), a second adding nonengaged border crossings and fire support, and a third involving information of less immediacy (e.g., unit movement behind the border). This three-level structure could provide a basis for generating specific guidelines regarding content and order of presentation for summaries of different levels of detail.

Although the judges did not expect unwarranted conclusions to be drawn from the intelligence data, they did expect at least two inferences to be made in light of available indicators. These two inferences were: the most likely point or points of main thrust, or breakthrough; and the probable location of the second echelon. If no logical indicators were available, a statement to that effect would be desired, as the judges valued null statements in comparison to ill-founded guesses or no statements. In light of this finding, the impact of battlefield indicators, as investigated by Johnson (1977), might be examined more closely in the future. If a reliable set of indicators could be developed, the capability to make logical inferences from available intelligence data could be operationalized within the context of specific information management procedures. Of course, the reliability of the intelligence reports themselves should be considered in the generation of such inferences.

Finally, with regard to style, the judges clearly preferred a conversational, or prose format rather than a series of quantified lists. This finding may be at odds with the widely held belief that it is desirable to allow unit commanders some flexibility in the form in which they choose to have intelligence reported to them.

Future Research

From the initiation of this research, in which a single scenario was examined, it was realized that the guidelines developed for summarizing intelligence information may not be generalizable to other types of scenarios. Enemy situation data is only one type of tactical data, and its summarization was studied here only at the Corps level, only in the context of a ground-war enemy-offensive scenario, and only at an early stage of the attack. However, it was also realized that all-purpose guidelines, if they could be formulated, would necessarily be so general that they would be of little use in summarizing any type of tactical information.

Therefore, it seems necessary to study a set of basic scenarios, carefully selected to extract the most important schemata used in describing tactical situations, from which corresponding sets of guidelines can be developed. The total number of these sets of guidelines need not be large, but it is important that they be sufficiently comprehensive to be representative of most TOS-related tactical requirements. Thus, additional research is called for to compare and contrast these guidelines with those developed for the summarization of military messages in other contexts. In particular, if differences in preferences for information or packaging were found across different scenarios, this would imply that different priorities should be given for different aspects of the intelligence information under different

conditions. These priorities could conceivably be incorporated into standard operating procedures or into training programs.

Also before any summarization guidelines can be implemented in the field, further empirical research is required to both assess and validate their effects upon summarization performance, and to evaluate their impact upon tactical decision-making performance.

REFERENCES

Bartlett, F.C. Remembering. Cambridge, England: Cambridge University Press, 1932.

Bjork, R.A. and Whitten, W.B. Recency Sensitive Retrieval Processes in Long-Term Free Recall. Cognitive Psychology, 1974, 6, 173-189.

Coates, E.N. and McCourt, A.W. A Questionnaire-Based Analysis of Order-of-Battle Elements. U.S. Army Research Institute (Alexandria, VA), Technical Paper 271, January 1976.

Johnson, E.M. The Perception of Tactical Intelligence Indications: A Replication. U.S. Army Research Institute (Alexandria, VA), Technical Paper 282, September 1977.

Kintsch, W. Comprehension and Memory of Text. In W.K. Estes (Ed.), Handbook of Learning and Cognitive Processes, Vol. 6. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1978.

Kintsch, W., Kozminsky, E., Streby, W.J., McKoon, G., and Keenan, J.M. Comprehension and Recall of Text as a Function of Content Variables. Journal of Verbal Learning and Verbal Behavior, 1975, 14, 196-214.

Kintsch, W. and Van Dijk, T.A. Comments on summaries of stories. *Langages*, 1975, 40, 98-116. (*In French*)

Rumelhart, D.E., and Ortony, A. The Representation of Knowledge in Memory. In R.C. Anderson, R.J. Shapiro, and W.E. Montague (Eds.) Schooling and the Acquisition of Knowledge. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1976.

Thorndyke, P.W. The Role of Inferences in Discourse Comprehension. Journal of Verbal Learning and Verbal Behavior, 1976, 15, 437-446.

Thorndyke, P.W. Cognitive Structures in Comprehension and Memory of Narrative Discourse. Cognitive Psychology, 1977, 9, 77-110.

APPENDICES

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APPENDIX A-1

PARTICIPANT MATERIAL: SCENARIO AND TASK INSTRUCTIONS

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INFORMATION SUMMARIZATION EXPERIMENT
MARCH 1979

- -

SUMMARIZATION OF ENEMY SITUATION DATA

1. Introduction

2. Strategic Scenario

   2.1 Strategic Environment
   2.2 Strategic Developments
   2.3 Comparison of Forces

3. Task Instructions

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INFORMATION SUMMARIZATION EXPERIMENT
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1. SUMMARIZATION OF ENEMY SITUATION DATA

1. Introduction

The general purpose of this study is to determine plausible ways of summarizing battlefield intelligence information, such that the important aspects of the current situation can be understood by a Corps Commander within a very brief period of time. A brief tactical scenario involving a conflict in a European setting is provided here to give you an overview of the present tactical environment. Later on, our procedure will be to have you role play the G2 section TOC duty officer of the 10th Corps. Detailed instructions will be given after you have had a chance to read the scenario. At this time, please begin to study the scenario on the pages that follow.

2. STRATEGIC SCENARIO

2.1 Strategic Environment

The reality of deployed NATO and Warsaw Pact forces in Northern and Central Europe inexorably poses the threat of tension and crisis escalating to war. Both the United States and the Soviet Union have vital national security interests in Europe that are dramatically reflected in their military contributions in the two opposing alliances. Combined with military forces of other alliance/pact members, the European theater is composed of large, modern, and potentially destructive forces unparalleled in the history of warfare.

NORTHERN AND CENTRAL EUROPE	NATO	WARSAW PACT
Combat and direct support troops available	625,000	895,000
Tanks	7,000	19,000
Tactical aircraft	2,050	4,025
Nuclear weapons	7,000	3,500

2.2 Strategic Developments

2.2.1 It is now 6 August 1979. Amid a background of steadily deteriorating relations between NATO and the Communist powers and increasing global tension, ministers of the Warsaw Pact nations meet with the Politburo and agree to attack West Germany. East Germany, Poland, and Czechoslovakia are most receptive, and their forces are called on to participate in the offensive. Hungary, Bulgaria, and Romania will move forces to the borders of the southern NATO countries to prevent NATO from reinforcing central Europe. Covert preparations are initiated, to include the assembly of rolling stock and increasing units to full strength.

2.2.2 Subsequent chronological events leading to hostilities are:

(1) On 8 August, Warsaw Pact nations initiate full mobilization. Pact nations make every effort to limit NATO intelligence operations and thus hope to complete substantial military preparations without permitting a firm indication of their intent.

(2) On 9 August, Moscow publicly announces a forthcoming field exercise to test Warsaw Pact defense plans, and at the same time a restriction on foreign travel within Warsaw Pact countries is invoked.

(3) On 10 August, Intelligence reports indicate that Soviet military traffic from western USSR to Poland and East Germany is unusually heavy and appears excessive to the needs of the previously announced field exercise. Supreme Allied Commander Europe (SACEUR) orders a state of Military Vigilance.

(4) By 11 August, the Warsaw Pact buildup in Communist Europe is apparent to the West. Increased rail, road, and air activities, as well as the arrival of several Soviet divisions in East Germany have been confirmed. SACEUR requests authority to declare Simple Alert.

(a) The request is transmitted to the NATO Secretary General, who chairs the Defense Planning Committee (DPC). This committee consists of the permanent representatives to the NATO council, with the exception of France and Greece, and is vested with authority over the major NATO commanders (SACEUR, SACLANT, and CINCHAN).

After consulting with their national governments as well as their permanent representatives to the NATO Military Committee, the permanent representatives to the DPC voice no objection to SACEUR's request when polled by the Secretary General, who then authorizes the declaration of Simple Alert.

(b) As a result, SACEUR alerts his allied force headquarters in northern, central, and southern Europe. Headquarters, Allied Forces Central Europe (AFCENT), in turn, places its two Army groups and Headquarters, Allied Air Forces Central Europe (AAFCE), along with its two Allied Tactical Air Forces (ATAF's) on increased alert.

(5) On 13 August, because of the increased pace of the Warsaw Pact buildup, SACEUR issues planning guidance and requests authority to declare Reinforced Alert. The DPC, now in continuous session, approves the request. Efforts by the UN to halt the Warsaw Pact buildup continue to be unsuccessful. CINCENT issues theater guidance.

(6) On 14 August, evidence is received that Warsaw Pact forces are mobilizing and will soon attack. As a result, SACEUR receives authorization from the DPC to declare General Alert. NATO forces begin moving to their assigned emergency defense positions. Obstacle construction is initiated. The U.S. Congress declares a state of national emergency and orders units and members of the Ready Reserve and Standby Reserve to active duty. The President orders the deployment of dual-based forces to Europe. Other NATO nations commence mobilization at the same time.

(7) On 15 August, an increase in tactical air movement is detected - generally to bases in the vicinity of known training areas in the German Democratic Republic (GDR).

(8) On 16 August, Soviet forces continue to deploy into East Germany and Czechoslovakia.

(9) By 18 August, a major portion of the Soviet theater reserve forces has arrived in western Poland and are deployed along lines of communication that would facilitate their rapid movement into East Germany.

(10) On 20 August, Pact units are detected moving toward the western borders of East Germany and Czechoslovakia. NATO units patrolling border areas report the evacuation of civilians and other noncombatants.

(11) On 21 August at 0320, enemy units are detected 1-2 KM from the international border along much of the sector assigned to the 10th (U.S.) Corps (a sketch of CENTAG dispositions and an enemy situation map are attached). At 0330, heavy artillery and mortar fire is received by several elements of the 10th (U.S.) Corps positioned near the international border. At 0345, a BN size reconnaissance force is seen moving across the border at coordinates NB 6730 (see Enemy Situation Map).

2.3 Comparison of Forces

2.3.1 NATO forces (land and air):

(1) 10th (U.S.) Corps: Assigned sector is depicted in the sketch map. The corps, as a result of the recent arrival of replacements, is at 103 percent strength; and all TOE equipment has been issued, with some coming from float stocks. No major equipment shortage exists. There are no significant maintenance problems. Troops have been undergoing intensive combat training. Morale is good.

(2) 8 (Allied) TAF: Elements of the 8th (Allied) TAF will support the corps. Estimates indicate that the enemy will initially have general air superiority over the battlefield; however, friendly air forces will be able to achieve local air superiority for limited periods of time.

2.3.2 Enemy forces:

(1) The forces opposing the 10th (U.S.) Corps are elements of the enemy First Zapadnian Front. The front is composed of a shock army, two combined arms armies, and two tank armies. This front consists of approximately 11 motorized rifle divisions and 12 tank divisions. When the enemy attacks, it is estimated that nine of these divisions (three motorized rifle and six tank) will be employed against the 10th (U.S.) Corps. The first echelon will consist of three motorized rifle and two tank divisions, with four tank divisions in the second echelon (see Table 1).

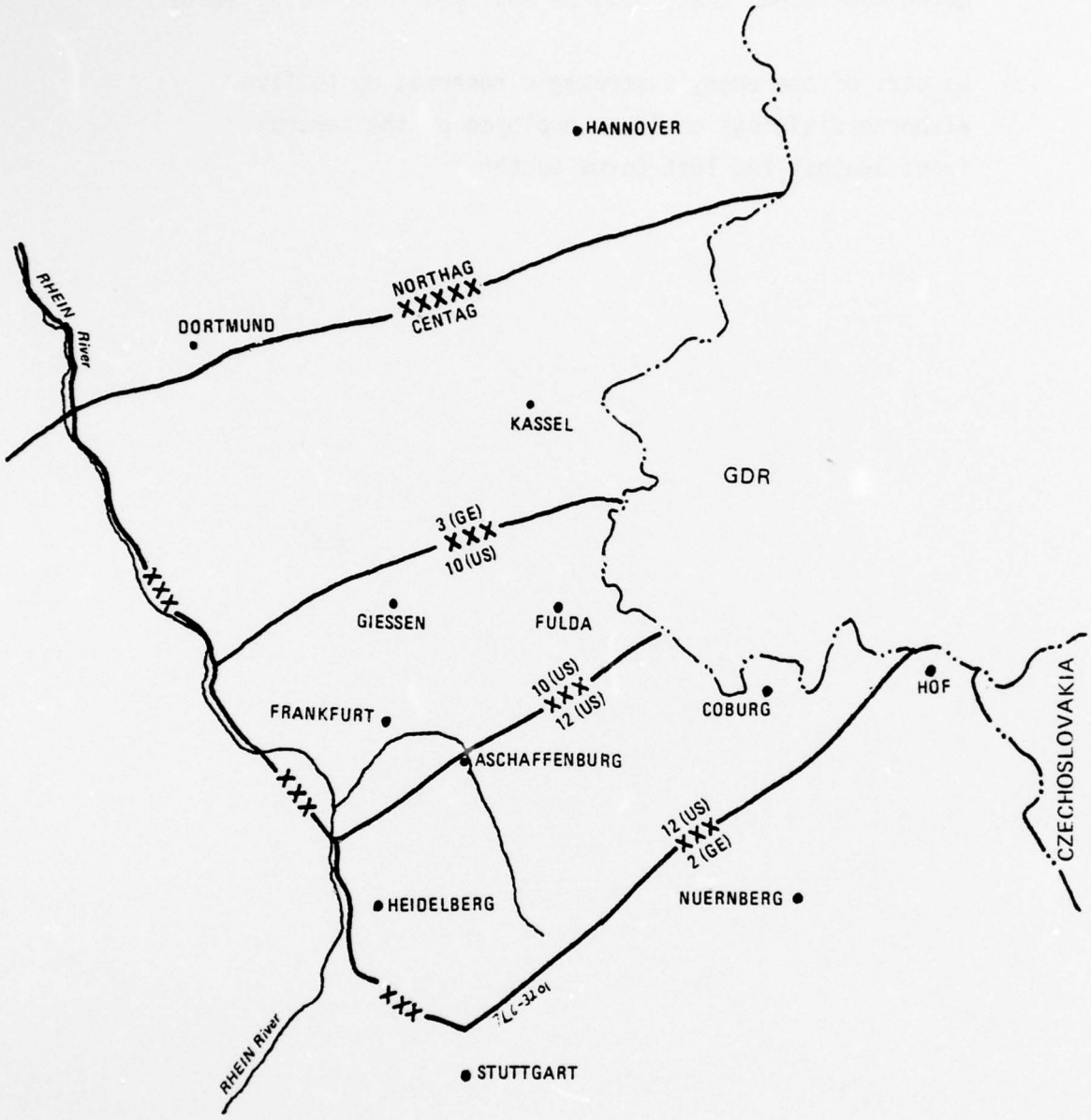
TABLE 1. FIRST ZAPADNIAN FRONT

CODE NAME ORO
CODE NUMBER 351568
AREA OF OPERATIONS Central Europe

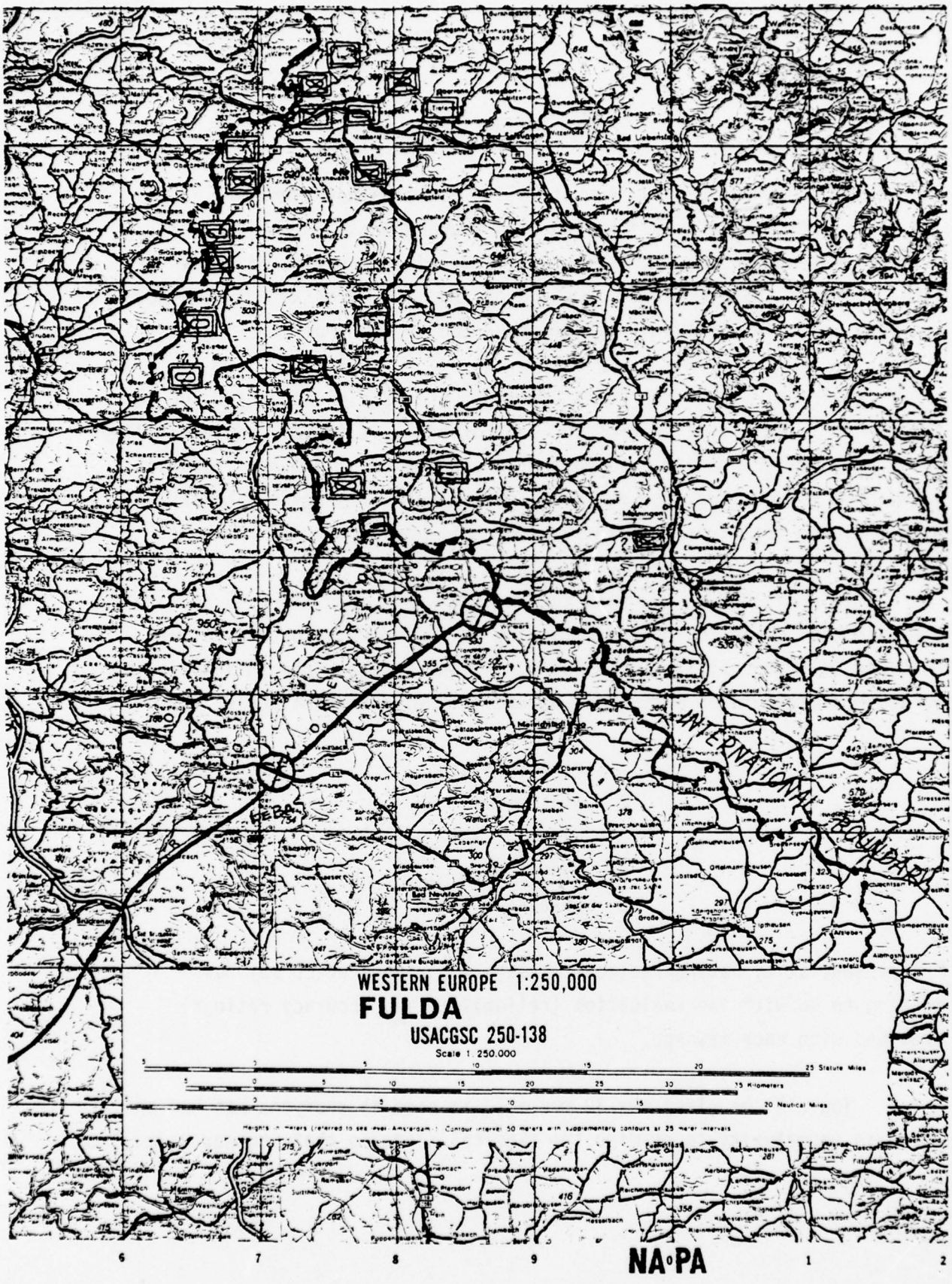
UNIT	COMMANDER	CODE NO.
CG.	Marshal DZIEDZIC.	
CofS.		
H&S Bn.		
12th Shock Army		.339994
2d CAA.	Gen Col PESTEL.	.200711
8th Gds Tk Army	Gen Col MURAVIEV, O	.439276
5th Gds Tk Army		.505722
20th CAA.		
35th SSM Bde.	Gen Maj BIBIKOV, G.	.528620
31st Engr Const Regt.	Col KUTUZOV, J.	
19th Engr Pon Regt.		
44th Sig Regt		
129th Med Regt.		
Cml Bde		
EW Bn		
Sig Intep Regt.		
Intel Regt.		
2d Arty Div		
4th MT Bn		
18th Engr Pipelaying Bde.		

(2) As normal, the front has an additional army, presently being mobilized, that could be employed in the U.S. sector.

(3) As part of the enemy's strategic reserve, up to five airborne divisions could be employed by the central front against the 10th Corps sector.



SCKETCH OF *CENTAG* DISPOSITIONS



A SECTION OF THE ENEMY SITUATION MAP

3. TASK INSTRUCTIONS

It is now 0430 on 21 August 1979. You have been involved in activities which have prevented you from reading messages received between 0400 and 0430. Shortly, you will be given a series of enemy situation data (ESD) messages received by the 10th Corps HQ between 0400 and 0430 Hrs. The messages will be presented in the order received.

Currently, the 10th Corps Commander and G2 are out of the TOC at the 52nd CP. As the G2 section TOC duty officer, it is your responsibility to be prepared to provide a summary of the enemy situation upon request. Therefore, as you study the messages, please keep this responsibility in mind. Please feel free to make marks upon the messages.

In addition, as you read each message, we would like you to rate how essential it is to the understanding of the enemy situation between 0400 and 0430 Hrs. at the Corps level. Please indicate the ratings in the space provided on each message using the following 5-point scale:

1 - of little use
2 - of some use
3 - useful
4 - important
5 - essential

This essentiality rating reflects message <u>importance</u> which may have nothing to do with the evaluation (reliability and accuracy ratings) provided with each message.

You will be given the 30 messages as soon as everyone has had an adequate opportunity to examine the tactical scenario that you now have.

APPENDIX A-2

PARTICIPANT MATERIAL: MESSAGE BOOKLET

MESSAGE
BOOKLET

NO.: _____

PRIMARY/SECONDARY SPECIALTY: _____

PRECEDING PAGE NOT FILMED
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Instructions

The series of enemy situation data (ESD) messages is presented on the following pages in the order in which they were received at the HQ of the 10th Corps. First, however, the format in which the messages are presented is described briefly for your information, and a key to abbreviations is included. (The format descriptions and key are presented on the yellow sheets of paper.) Of course, some of the entries provided for in the message format are left blank; this is because the associated information is either unknown or irrelevant to your task. As you examine the messages, please be sure to rate each message for its essentiality in understanding the enemy situation between 0400 and 0430 at the Corps level. Please make the ratings using the following 5-point scale:

1 - of little use
2 - of some use
3 - useful
4 - important
5 - essential

Please feel free to make notes upon any of the messages, either of the two maps, or on the scrap paper provided.

You will be given 45 minutes to study the messages and make your essentiality ratings. As you work, please bear in mind that you may be subsequently called upon to summarize the enemy situation data, at the Corps level. You will be told when there are 10 minutes remaining so that you can verify that you have rated each and every message for essentiality. Please begin your examination of the messages.

The General Format for ESD Messages

```
ORIG/MSG NO:                FILE:     ACTION:    FILE-NAME:              PREC:

SCTY:          RESTR:         DISTR:

SUBJ:                         UNIT:
  LABEL:                        ECH    :                        LOC:
  SIG-EVENT?:                   TYPE   :                           :
                                EMPL   :                           :
  ACTV:                         NATION:                            :
    SPEED:                                                         :
    DIR  :                    TGT?:                                :
  ACTV-TIME:                    TGT-NO :                           :
  QTY:                          ALT    :                           :
                                LOC-ERR:                           :
SOURCE:
AGENCY:                       CH-TO-MSG:                REF     :
EVAL   :                                                TASK NO:

REMARKS:
```

Key:

Identifier	Purpose
ORIG/MSG NO	To provide a unique identifier for each TOS message. Terminal assigns the value entered in MSG-NO.
FILE	To specify the TOS file that a message will affect.
ACTION	To specify the type of transaction. A=add, C=change, D=delete.
FILE-NAME	Ignored.
PREC	To specify the communications precedence of the message.
SCTY	To specify the security attributes of the message.
RESTR	To specify the restriction of access to data contained in the message.

Key (continued):

Identifier	Purpose
DISTR	To specify the distribution of the message.
SUBJ	To specify the Subject of an ESD intelligence report.
LABEL	To provide a label for a graphic symbol.
SIG-EVENT?	To indicate that an ESD record concerns a significant event or item. (This has been ignored for this experiment.)
ACTV	To specify the activity associated with subject of an intelligence report.
SPEED	To specify the speed of movement in kilometers per hour.
DIR	To specify the direction of movement in either degrees or mils measured from grid north.
ACTV-TIME	To specify the time when an activity took place.
QTY	To specify the quantity of items identified in the subject of a report.
SOURCE	To specify the source of information.
AGENCY	To specify the category of Agency that has received or gathered intelligence information and has reported on the information.
EVAL	To specify an evaluation of reliability and the accuracy of the information.
UNIT	To specify an enemy unit identification.

Key (continued):

Identifier	Purpose
ECH	To specify either the echelon level or the echelon size of a unit that could occupy a terrain feature.
TYPE	To specify the principal and/special organizational type of the enemy unit.
EMPL	To specify how a unit is employed.
NATION	To specify a country of the world from which an enemy units derives its origin.
TGT?	To indicate if the contents of an ESD message identify a potential target.
TGT-NO	To specify the American, British, Canadian, Austrailian target identifiers assigned to a potential target.
ALT	To specify the altitude above or below mean sea level of a target measured in meters.
LOC-ERR	To specify the probable error in meters of the locating source.
CH-TO-MSG	Ignored.
LOC	To specify a location.
REF	To allow the user to reference another ESD record by its ORIG/MSG-NO.
TASK-NO	To specify the identification number assigned to an intelligence collection task.
REMARKS	To provide for entry of amplifying or clarifying remarks.

KEY TO MESSAGE ABBREVIATIONS

PRECEDENCE:

Z = flash
I = immediate
P = priority
R = routine

SUBJECT:

RDRACQ = radar acquisition
122 = Howitzer
130 = field gun
SA8 = short range SAM
SA6 = low/medium altitude SAM (GAINFUL)

SOURCE:

SLAR = Side Locking Airborne Radar
CEINT = Communications Intelligence
TACFIR = Artillery (computerized)
RECNGE = Recon (ground)
RECNAV = Aerial Visual Recon
RDRCM = Radar Communications
RPV = Remotely Piloted Vehicle
IR = Infra red

EVALUATION (reliability and accuracy):

A = completely reliable
B = usually reliable
1 = confirmed by other sources
2 = probably true

ORIG/MSG NO: 11/201 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: ATK
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : INME
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 100

LOC: NB6745

SOURCE: TRPS/2BDE CH TO MSG: REF :
AGENCY: TASK NO:
EVAL: A2

REMARKS: BEING ATTACKED BY TWO MR BNS AND ONE TNK BN. ENGAGING.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#2

ORIG/MSG NO: 11/203 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: ATK
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : AR
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 100

LOC: NB6518

SOURCE: TRPS
AGENCY:
EVAL: A1

CH TO MSG: REF :
TASK NO:

REMARKS: BEING ATTACKED BY TWO MR BNS AND ONE TNK BN. ENGAGING.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

ORIG/MSG NO: 3/7044 FILE: ESD ACTION: A FILE NAME: PREC: I

SCTY: U RESTR: DISTR:

SUBJ: RDRACQ
LABEL:
SIG-EVENT?:

ACTV: DETECT
SPEED:
DIR:

ACTV-TIME: 210350AAUG79
QTY:

UNIT: UNK
ECH : UNK LOC: NB852059
TYPE : AD :
EMPL : :
NATION : AE :
:
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 1000 :

SOURCE: CEINT/20
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#4

ORIG/MSG NO: 15/7550 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: TRPS
LABEL:
SIG-EVENT?:

ACTV: ADV
SPEED:
DIR:

ACTV-TIME: 210405AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : INME
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 700

LOC: NB725005

SOURCE: TRPS/5223 CAV
AGENCY:
EVAL: A1

CH TO MSG:

REF :
TASK NO:

REMARKS: APPARENT ENEMY MECHANIZED INFANTRY COLUMNS ADVANCE FROM CONCENTRATIONS NOTED. HAVE PENETRATED ABOUT 1 KM. NOW ENGAGING LEAD ELEMENTS IN DELAYING ACTION.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#5

ORIG/MSG NO: 15/7612 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: 122
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210405AAUG79
QTY: 5

UNIT: UNK
ECH : BTY
TYPE : FA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 90

LOC: NB881020

SOURCE: TACFIR/52
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#6

ORIG/MSG NO: 9/201 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: VEH
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED: 10
DIR: 270

ACTV-TIME: 210400AAUG77
QTY:

UNIT:
ECH :
TYPE :
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 50

LOC: NB7245

SOURCE: SLAR
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS: LEAD ELEMENTS ARE CROSSING BORDER.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#7

ORIG/MSG NO: 9/202 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: VEH
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED: 10
DIR: 270

ACTV-TIME: 210400AAUG79
QTY:

UNIT:
ECH :
TYPE :
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 50

LOC: NB6644

SOURCE: SLAR
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS: LEAD ELEMENTS ARE CROSSING BORDER.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#8

ORIG/MSG NO: 9/204 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: VEH
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED: 10
DIR: 270

ACTV-TIME: 210400AAUG79
QTY:

UNIT:
ECH :
TYPE :
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 50

LOC: NB7133

SOURCE: SLAR
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS: LEAD ELEMENTS ARE CROSSING BORDER.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#9

ORIG/MSG NO: 15/7009 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: 122
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : UNK
TYPE : FA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 50

LOC: NB790056

SOURCE: TACFIR/52
AGENCY:
EVAL: B1

CH TO MSG: REF :
TASK NO:

REMARKS: CM/CB RDR LOCD ENEMY ARTY - CB FIRES LEVIED AS PERMITTED.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#10

ORIG/MSG NO: 9/0864 FILE: ESD ACTION : A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVSW
SPEED: 20
DIR:

ACTV-TIME: 210355AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : UNK
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 100

LOC: NB730160

SOURCE: SLAR/10
AGENCY:
EVAL: B1

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#11

ORIG/MSG NO: 3/08131 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: 130
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210355AAUG79
QTY:

UNIT: UNK
ECH : BTY
TYPE : FA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB800239

SOURCE: CEINT/10
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS: DIV ARTY GP. (DAG).

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#12

ORIG/MSG NO: 3/7087 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: CP
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210351AAUG79
QTY:

UNIT: IDP
ECH : BN
TYPE : AR
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB761010

SOURCE: CEINT/10
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes.

#13

ORIG/MSG NO: 9/0884 FILE: ESD ACTION : A FILE NAME: PREC: R

SCTY: RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED: 15
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BN LOC: NB730238
TYPE : UNK :
EMPL : :
NATION : AE :
:
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 100 :

SOURCE: SLAR/10
AGENCY:
EVAL: B1

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#14

ORIG/MSG NO: 3/7111 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: CP
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210357AAUG79
QTY:

UNIT: 3
ECH : BN
TYPE : INME
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB961111

SOURCE: CEINT/10
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#15

ORIG/MSG NO: 15/7552 FILE: ESD ACTION: A FILE NAME: PREC: Z

SCTY: U RESTR: DISTR:

SUBJ: VEH
LABEL:
SIG-EVENT?:

ACTV: MOVSW
SPEED: 18
DIR: 225

ACTV-TIME: 210403AAUG79
QTY:

UNIT:
ECH :
TYPE :
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 150

LOC: NB870018

SOURCE: RECNGE/52
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS: LARGE NUMBERS OF HEAVY VEHICLES ADVANCING ON ROADS THRU LOCATION NOTED. APPEAR TO REFLECT BN-SIZE FORCES.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#16

ORIG/MSG NO: 15/400 FILE: ESD ACTION: A FILE NAME: PREC: I

SCTY: U RESTR: DISTR:

SUBJ: ARTY
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY: 1

UNIT: UNK
ECH : BTY LOC: NB830055
TYPE : FA :
EMPL : :
NATION : AE :
: :
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 70 :

SOURCE: RDRCM CH TO MSG: REF :
AGENCY: TASK NO:
EVAL: A2

REMARKS: DIV ARTY HAS LOCATED 31 EN ARTY PSNS (CONFIRMED) 122 MM-12, 130 MM-4, 152 MM-2, 122 MRL-1.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#17

ORIG/MSG NO: 50/0843 FILE: ESD ACTION : A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED:
DIR:

ACTV-TIME: 210345AAG79
QTY:

UNIT: UNK
ECH : BN LOC: NB780230
TYPE : UNK :
EMPL : :
NATION : AE :
: :
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 1000 :

SOURCE: CEINT/52
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#18

ORIG/MSG NO: 11/0858 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVSW
SPEED: 20
DIR:

ACTV-TIME: 210345AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : UNK
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 500

LOC: NB750160

SOURCE: RPV/23
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#19

ORIG/MSG NO: 3/0876 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: RGT
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : RGT
TYPE : UNK
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB763193

SOURCE: CEINT/13
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS: RGT CP

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#20

ORIG/MSG NO: 11/08112 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: 122
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210359AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : FA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 50

LOC: NB730183

SOURCE: RADAR/23
AGENCY:
EVAL: B1

CH TO MSG:

REF :
TASK NO:

REMARKS: DIV ARTY GP (DAG).

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#21

ORIG/MSG NO: 3/0895 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: FROG
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BTY
TYPE : FARK
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB859215

SOURCE: CEINT/10
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#22

ORIG/MSG NO: 11/08122 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: SA8
LABEL:
SIG-EVENT?:

ACTV: ENGAG
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BTY LOC: NB680215
TYPE : ADSA :
EMPL : :
NATION : AE :
:
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 100 :

SOURCE: RPV/23
AGENCY:
EVAL: A1

CH TO MSG: REF :
TASK NO:

REMARKS: SHOT DOW RPV OVER FLIGHT.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#23

ORIG/MSG NO: 6/82 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: JAMR
LABEL:
SIG-EVENT?:

ACTV: DETECT
SPEED:
DIR:

ACTV-TIME: 210352AAUG79
QTY:

UNIT:
ECH :
TYPE :
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR:

LOC: NB802108

SOURCE: CEINT
AGENCY: TAF
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS: VHF JAMMERS LOCATED.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#24

ORIG/MSG NO: 11/08106 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: SA8
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210401AAUG79
QTY:

UNIT: UNK
ECH : RGT
TYPE : ADSA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 1000

LOC: NB752190

SOURCE: CEINT/21
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

ORIG/MSG NO: 6/08123 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: SA8
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210400AAUG79
QTY:

UNIT: UNK
ECH : BTY LOC: NB680215
TYPE : ADSA :
EMPL : :
NATION : AE :
: :
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 100 :

SOURCE: IR/10
AGENCY:
EVAL: B1

CH TO MSG: REF :
TASK NO:

REMARKS: UNIT ACTIVATED RADAR IN RESPONSE TO RPV FLIGHT.

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#26

ORIG/MSG NO: 4/7536 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: SA6
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210401AAUG79
QTY: 1

UNIT: UNK
ECH : BTY
TYPE : ADSA
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 500

LOC: NB971058

SOURCE: CEINT/25
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#27

ORIG/MSG NO: 4/7069 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: CP
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210359AAUG79
QTY:

UNIT: 67
ECH : RGT LOC: NB837029
TYPE : INME :
EMPL : :
NATION : AE :
: :
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 1000 :

SOURCE: CEINT/35
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#28

ORIG/MSG NO: 15/7066 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVW
SPEED: 15
DIR: 270

ACTV-TIME: 210410AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : INME
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 100

LOC: NB790024

SOURCE: RECNAV/45
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#29

ORIG/MSG NO: 11/0866 FILE: ESD ACTION: A FILE NAME: PREC: R

SCTY: U RESTR: DISTR:

SUBJ: BN
LABEL:
SIG-EVENT?:

ACTV: MOVSW
SPEED:
DIR:

ACTV-TIME: 210355AAUG79
QTY:

UNIT: UNK
ECH : BN
TYPE : UNK
EMPL :
NATION : AE

TGT?:
TGT-NO :
ALT :
LOC-ERR: 100

LOC: NB730160

SOURCE: RECNAV/42
AGENCY:
EVAL: B2

CH TO MSG:

REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

#30

ORIG/MSG NO: 3/7116 FILE: ESD ACTION: A FILE NAME: PREC: P

SCTY: U RESTR: DISTR:

SUBJ: RGT
LABEL:
SIG-EVENT?:

ACTV: LOCD
SPEED:
DIR:

ACTV-TIME: 210359AAUG79
QTY:

UNIT: UNK
ECH : BN LOC: NB960098
TYPE : UNK :
EMPL : :
NATION : AE :
: :
TGT?: :
TGT-NO : :
ALT : :
LOC-ERR: 1000 :

SOURCE: CEINT/13
AGENCY:
EVAL: B2

CH TO MSG: REF :
TASK NO:

REMARKS:

ESSENTIALITY RATING [ ]

If desired, use this space for notes

APPENDIX A-3

PARTICIPANT MATERIAL: INSTRUCTIONS FOR SUMMARIZATION PHASE

(PRESENTED VERBABLY)

INSTRUCTIONS FOR SUMMARIZATION PHASE

(VERBAL)

To complete this exercise, we would now like you to do the following. Assume that the G2 and commander will be arriving at TOC momentarily. Your task is to prepare a summary or update briefing of the enemy situation for the G2. The summary should not be merely a listing of messages, but rather it should represent a thought-out and well-organized description of the situation. For our purposes, we ask that you write out the summary as you would say it directly to the G2; blue scrap paper will be provided to you on which you are asked to work. With respect to length, assume that your summary would take about 3 minutes to present orally, and that in final written form it should take up no more than 3 pages. Your summary cannot contain any drawings or graphics, although you may refer to map coordinates.

You will now be given up to 20 minutes to compose and draft your summary. Because this is a limited amount of time, we realize that you may not be able to provide a neat copy of the summary. However, since it is necessary that your summary be completely legible so we can analyze it, we must ask you to copy it over into final form. Thus, during the 20-minute period, all you need to do is to draft your summary on the blue scrap paper. Then, at the completion of that period, all materials, except the blue sheets, will be collected and you will be given special sheets upon which to copy the final summary.

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AD-A078 021 VECTOR RESEARCH INC ANN ARBOR MICH F/G 5/9
INFORMATION SUMMARIZATION IN A CORPS-LEVEL SCENARIO.(U)
OCT 79 R E GEISELMAN , M G SAMET DAHC19-78-C-0027
UNCLASSIFIED VRI-ARI-3-FR79-1 ARI-TP-385 NL

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APPENDIX B

INSTRUCTIONS FOR RATERS

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Instructions for Raters

Perceptronics is currently engaged in an empirical study of the quality and structure of tactical-situation summaries prepared by staff officers working in a TOS-like context. In this study, 18 advanced students at the U.S. Command and General Staff College at Fort Leavenworth were asked to role-play an intelligence-section TOC duty officer at the Corps level. After reading a tactical scenario of a developing conflict in Europe and reviewing an enemy situation map, the students were asked to study 30 Enemy Situation Data (ESD) messages said to have been received over a specific half-hour period. Their task was to summarize the information contained in the 30 messages in preparation for a three-minute briefing to the G2 on the events transpiring during the half-hour period. The students were told that their task was simply to inform the G2, who had been absent during the half-hour period, of the enemy situation; they were not to make tactical recommendations. The summaries were written out by the students; they were not allowed to draw pictures, but they were allowed to refer to map coordinates. In brief, they were to write the summary as they would say it given only three minutes with the G2.

Enclosed are:

(a) a description of the tactical scenario (excerpted from instructions to subjects)

(b) the 30 ESD messages as presented to the students in standard TOS format (keys to the format and abbreviations are included)

(c) typed copies of the 18 student-generated summaries of the messages, with an evaluation sheet attached to each

The first thing we would like you to do is to read through the scenario and messages. We realize that you may be overly familiar with this scenario, but you should keep in mind that the summaries you are to judge were based only on the 30 messages included here. Then, after you have studied the

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scenario, read each of the 18 summaries over once. This initial view of all summaries will help you establish a framework for the individual summary evaluations we wish you to make.

An evaluation sheet (printed on legal-size paper) has been attached to each of the 18 summaries. Using these forms, we would like you to judge the quality of each summary with respect to three general evaluative attributes. The first attribute is information content, which refers to the appropriateness of the scope of the information selected for inclusion in the summary. That is, to what degree does the summary include what the G2 should know, yet exclude what the G2 does not need to know? The second attribute is information accuracy, which indicates the degree to which the information presented in the summary correctly reflects the detailed information contained in the messages. In other words, is the information included in the summary true or plausible? The third attribute is information organization, which reflects how well the important bits of information are presented in an order that would facilitate understanding of the tactical situation by the G2. That is, how adequate is the structure of the information presentation? Your rating for each attribute is to be indicated on a five-point scale ranging from "very poor" to "very good"--please mark the appropriate box in each case.

We would also like you to make critical comments concerning what you think are the positive and negative characteristics of each summary. As you analyze a given summary, consider and briefly write down what you feel is particularly good about this summary or particularly bad about it. These comments should reflect more specifically stated qualities than the three general evaluative attributes given at the top of the rating sheet. Please list the good and bad qualities of each summary legibly in the respective columns provided on the evaluation sheet; and please try to specify at least one "good" trait and one "bad" trait for each summary. If you need more room, additional space for specific comments is available on the back of the evaluation sheet.

Finally, for each summary, we need your single assessment of the overall quality of the entire summary; in other words, as expressed by the summary, how well did the student performing the summarization task role-play the duty of the G2-section TOC duty officer? This judgment is made in the form of a quantitative rating on a 0-to-100 quality scale, with the correspondence between some numerical anchors and their verbal tags shown as a guideline in the box in the lower left portion of the evaluation sheet. Your assigned overall rating for a summary, which can be any number between 0 and 100, should be recorded in the box provided in the lower right corner of the sheet.

We realize that the tasks we are asking you to do are somewhat time-consuming. However, we need your work returned within ten days in order to complete this phase of our program on schedule; for your convenience we have enclosed a return-mail envelope. Therefore, we would like to thank you in advance for your speedy cooperation.

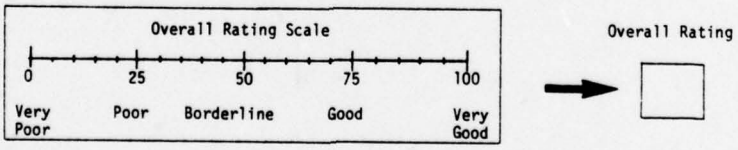
SUMMARY EVALUATION SHEET

Summary No._____ Rater_____

Attribute	Very Poor	Poor	Borderline	Good	Very Good
CONTENT --appropriateness of scope of information included.	☐	☐	☐	☐	☐
ACCURACY --correctness or plausibility of information in light of message content.	☐	☐	☐	☐	☐
ORGANIZATION --logic of order of information presentation.	☐	☐	☐	☐	☐

COMMENTS

POSITIVE QUALITIES | NEGATIVE QUALITIES



APPENDIX C

THE PARTICIPANTS' SUMMARIES

[Summaries are presented in descending order of quality; the average overall evaluation and quality classification is provided with each summary]

APPENDIX C

THE PARTICIPANTS' SUMMARIES

[Summaries are presented in descending order of quality; the average overall evaluation and quality classification is provided with each summary]

SUMMARY NO. 1

There have been significant reports (30) indicating enemy activity in 3 primary axes and possibly a fourth.

The major activity occurs in the south of the Corps sector in two areas. First, along the axis Gerthausen (NB850030) - Thaide (NA720999): the cavalry reports mechanized infantry penetrations of 1 KM vic NB725005; visual recon shows BN-size forces moving SW vic NB870018 and vic NB790024; a regimental CP has been reported near Gerthausen (NB837029); and several reports of both confirmed and probable DAG and RAG locations in grid square NB8000. ADA in this same general area indicate a possible division attack in progress.

The second major activity in the south occurs along the axis Urnhausen NB830210 - Fulda (NB480020), where a two-axis attack, probably a division, appears in progress. The southern of these two axes is an attack toward Schlitzenhausen NB710130, as indicated by visual recon reports of a BN moving southwest vic NB730160, drone reports of another battalion moving SW vic NB750160, and a probable regimental CP location vic NB763193, and SLAR reports of a battalion-size force moving SW vic 730160, plus several reports of possible DAG and ADA locations. A VHF jammer located vic NB802108 may indicate this is part of the main attack.

On the northern axis of this attack, corps elements are in contact with 2 MRBn's and one Tank Bn vic NB6518. Also, a probable DAG has been located vic NB800239. Numerous ADA sitings have been reported from this area.

In the northern part of the corps sector, corps elements are in contact with 2 MRBn's and a tank Bn vic NB6745. SLAR reports indicate a Bn-size element crossing the border vic NB6644. At least a regimental attack appears in progress here.

There have been other lone reports in the area between the northern attack and the two attacks in the south. Another attack may develop along an axis here, but it appears too early to say.

Average Overall Evaluation = 78.8, "good."

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SUMMARY NO. 2

There has been activity reported all along the border and units are engaging. The overall situation is still vague as to the exact location of the enemy's main and/or supporting attack. He has penetrated 1 KM past the border with mech. infantry columns. We are fighting a delaying action and are engaging the lead elements. The penetration was in the southern sector of the Corps zone at NB725005. Large numbers of vehicles on the road at NB870018, possibly reinforcing the penetration. Several locations of DAG's and RAG's were noted in messages received and are located as follows (show on map). Some are not confirmed sightings.

Two units are in contact in the northern sector of the Corps zone. Both units are fighting 2 MR BNs and one tank BN respectively. We can make an assumption that the 1st echelon forces crossing the border.

Elements are also crossing the border in the northern zone of the Corps sector at NB7245, indicating their efforts to attack at multiple locations for the most successful penetration, and to provide rapid advance once this success is made. Crossing elements at NB7245, 6644, and 7133 all along the border.

Average Overall Evaluation = 71.6, "good."

SUMMARY NO. 3

All available Intelligence sources reported heavy enemy vehicular movement in a westerly and south-westerly direction toward the border from 0345-0400.

SLAR reports indicated initial border crossings at 0400 Hrs. in the vicinity of NB7133, 6644, and 7245. Tenth Corps forward echelon units reported being attacked by multi-battalion-strength combined arms forces, commencing at 0400 Hrs. These engagements occurred at NB6518, 6745, and 725005. At 0403 reconnaissance flight 52 observed large numbers of heavy vehicles moving west at 870018. The units were estimated to be BN size.

Since initial crossings, all Intelligence sources continue to report BN-size enemy unit movements to the west.

Artillery unit locations have been reported by radar and enemy jamming locations have been pinpointed. An enemy FROG unit has also been located.

Average Overall Evaluation = 69.0, "good."

SUMMARY NO. 4

The enemy began attack at 0400 21 AUG 79. Regimental elements have crossed the international border and are engaging U.S. forces at NB6745 (2 MRB, 1 TKB), NB6518 (2 MRB, 1 TKB) and NB7200 (1 MRB). In addition, significant enemy movement of Battalion-size elements toward the international border has been detected at NB7902, NB7823, NB7601, NB7316, NB7324, NB8702, NB7516, NB7245, NB6644, NB7133.

Possible Division ARTY Groups have been located at NB306, NB7318 and NB8024. A FROG BN has been detected in the vicinity of NB8521.

Enemy has initiated electronic jamming and air defense measures are being utilized against our aircraft.

Identification of enemy units has not been made.

Average Overall Evaluation = 65.6, "good."

SUMMARY NO. 5

As of 0400, the enemy has crossed the international border in several locations in both the 23rd and 52nd Division sectors. At least one MRR is attacking along the E70 Autobahn and one in vicinity of grid 6518. The enemy appears to be supported by the normal RAG's and DAG's. Radar has located at least 31 enemy ARTY positions, several SA8 locations and one FROG unit located vic grid 8521. There have been no reports of enemy air action or use of chemical munitions. We have no casualty reports. The cavalry units along the border have engaged the enemy and have started a delaying action. We have not been able to determine the axis for the main attack and will have to wait on additional information.

Although there are reports of BN-size units moving SW toward the 52nd Divisions's sector, we need additional reports to locate the 2nd echelon locations.

Average Overall Evaluation = 65.6, "good."

SUMMARY NO. 6

At approximately 210350 AUG we started receiving reports of enemy movement both from SLAR and the cavalry units along the border. The reports indicated that tank and mechanized infantry were moving generally southwest.

At 210400 AUG enemy elements attacked our border positions in strength. Two motorized rifle battalions and a tank battalion attacked in the vicinity of NB6518. Additional contacts took place throughout our zone at NB 725005, 6745 , 6518, and 7245. Initial indications are that they were from the First echelon.

Additionally, enemy DAG have been reported at NB820255, and NB870045. A FROG battery has been located in the vicinity of NB850240. These positions are relatively close to the line of contact and would seem to indicate the enemy's desire to make a major push in these areas.

However, most of the reports that would seem to indicate second echelon forces moving up are taking place in the vicinity of our southern boundary. Reports indicate heavy movement of mechanized infantry and tanks in the vicinity of NB870035. All reports indicate the movement is to the southwest.

Enemy ADA assets appear to be moving to positions near the border to provide effective coverage to the attack forces.

Average Overall Evaluation = 59.2, "good."

SUMMARY NO. 7

Units along the international border report that the enemy has attacked across the border with a mechanized force of unknown size at 210400 AUG 79. This action has been confirmed by SLAR and CEINT sources. Reports indicate the enemy crossed at several locations along the front from NB7248 to NB7205. The heaviest action appears to be concentrated in the North with two regiments reported crossing at NB6518 and NB 6745.

As of 210405 AUG 79, 5223 CAV reported the enemy as having penetrated 1 KM vic BN725005.

Forces along the remainder of the front report that they are engaging the attacking enemy, but data as to the depth of penetration is not yet available.

There has been some success in locating enemy artillery, air defense, and CP positions. DIV ARTY has confirmed the location of 31 enemy artillery positions.

SLAR and CEINT report that enemy mechanized units are moving from their positions toward the international border.

Average Overall Evaluation = 54.4, "borderline."

SUMMARY NO. 8

At this time, it appears that the heaviest attack is in the 23rd sector. A secondary effort is being made in the 52nd sector near the 23/52 boundary.

About 25 KM behind the border in the 23rd sector is what appears to be the lead Regt. of the 2nd echelon Div. It is too early to confirm.

About 15 KM behind the border in the 52nd sector, along the 23/52 boundary, is what appears to be the second echelon Regt. of the lead Div.

Based on the above, it would be logical to assume that an enemy Div. boundary exists very close to the 23/52 boundary, with the probability that it is between 5-15 KM south of the 23/52 boundary.

Significant Events are:

BN at 6745 - 1E, BN at 6518 - 1E, BN at 7200 - 1E, BN at 7323 - 2E Regt (?), BN CP at 9611 - 2E Div (?), BN at 7823 - 2E Regt (?), Regt at 7619 - 2E Regt, 122 of 1E - possible DAG, FROG 1E - possible DAG, BN at 7902 - 1E, and Regt at 9609 - lead of 2E Div.

Average Overall Evaluation = 53.0, "borderline."

SUMMARY NO. 9

Enemy ATK initiated at 0330 with Hvy ATK by indirect fire across entire Corps sector. Enemy crossed international border at 0345 with recon elements vic NB6730. During next 15 minutes, crossed in BN formations on Regt avenues at 8 locations. Appears to have committed 4 Div to CAA 1st echelon. ATK not completely coordinated: Units in south 10 minutes behind center and north. Hvy BN-size movement toward border and regimental CP locations in center/southern sector. Possibly CAA 2nd echelon forces. No indicator of 2nd echelon forces in north yet.

Enemy ARTY units were located vic NB8305 (RAG); 7823 (DAG); 859215 FROG BN. Pattern of enemy ARTY well forward. No ARTY identified in north yet.

Air defense Hvy in center sector. SA8 located vic NB680215 and 752190 with Div 1st echelon. SA6 vic 971058 with Div 2nd echelon. Only one incident of jamming from vic NB802108 at 0352 Hrs.

Location of 2nd echelon forces remains unk. Current disposition indicates center and southern sector most likely area for employment. Current ARTY, ADA, jamming effort and location and troop movement indicate 10 Corps center sector most likely main ATK.

Average Overall Evaluation = 50.0, "borderline."

SUMMARY NO. 10

The following actions have taken place during the time frame 0355A. to 0430A. 21 AUG:

A regimental ATK vic NB680215; another regimental ATK vic N7301, with a DAG located 7318; SA-8 firing with subsequent destruction of unmanned drone vic NB752190; Element of vic NB800239 & 859215; and regimental CP vic 837029 w/ 122 mm. Bn 830055.

From this information, we feel 2 Divisions can be templated; but designations of unit I.D.s are not confirmed. Obviously, the enemy is attacking, but the main ATK has not been identified.

Average Overall Evaluation = 49.0, "borderline."

SUMMARY NO. 11

At approximately 210400 AUG 79, the enemy launched an attack across the international boundary on three fronts (vicinity 6745, 6518 and 725005). The enemy is attacking with the motorized rifle regiments of the Motorized Rifle Divisions in the 1st echelon of the First Zappadnian Front. (Reports do not identify specific units.)

At 210400 AUG 79, Front-line troops of the 2nd Bde engaging the enemy.

At 210400 AUG 79, the 5223 CAV is engaging the enemy and delaying Corps targeting information: DAG ARTY - 800239, Enemy ARTY P5N5 - NB830055 (122, 130, 152 and 122 MRL), Reg CP - NB763193, DAG - NB730183, FROG - NB859215, and ADA (SA8) - NB680215, 752190.

Average Overall Evaluation = 47.8, "poor."

SUMMARY NO. 12

The Warsaw Pact crossed the border at 210400 AUG following an intensive ARTY preparation. Since the initial penetration in the 23 AD sector, several other BN-size forces have crossed the border throughout the Corps sector. It appears that at least 12 BN-size forces have been reported by elements of the Corps. In addition, two regiments have been reported; one in each division sector. These regiments could be the reserves or counter-attack forces for the 1st echelon armies making the penetration.

130 mm, 122 mm, MRR and FROG weapons systems have been located. The FROG is of particular importance because of its nuclear/Bio-chemical capability.

SA6 and SA8 Air Defense Weapons have been reported in the Corps sector. In addition, an acquisition radar site was located.

CEINT efforts have also located a VHF Radio Jammer in the 52nd Div. sector across the border.

The deployment of the forces at the current time indicates that a major effort is under way throughout the Corps sector, but the location of the FROG and a possible enemy Regt in the 23 AD sector, along with the good avenues of approach north of Fulda indicates that the main effort of the penetration will most likely be in the 23 AD sector.

Average Overall Evaluation = 45.6, "poor."

SUMMARY NO. 13

Commencing 210400 AUG 79, SLAR Rpts lead elements crossed border vic. NB7245, NB6644 and NB7133. Our forces rpt engaging 2 MRB and 1 TB vic. NB6745 and NB6518. At 210405 AUG 79, 5223 CAV rpt elements of MRB penetrated 1 KM vic. NB725005. Rpts indicate ARTY concentrations as indicated: DAG vic NB800239; RAG vic NB830055; DAG vic NB730183; FROG vic NB859215; SA8 vic NB752190; 122 vic NB881020; 122 vic NB790056; and SA6 vic NB971058. Enemy has VHF jammers loc vic NB802108, 210352 AUG 79. The following major units have been located:
67 Rgt CP vic BN837029, Unk Rgt vic NB960098, and Unk Rgt CP vic NB763193. We have not yet located the enemy 2nd echelon.

Average Overall Evaluation = 44.4, "poor."

SUMMARY NO. 14

Enemy forces have crossed the International Border and began their attack at 210400 hours across the 10th Corps front. Elements of the 23rd Div in the South have initiated delay activities: The preponderance of enemy movement reported indicates a south-westerly direction.

The following enemy artillery sites have been located: 122 mm Btry - NB881020, NB790056, and NB730183; 130 mm BN - NB800239 (DAG); and FROG BN - NB859215. Our Div Arty has positive locations on 31 enemy Arty positions.

The following enemy unit C.P.s have been located: BN-size - NB761010, and NB961111; Reg-size - NB763193, NB837029 (67th Reg), and NB960098.

SA8 sites have been located at: NB680215 and NB752190.
SA6 is located: NB971058.

The most numerous sitings have occurred in the southern portion of the 10th Corps zone.

Average Overall Evaluation = 41.0, "poor."

SUMMARY NO. 15

The following list of events have occurred since 0345 Hrs.

1) Enemy attack at 0400 Hrs: COORD: NB6745, NB6518. (BN size).

2) Enemy RGT Locations: COORD: NB960098, NB763193, NB730183, NB790056, NB881020.

3) Enemy ARTY Locations: COORD: "FROG", NB859215; DAG: NB800239, SA8, NB68000215, NB752190, SA6, NB971058.

4) Enemy TRP Concentrations at: COORD: NB7245, NB6644, NB7133, NB730238 (RPT SLAR).

5) Enemy movement reported at: COORD: NB730160, NB780230, NB750160, NB852059 (BN size).

Average Overall Evaluation = 38.0, "poor."

SUMMARY NO. 16

Enemy initiated action by crossing the international border at NB6644 and at NB6745. The forces in the center sector are probably a tank Div's 1st echelon (2 mech and 1 tnk Rgt). They have continued the attack and advanced a Km or more across the border. A regimental H.Q. has been located at NB763193. This indicates the main attack will probably come in this sector. This would make use of the border salient in front of that position. This is also supported by the location of the FROG Btry at 859215, indicating the presence of at least a DAG, but probably army-level Arty support. Another regimental H.Q. located at 837029 further supports this assumption. Additional RAG's have also been located in this sector. The enemy has begun to attempt to jam our communications systems. It appears the enemy main thrust will be in our central sector. Present Intelligence efforts have not located the enemy second echelon.

Average Overall Evaluation = 37.4, "poor."

APPENDIX D

THE RATERS' EVALUATIONS

RATER A

SUMMARY	QUALITATIVE DIMENSIONS			OVERALL EVALUATION
	CONTENT	ACCURACY	ORGANIZATION	
1	4	4	4	75
2	4	4	4	75
3	3	2	3	35
4	2	3	3	40
5	3	3	3	45
6	4	4	4	75
7	3	2	4	50
8	4	4	4	70
9	4	4	5	80
10	3	3	2	40
11	3	3	4	55
12	3	1	4	40
13	3	3	4	55
14	1	2	3	25
15	2	3	1	20
16	1	1	3	20
AVERAGE	2.94	2.88	3.44	50.3

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RATER B

SUMMARY	QUALITATIVE DIMENSIONS			OVERALL EVALUATIONS
	CONTENT	ACCURACY	ORGANIZATION	
1	5	5	5	99
2	3	3	3	50
3	4	4	4	80
4	3	3	3	50
5	4	4	4	80
6	2	3	2	25
7	4	4	4	68
8	4	4	4	80
9	3	3	3	50
10	3	3	3	50
11	1	1	1	24
12	2	3	3	45
13	2	2	2	25
14	3	4	2	25
15	3	4	3	50
16	2	2	3	27
AVERAGE	3.00	3.25	3.06	52.7

RATER C

SUMMARY	QUALITATIVE DIMENSIONS			OVERALL EVALUATION
	CONTENT	ACCURACY	ORGANIZATION	
1	5	3	5	75
2	5	5	5	98
3	3	4	5	80
4	2	5	3	68
5	2	4	3	58
6	2	2	4	50
7	3	3	4	59
8	2	2	1	20
9	3	2	3	30
10	2	4	4	60
11	2	4	2	50
12	2	2	5	58
13	1	1	1	00
14	1	3	2	30
15	1	4	1	25
16	5	4	5	85
AVERAGE	2.56	3.25	3.31	53.0

RATER D

SUMMARY	QUALITATIVE DIMENSIONS			OVERALL EVALUATION
	CONTENT	ACCURACY	ORGANIZATION	
1	4	4	4	90
2	4	4	4	75
3	3	4	4	75
4	3	4	4	80
5	4	4	4	85
6	5	2	4	96
7	3	3	3	40
8	4	4	4	75
9	3	4	4	50
10	4	3	4	60
11	4	3	3	65
12	1	2	4	40
13	4	4	4	92
14	3	3	4	60
15	4	4	4	70
16	2	2	3	30
AVERAGE	3.44	3.38	3.81	66.0

RATER E

SUMMARY	QUALITATIVE DIMENSIONS			OVERALL EVALUATION
	CONTENT	ACCURACY	ORGANIZATION	
1	2	4	4	55
2	3	3	2	60
3	4	4	4	75
4	4	5	5	90
5	3	3	4	60
6	3	4	4	50
7	3	3	4	55
8	2	2	1	20
9	3	2	3	40
10	2	3	2	35
11	3	4	2	45
12	3	2	3	45
13	3	4	2	50
14	3	4	4	65
15	2	4	1	25
16	2	2	2	25
AVERAGE	2.81	3.31	2.94	50.0

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1 HQDA (DAPE-MPO-C)
1 HQDA (DAPE-DW)
1 HQDA (DAPE-HRL)
1 HQDA (DAPE-CPS)
1 HQDA (DAFD-MFA)
1 HQDA (DARD-ARS-P)
1 HQDA (DAPC-PAS-A)
1 HQDA (DUSA-OR)
1 HQDA (DAMO-RQR)
1 HQDA (DASG)
1 HQDA (DA10-PI)
1 Chief, Consult Div (DA-OTSG), Adelphi, MD
1 Mil Asst, Hum Res, ODDR&E, OAD (E&LS)
1 HQ USARAL, APO Seattle, ATTN: ARAGP-R
1 HQ First Army, ATTN: AFKA-OI-TI
2 HQ Fifth Army, Ft Sam Houston
1 Dir, Army Stf Studies Ofc, ATTN: OAVCSA (DSP)
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