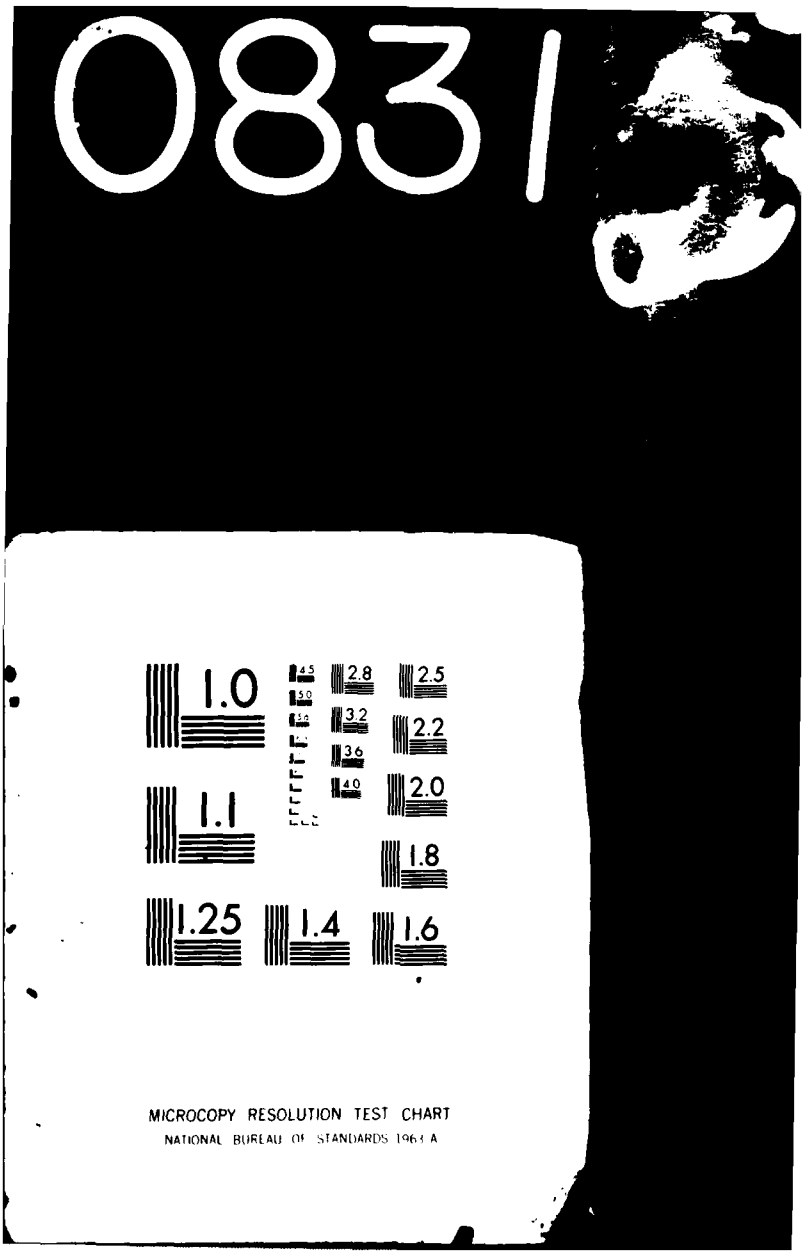
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Commander
US Army Concepts Analysis Agency
ATTN: Systems Force Mix Directorate
8120 Woodmont Avenue
Bethesda, Maryland 20014

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Electronic Warfare	Communications Intelligence	War Games
Simulation	Radar Interception	
Electronic Countermeasures	Tactical COMM/EW Analysis	

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

This document is a manual to assist military and operations research analysts in the use of the Divisional Electronic Warfare Combat (DEWCOM) computer simulation model. The manual was prepared by C.A.C.I., Inc.-Federal under contract to the US Army Concepts Analysis Agency. The DEWCOM Model is a two-sided stochastic combat simulation model which focuses upon tactical communications and electromagnetic intelligence/threat acquisition systems and the electronic warfare (EW) directed against those systems. To accomplish this, the model is driven by conventional tactical engagement between a blue maneuver force against

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a red maneuver force. Each side consists of realistically deployed ground and close air support forces that include maneuver units, EW units, artillery units, and support units. The tactical war is driven by a set of orders that may direct units to attack, defend, move, delay or withdraw. As units begin to take tactical actions, messages are triggered which are transmitted over explicitly modeled communication links. The successful completion of these message transmissions is necessary for units to respond in the desired manner. Intelligence is gathered through direct observation of units in contact, radars, and from messages that flow between units. Increases in intelligence can in turn cause messages to be generated which may be sensed or acted upon. As messages are being transmitted over the communications facilities of one side, they are subject to being sensed by the opposing side. Several possible actions may be taken by a side upon becoming aware of the messages of the other side. The messages may be jammed, intercepted, the originator may be located, or no action at all may be taken. Intercepting a message or locating a transmitter allows an increase in the knowledge or intelligence. The model is run as a pure simulation for about 8 to 12 simulated combat hours.

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DIVISIONAL ELECTRONIC WARFARE COMBAT (DEWCOM) MODEL

USER MANUAL

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1.0 INTRODUCTION

1.1 Modelling and Simulation

Most phenomena of the real world can, when taken individually, be described in the language of mathematics as a set of fixed relationships obeying the fundamental laws of nature or the more empirical approximations drawn from observation. For example, the distance travelled by a body moving at a fixed velocity can be expressed as "distance = velocity x time". Another statement of relationship might be the "radius of damage of a nuclear burst increases as the cube root of the yield". One can combine these two expressions to determine the amount of warning required by a person at desired ground zero (DGZ) of a nuclear device of given yield if he is to escape the blast by moving away from it at a given velocity. It is not necessary to actually explode weapons of various yields while people are driving away from DGZ at various speeds.

The development and use of a set of these abstract relationships to determine the outcome or the intermediate conditions of some collection of interacting real world phenomena is called "modelling", and the set itself is called a model. In the example above, if a number of weapons of various yields are exploded at various times and places over a large number of people in vehicles having different rates of speed, the computations become extremely tedious and complicated. The problem can best be resolved by transferring the computations to a large scale computer which does the arithmetic at lightening speed, and can keep track in its memory of all the events as they occur. This, then is called a "computerized model".

If, during the sequence of events in the above example, the drivers have opportunities to make choices depending upon their observation of the situation, these choices can be added to the model by inserting a set of logical rules into the list of instructions that the computer follows. For example, at any fork in the road, the vehicle takes that fork which leads most directly away from the most recent blast.

If there is a known probability that a particular weapon will not fire, then over a large number of weapons, the performance of each individual weapon can be determined by the throw of dice. Suppose the chance of failure is one out of six. If the dice comes up a six, for example, that weapon is said to fail. Such a procedure using random numbers instead of dice in the computer adds the capability of handling probabilistic processes in the model. Such a model is called a stochastic model.

A large and complex model, containing logic and probability, which runs on a computer from the initial conditions to completion without human intervention is usually called a simulation. This is a general term for the manipulation of the symbolic representation of a highly complex set of interacting events taking place over a period of time.

In order to simulate a particular real world activity, the mathematical expressions for the model must include all the factors significant to this activity and reflect faithfully their real life relationships. Moreover, in order that the model may be used more than once, these factors must be expressed so as to accept values of varying magnitudes for the many possible situations encountered in real world activity.

1.2 The DEWCOM Model

The DEWCOM Model is a two-sided stochastic combat simulation model which focuses upon tactical communications and electromagnetic intelligence/threat acquisition systems and the electronic warfare (EW) directed against those systems. To accomplish this, the model is driven by conventional tactical engagement between a blue maneuver force against a red maneuver force. Each side consists of realistically deployed ground and close air support forces that include maneuver units, EW units, artillery units, and support units. The tactical war is driven by a set of orders that may direct units to attack, defend, move, delay, or withdraw. As units begin to take tactical actions, messages are triggered

which are transmitted over explicitly modeled communication links. The successful completion of these message transmissions is necessary for units to respond in the desired manner. Intelligence is gathered through direct observation of units in contact, radars, and from messages that flow between units. Increases in intelligence can in turn cause messages to be generated which may be sensed or acted upon. As messages are being transmitted over the communications facilities of one side, they are subject to being sensed by the opposing side. Several possible actions may be taken by a side upon becoming aware of the messages of the other side. The messages may be jammed, intercepted, the originator may be located, or no action at all may be taken. Intercepting messages or locating enemy transmitters increases a unit's level of intelligence of the opposing force. The model is run as a pure simulation for about 8 to 12 simulated combat hours.

The DEWCOM Model provides for user entry of data describing a number of factors affecting the outcome of combat, including such things as:

- Combat organization
- Communications organization
- Equipment
- Terrain
- Orders

The model can produce two sets of reports, individually selectable by the user at run time. The first set consists of formatted listings of input data as submitted by the user, one report for each major category of data. The second set consists of results of the simulation based on the input data and the internal logic of the model. In addition, the model generates an output file from which the user can prepare adhoc reports as required.

2.0 THE DEWCOM MODEL

2.1 Description

2.1.1 Design Characteristics

The DEWCOM Model is designed to simulate the concepts used in tactical combat, including communications-electronics and electronic warfare (EW). The model permits the analysis of communications, radars, and EW systems. The following features are incorporated in the model:

- Provision for two-sided tactical warfare with flexibility in force structure, organization, and doctrine. Through changes in model input, essentially any mix of echelons of combat forces can be simulated (e.g., Battalion to individual items of equipment, or Corps to Company, or Echelons above Corps to Brigade/Battalion). Limiting factors to what can be represented are computer size and/or model running time; such limitations may potentially be offset by simulation of a slice of the echelons to be studied.

- Realistic message processing, with the ability to depict non-degradable and degradable communications independently for either side.

- Two terrain models, one of which is the basis for line-of-sight (LOS) calculations and the other for mobility and combat attrition routines.

- Flexible artillery algorithms which allow indirect fire artillery missions as well as direct fire missions.

- Description of weapon destructive effects and attrition as a function of target class, range, posture, and other variables.

- The ability to represent command and control capabilities.

- Provision for units to change posture during the course of the battle.

- Provision for units to have a succession of tactical objectives.

- Unit movement and provision for interruption or changes in unit movement based on intelligence and force ratios.

- Provision for two-sided electronic warfare functions of jamming, intercepting, and direction finding.

- Display of radar and communications transmitters as tactical signal emitters.

- The capability to reflect ground-to-air and air-to-ground data links and jammers.

- The capability to utilize communications intelligence.

- Direction finding (DF), including the capability to discriminate between long and short range DF for both intelligence implications as well as artillery targeting.

- Close air support, including rotary wing and fixed wing aircraft. Sortie attrition and failure rates are included.

- Provision for intelligence gathering and dissemination.

2.1.2 General DEWCOM Structure

The overall DEWCOM methodology is reflected on the foldout diagram on the facing page and consists of the following elements:

- The input data, introduced by the user, containing all the variable data concerning such factors as organization, equipment, communications, terrain, etc. to be modelled.

- The data processor and its user-specified controls, which build the data set that drives the DEWCOM Model itself. The data processor performs certain input data verification functions by subjecting the data to reasonableness checks, builds the internal data structure from the user input, and produces reports based on the contents of the input data.

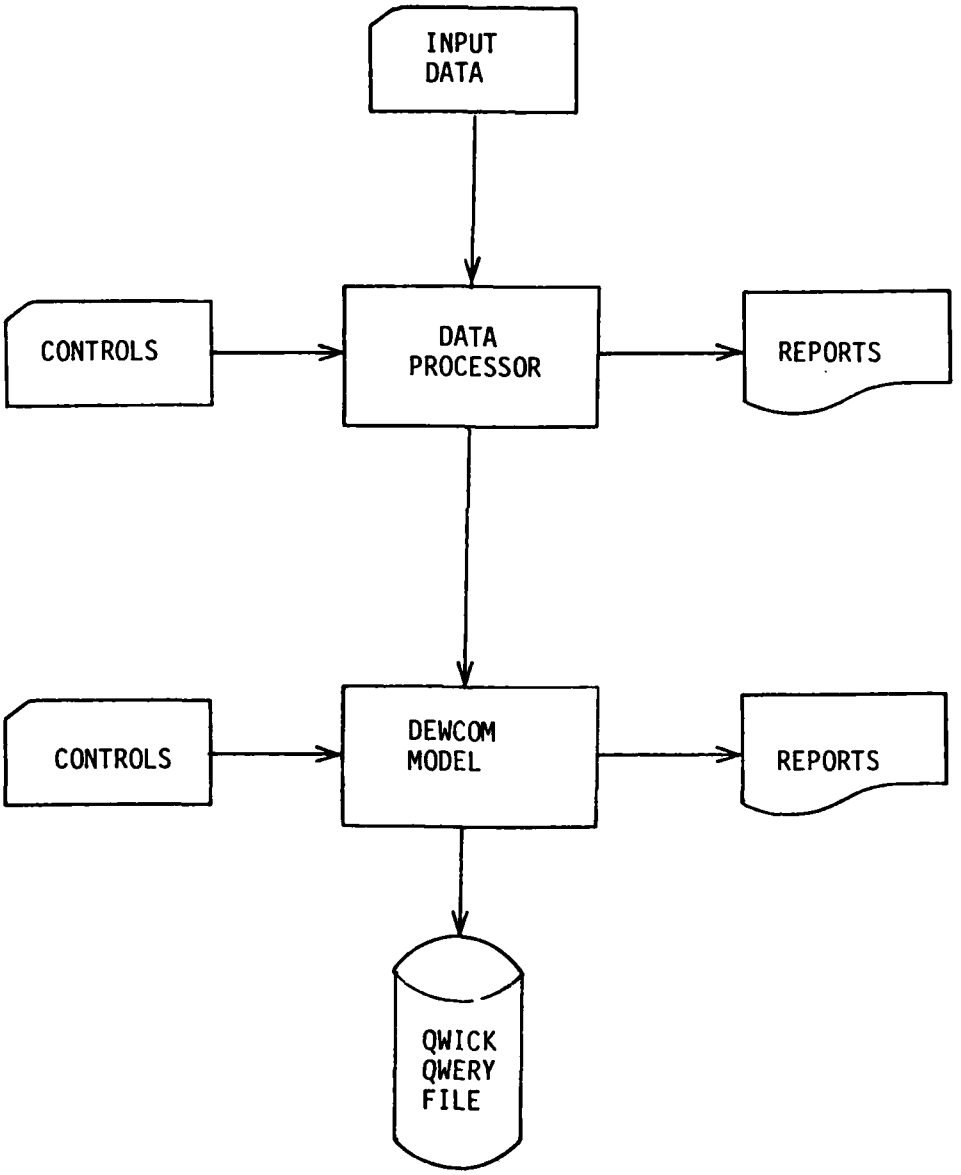
- The DEWCOM Model itself, consisting of a large number of computer routines organized into several modules which simulate the passage of time and the multitude of interrelated processes occuring during the combat period. The model produces user-specified standard output reports and an output file from which the user can generate desired ad hoc reports.

2.2 Methodology

2.2.1 Modules and Their General Functions

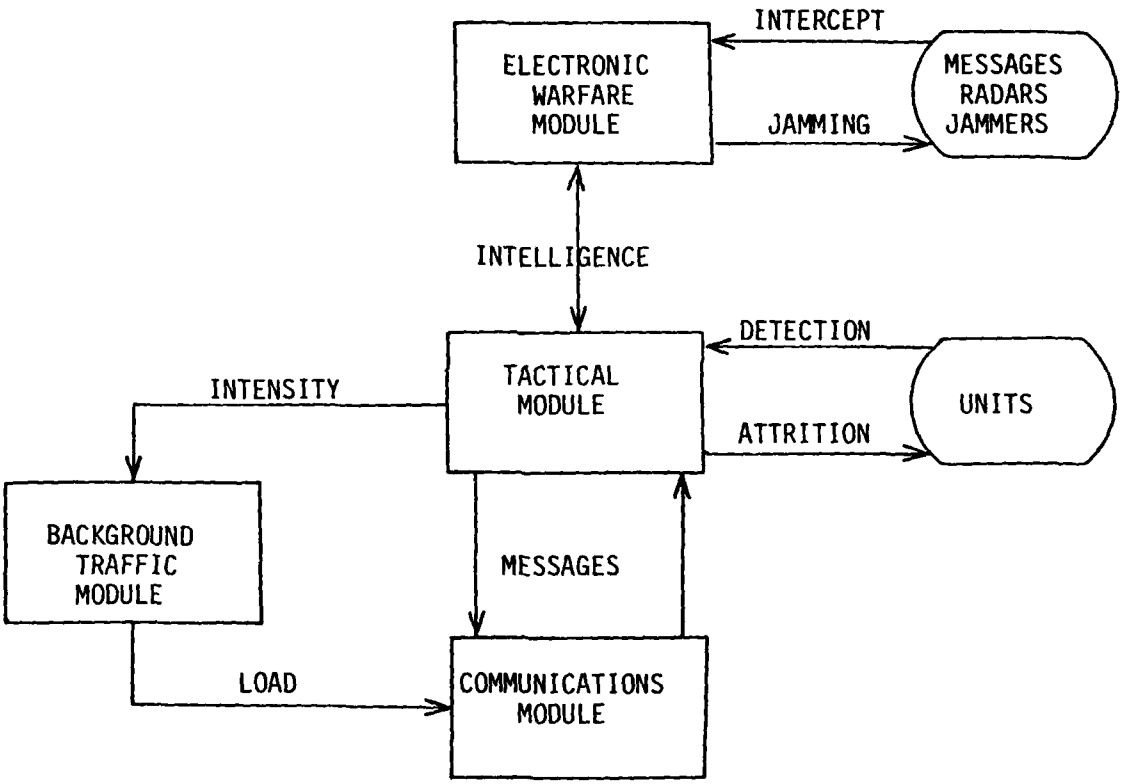
The DEWCOM model consists of several interrelated modules, as depicted on the diagram facing page 7. The major functions of each module are as follow:

DEWCOM
METHODOLOGY



DEWCOM

MODEL STRUCTURE



2.2.1.1 The Tactical Module

- o Maneuvers units on the battleground;
- o Processes orders for each unit;
- o Fires weapons at opposing units and causes losses of personnel and equipment;
- o Causes explicit messages to be transmitted;
- o Maintains command structure;
- o Collects intelligence from sources other than radar.

2.2.1.2 The Communications Module

- o Processes and routes messages;
- o Maintains status of communications facilities;
- o Maintains communications structures.

2.2.1.3 The Electronic Warfare Module

- o Intercepts enemy messages and radar transmissions;
- o Performs direction finding;
- o Jams enemy communications;
- o Performs communications intelligence;
- o Performs electronic intelligence.

2.2.1.4 The Background Traffic Module

- o Reflects message traffic implicitly;
- o Responds to tactical situations in volume of traffic.

2.2.2 How the Model Works

A main program provides central control for execution of the DEWCOM Model. The four modules mentioned above include many

complex computer programs which represent specific activities or conditions occurring in the combat situation, as described below:

- Unit Movement is controlled by tactical orders. Three types of orders (attack, move, withdraw) cause a unit to move. The unit moves until the desired distance is covered, and then it executes a new tactical order. Movement is by a distance rather than time increment. An input value controls the frequency with which a unit's position is updated.

- Direct fire attrition is an aggregated "force on force" approach. As units are moved, they may come into contact with opposing units, causing attrition upon each other. Reduction in strength is a function of terrain, range, force ratio, and weapons. The loss of strength by a unit can cause a change in tactical orders. For example, a unit may change posture from "defend" to "withdraw". Such a change could separate the opposing forces and cause direct fire attrition to stop.

- Indirect fire attrition is only applied when messages requesting such fire are received by the firing units. The routing of the message is determined by input data. Units generate requests for fire; the requests are communicated to firing units; and the missions are fired.

- Close air support may be requested by message sent by units to the headquarters controlling air resources. If the message succeeds, an air mission is ordered. If the communications fail because of jamming, the close air support mission is not initiated. For missions requiring ground coordination (user input) a subsequent message must succeed between a ground station and the aircraft before attrition can be applied.

- Command and Control is simulated in terms of orders and messages. As actions occur, messages are generated (based on input data) to direct units to take actions.

- Message processing is one of the most complex tasks performed by the model. This task takes the messages that are generated and routes them to the destination via links and nets defined by the input data. Message processing includes the delays that may occur for encrypting and decrypting, as well as those encountered when all available links are busy.

- Electronic Warfare (EW) actions (direction finding, jamming, and interception) are all directed by a set of EW orders described by input data. Direction finding and intercepting result in an increase in intelligence about the opposing side. Jamming results in the enemy being denied use of communications resources.

- Intelligence collection becomes the basis for many decisions in the model. Intelligence is gathered directly by units in contact with one another, direction finding, message intercepting, and radar. It is gathered indirectly from messages that flow between units. Artillery fire can be ordered as a result of increased intelligence, and attrition on one side changes in accordance with the amount of knowledge about that side by the opposing side.

- Implicit message functions are modelled since it is virtually impossible (and in most cases, not desirable) to model every individual message that is transmitted among the units in the simulation. For example, the delay time encountered by messages in the communications system may be increased as the amount of tactical activity increases.

- o Radar of two kinds is simulated in the model: counterbattery and detection. Counterbattery radar reacts to artillery fire and can gain intelligence about the firing unit. The detection radar gathers intelligence about the opposing units within range and line of sight.

- o Terrain is taken into account by the use of two terrain models. The first describes each grid square of the terrain with parameters affecting movement rates. The second (STAR terrain model) determines the presence of optical line of sight between any two points on the battlefield. This routine is employed for direct fire combat to determine if units can engage opposing units. The routine is also employed to determine radio line of sight. The signal loss for electronic transmission is based on the existence (or absence) of visual line of sight.

2.2.3 Model Operating Features

The model can be stopped, have data changed, and restart at the point it stopped. This permits changing tactics in the middle of a battle. It also allows the data that describes weapon performance to be changed. The change of tactics might be employed to model a commander declaring radio silence at some time. The change of the weapons data could be used to model a change in the environment such as the employment of smoke.

2.3 Limitations and Assumptions

For the purpose of developing the DEWCOM Model, certain size considerations came into play. In general, the number of communications nets increases with the size of the echelon. The information which follows concerning communications arrays and nets for U.S. and potential threat forces was used as a guide in the DEWCOM design to permit sizing the model. Since future systems which might require modelling may be structured in a much different manner, a certain degree of flexibility in the manner in which nets are depicted is incorporated in the model.

2.3.1 U.S. Forces

The following table is a depiction of the systems one might expect to encounter in a typical U.S. Corps. Representation of a Joint Tactical Information Distribution System (JTIDS) may well constitute an upper bound on the complexity of future communication systems to be addressed in the DEWCOM model. Application of packet radios and JTIDS systems within the tactical arena have not yet been specifically defined, so a generalized approach was taken in structuring the communications data base for the model.

ECHELON & NUMBER	NET FUNCTION	NUMBER OF NETS	AVERAGE NUMBER OF MEMBERS
CORPS	Command	3	8
	Fire Command	3	8
	Intelligence Dissemination	3	6
	Intelligence Collection	3	5
	Other (e.g., Air Req.)	3	6
DIVISION	Command	3	8
(1)	Fire Direction	5	6
	Intelligence Dissemination	3	6
	Intelligence Collection	9	4
	Other (e.g., Air Req.)	4	3
BRIGADE	Command	2	6
(3)	Fire Direction	2	4
	Intelligence Dissemination	2	4
	Intelligence Collection	3	12
	Other	2	8

BATTALION (11-14)	Command	2	6
	Fire Direction	1	4
	Intelligence	1	6
	Other	1	3
COMPANY (44-56)	Command	2	4
	Fire Direction	1	3
	Other	1	3
ADJACENT DIVISION (2)	Command	2	2
	Fire Direction	2	3
ADJACENT BRIGADE (2)	Command	2	2
	Fire Direction	2	2

2.3.2 Threat Forces

The following is a listing of net types one might encounter in a threat force. They are listed by echelon.

ECHELON & NUMBER	NET FUNCTION	NUMBER OF NETS	AVERAGE NUMBER OF MEMBERS
FRONT	Command	3	6
	Fire Direction	2	12
	Intelligence	6	8
	Other	5	8
ARMY	Command	8	6
	Fire Direction	38	4
	Intelligence	4	4
	Reconnaissance	2	4
	Other	4	6

DIVISION	Command	7	6
(7)	Fire Direction	31	5
	Intelligence	2	4
	Reconnaissance	6	3
	Other	4	8
REGIMENT	Command	3	16
(28)	Fire Direction	2	5
	Intelligence	1	4
	Reconnaissance	1	5
	Other	2	10
BATTALION	Command	2	28
(84)	Fire Direction	1	6
	Intelligence	1	6
	Reconnaissance	1	6
	Other	1	3
COMPANY	Command	1	10
(36)	Fire Direction	1	4
	Other	1	4

2.3.3 Electronic Warfare (EW) Assets

Notional electronic warfare assets are as indicated below. The same number of systems and system types are presumed to be available to comparable U.S. and threat force units.

2.3.3.1 Signal Intercept Regiment (Front)

Unit	Equipment
Radio Intercept Battalion	72 Communications Intercept Sets
Radio DF Battalion	48 Communications Location Sets
Radar Intercept & DF Battalion	30 Non-communications Intercept & Location Sets

2.3.3.2 Radio Electronic Support Battalion (Front & Army)

Unit	Equipment
Radio Company (3)	12 Communications Intercept Sets
	12 Communications Intercept & DF Sets
	36 Communications Jammers
	9 Multi-channel Jammers
Radar Company	11 Non-communications Jammers
	10 Non-communications Intercept & DF Sets

2.3.3.3 Signal Intercept Battalion (Army)

Unit	Equipment
Radio Intercept Company	28 Communications Intercept Sets
Radio DF Company	16 Communication Location Sets
Radar Intercept & DF Company	15 Non-communications Intercept & DF Sets

3.0 INPUT DATA

3.1 General Description

The DEWCOM Model is driven by data supplied by the user, describing the characteristics and conditions of the forces involved in the simulated combat. The input data use English-like keywords, making them more meaningful and manageable when being prepared, modified, and verified. The data are structured for minimal repetition. For example, it is necessary to enter the characteristics of a radio only once rather than for every unit that has one. Built into the model are verification checks which look for "reasonableness" of the data. For example, probability values should be in the range of zero to one. The model does not stop when an "out of bounds" value occurs, but issues a warning notice to the user and continues.

3.2 User Control

The control available to the user of the DEWCOM Model is detailed, since the data to run the model is input rather than imbedded in the code. This control ranges from the selection of the data to run the model to the selection of reports to be generated from the model. User ability to direct the forces for either side through input is extremely flexible. The following sections provide a description of the data to operate the model.

3.3 Input Data Organization

Input data are organized into the following major categories:

- Controls
- Terrain
- Equipment
- Type Units
- Combat Organization
- Communications Organization
- Orders

The first category (Controls) is concerned with the general overall operation of the model. Through it, the user identifies reports to be produced from the simulation, lists variables which do not apply exclusively to one side or the other, and otherwise establishes the general parameters for a particular "run" of the model.

The remaining six categories describe specific characteristics, capabilities, and conditions of the opposing forces being modelled, such as units, weapons, organization, combat posture, tactics, etc. and the terrain on which the simulated combat takes place. The basic building block for the forces in the model is the unit. Each unit is given a data structure so that any unit found in military organizations can be described. In this manner, it is possible to describe forces to the resolution of platoons, companies, or battalions. Units are organized in a "tree" structure to allow complete freedom in describing the command structure.

3.4 Input Data Conventions

Unless otherwise specified, all seven categories of data are required for operation of the model, and they must be input in the sequence shown in the preceding paragraph (i.e., Controls, Terrain, Equipment, Type Units, Combat Organizations, Communications Organization, and Orders). The following rules or conventions govern the input data:

- Major categories and subcategories of data are preceded by an appropriate identifying keyword and are terminated by the keyword "HALT". All keywords shown in these instructions (and the terminating keyword "HALT") must be included in the input stream, even if no data for a particular category or subcategory is being input for a given run.

- Although the SIMSCRIPT free-form "read" statement is used in this model, allowing considerable latitude in the formatting of input data, the specific formats and spacing

shown in these instructions are strongly recommended in order to more clearly illustrate the data structure and relationships and to facilitate visual checking by the analyst.

- o When a zero value for a variable or field is intended, the zero (Ø) must be explicitly input (as opposed to leaving the field blank).

- o Unless otherwise stated, numeric data should be right-justified in a field (with leading blanks, if appropriate) and alphabetic data should be left-justified (with trailing blanks).

- o Since input may be through punch cards as well as other media, each line (may also be referred to as a record) is limited to 80 characters of data (including blanks).

3.5 Input Data Preparation Forms

Special forms have been designed to simplify the coding of data for input to the DEWCOM Model. Roman numerals are used to identify the order of major data categories (Controls, Terrain, Equipment, etc.) while Arabic numerals reflect the sequence of forms within a major category. Subcategories of data contained on a given form are listed adjacent to the sequence number. The numbering of forms by and within major data category permit them to be readily maintained in the proper entry sequence. Where necessary, multiple copies of a specific form can be used by lining out inapplicable key words and data fields. Details are contained in the instructions relating to each specific form.

The DEWCOM Model input data preparation forms are listed below. Each item identifies one specific form with its major data category (shown in all capital letters following a Roman numeral), its sequence within major category (Arabic numeral under major category), and data subcategories for which it is used (following Arabic numeral).

- I. CONTROLS
  1. Global Variables Data
     Reports

- I. CONTROLS
  2. Side Attribute Data

- II. TERRAIN
  1. Mobility Data

- II. TERRAIN
  2. Obstacle Data

- II. TERRAIN
  3. Base Height Data

- II. TERRAIN
  4. Hill Data

- II. TERRAIN
  5. Hill List Data

- II. TERRAIN
  6. Cover Data

- III. EQUIPMENT
  1. Damage Class Data
     Communication Equipment Data

- III. EQUIPMENT
  2. EW Equipment Data

- III. EQUIPMENT
  3. Weapon Data

- III. EQUIPMENT
  - 4. Type Sortie Data

- IV. TYPE UNITS
  - 1. Unit Attribute Data
    Communication Equipment Owned Data

- IV. TYPE UNITS
  - 2. EW Equipment Owned Data
    Weapon Owned Data

- IV. TYPE UNITS
  - 3. Attrition Data
    Desirability of Firing Data
    Sector Width Data
    Performance Degradation Factor Data

- V. COMBAT ORGANIZATION
  - 1. Unit Data

- V. COMBAT ORGANIZATION
  - 2. Air Sortie Data

- VI. COMMUNICATIONS ORGANIZATION
  - 1. Nets and Links

- VI. COMMUNICATIONS ORGANIZATION
  - 2. Compound Links

- VII. ORDERS
  - 1. Communication Orders

- VII. ORDERS
  - 2. EW Orders

- VII. ORDERS
  - 3. Tactical Orders

o VII. ORDERS

4. Posture

3.6 Input Data Preparation Instructions

Detailed instructions for completion of the input data preparation forms follow. A foldout of a completed sample of each form follows each subparagraph containing instructions governing its data fields.

All required key words are preprinted in bold block letters in the appropriate columns. Key words are shown in their proper relationship to other key words and data fields. These relationships must be maintained in the input data stream.

In some instances, brief instructions for entries in the fields are contained on the form itself, adjacent to the space for the data. Areas of each form which are not to be used for data are shaded.

Where deemed necessary, a reference number or "key" is used to relate data fields on the form to the specific associated instructions. Key numbers are encircled and shown over or adjacent to a specific field, or preceeding a line on the form.

The general format for detailed instructions is as follows:

Key:	(When applicable; an Arabic numeral.)
Name:	(The internal DEWCOM Model name for the data field or variable; all capital letters separated by dots, if appropriate; no embedded blank spaces.)
Spaces:	(The maximum number of characters of data which may be entered.)
Columns:	(The horizontally numbered spaces on the form in which the data are entered.)

Entries: (When applicable; a listing of the entries or types(s) of entries permitted or required in the field.)

Description: (When necessary; an explanation of the data field or variable, significance of entries, restrictions, etc.)

3.6.1 Form I.1 (CONTROLS; Global Variables Data, Reports Data)

This form contains data which control certain overall aspects of the model. It is used to specify whether or not a simulation is to be run, which reports are to be produced, and the values of certain "Global Variables" (those variables which do not apply exclusively to one side or the other). A foldout sample of this form is located on page 27.

Key:	1
Name:	SIMULATION
Spaces:	3
Columns:	14-16
Entries:	YES or NO
Description:	Used to specify whether or not the simulation is to be run. An entry of NO will cause the model to read in and verify the data, and then stop. An entry of YES will cause the model to read in and verify the data and, if no input errors occurred, to start the simulation.

Key:	2
Name:	BACKGROUND.TRAFFIC.UPDATE.TIME
Spaces:	5
Columns:	5-9
Entries:	Integer minutes
Description:	The interval at which message processing delays due to the background traffic are computed.

Key:	3
Name:	DT.V
Spaces:	5
Columns:	11-15
Entries:	
Description:	The current version of the model does not input this variable. It should be left blank.

Key:	4
Name:	MAX.LINKS.IN.CIRCUIT
Spaces:	5
Columns:	17-21
Entries:	Integer
Description	The maximum number of links which may be concatenated to connect two units in a circuit.

Key:	5
Name:	MAX.PERMITTED.ERRORS
Space:	5
Columns:	23-27
Entries:	Integer
Description:	The maximum number of errors detected before the model terminates.

Key: 6
Name: MAX.STEP
Spaces: 5
Columns: 29-33
Entries:
Description: The maximum time in minutes which may pass before the strengths of the units are updated.

Key: 7
Name: MIN.STEP
Spaces: 5
Columns: 35-39
Entries:
Description: The minimum time in minutes after which the strengths of the units are updated.

Key: 8
Name: MOVE.STEP.SIZE
Spaces: 5
Columns: 41-45
Entries: Integer
Description: Describes the distance that a unit travels before the location coordinates are updated, expressed in meters.

Key: 9
Name: RATE.OF.CONTACT
Spaces: 5
Columns: 47-51
Entries: Integer between 0 and 100 (inclusive)
Description: Expresses the rate at which a unit in contact gathers intelligence about the opposing unit. The value entered reflects a rate per minute.

Key:	10
Name:	RN.STREAM
Spaces:	5
Columns:	5-9
Entries:	Integer, 1 through 10
Description:	Identifies which of the 10 available random number streams is to be used by the model.

Key:	11
Name:	STOP.TIME
Spaces:	5
Columns:	11-15
Entries:	None
Description:	The current version of the model does not use this variable. It should be left blank.

Key:	12
Name:	MIN.DELAY
Spaces:	5
Columns:	17-21
Entries:	Integer minutes
Description:	The minimum time required to process a message before transmission. This value is used when no units are in contact with the enemy.

Key:	13
Name:	MAX.DELAY
Spaces:	5
Columns:	23-27
Entries:	Integer minutes
Description:	The maximum time required to process a message before transmission. This value is used when all units are in contact with the enemy.

Key:	14
Name:	REPORT.FREQUENCY
Spaces:	5
Columns:	29-33
Entries:	Integer minutes
Description:	The frequency in simulated time at which requested reports are produced.

Key:	15
Name:	TIME.EOS
Spaces:	5
Columns:	35-39
Entries:	Decimal or integer hours
Description:	Specifies the length of time the simulation is to run, expressed in hours. Fractions of hours, if used, are expressed in decimal form (e.g., 12.5).

Key:	16
Name:	CHAR.PER.WORD
Spaces:	5
Columns:	41-45
Entries:	Integer
Description:	The number of characters which can be stored in one word of the computer system on which the model is to be operated.

Key:	17
Name:	MESSENGER.RATE
Spaces:	5
Columns:	47-51
Entries:	Integer
Description:	The rate at which a messenger travels, expressed in meters per minute.

Key: 18
Name: DATA (reports)
Spaces: 1 each
Columns: 10-22
Entries: Digits 1 through 7 or NONE
Description: Specifies the input data reports desired. Each report is a formatted listing corresponding to the actual data input to a specific run. Input data reports are:

1 - Controls
2 - Terrain
3 - Equipment
4 - Type Units
5 - Combat Organization
6 - Communications Organization
7 - Orders

If NO reports are desired, enter NONE in the first 4 spaces.

(1)

Key: 19
Name: MODEL (reports)
Spaces: 1 each
Columns: 11-23
Entries: Digits 1 through 7 or NONE
Description: Specifies the output reports to be produced from this run of the simulation. Output reports are:

1 - Unit Status
2 - Link Status
3 - Message Status
4 - Attrition Summary
5 - EW Status
6 - Equipment Status
7 - Intelligence Log Status

(18)
(19)

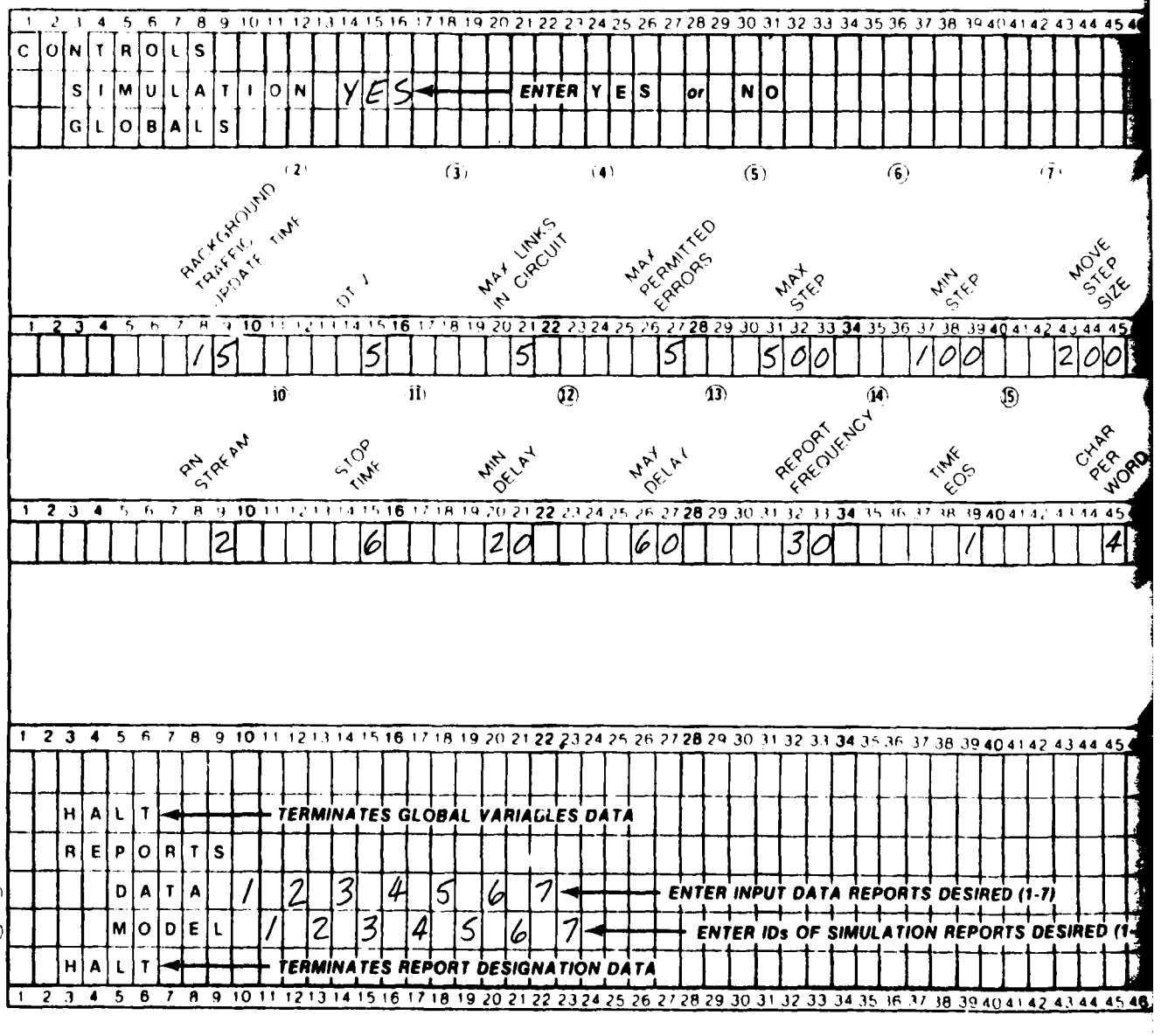
If no model reports are desired, enter NONE in the first 4 spaces.

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INPUT DATA PREPARATI



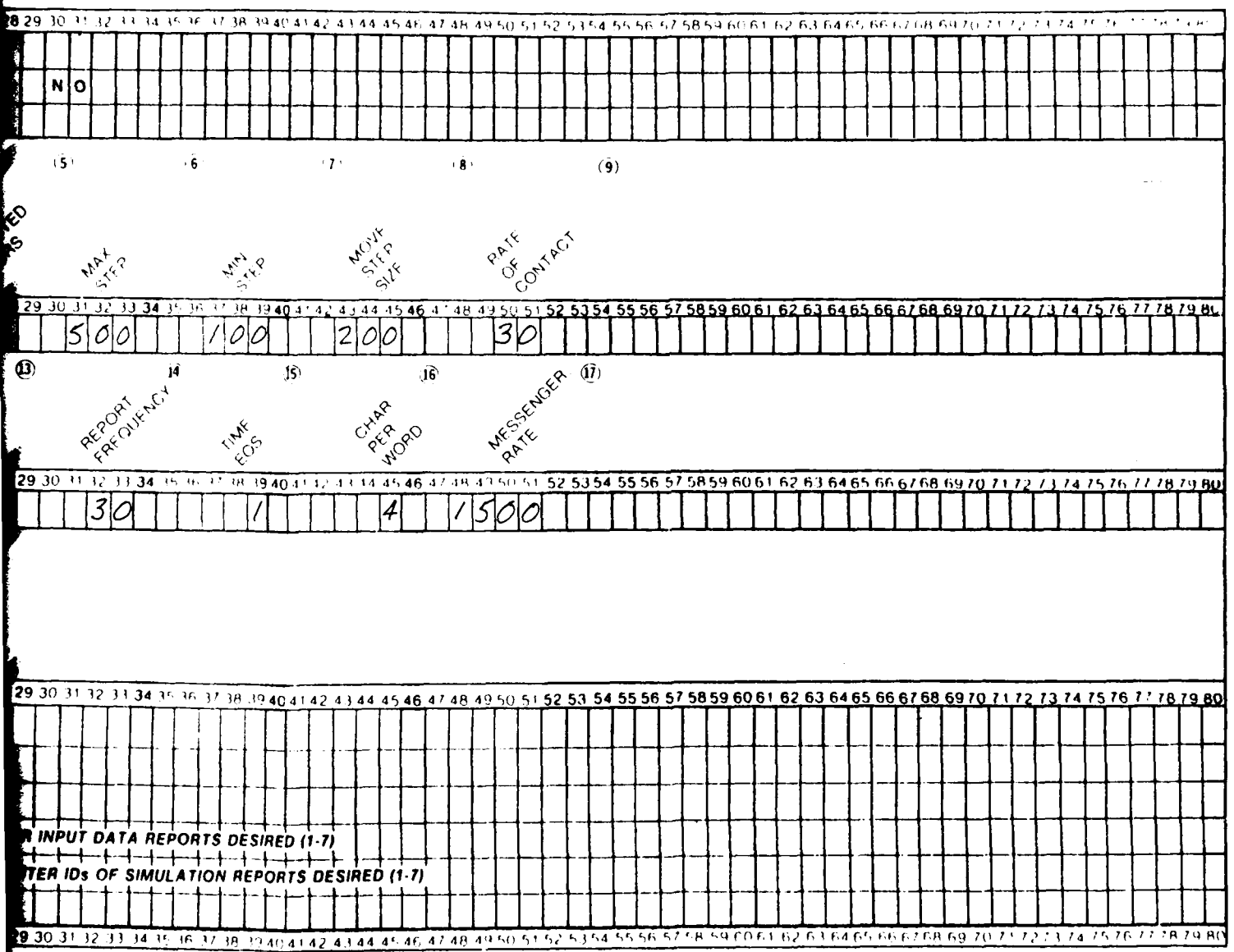
2

DEWCOM MODEL

INPUT DATA PREPARATION FORM

I. CONTROLS

1 GLOBAL VARIABLES DATA
REPORTS DATA



3.6.2 Form I.2 (CONTROLS; Side Attributes Data)

This form continues CONTROL input data, which specify certain overall characteristics of units in the simulation. It is used to identify attributes which apply to all units on each side (BLUE and RED). The form contains spaces for two separate sets of the attributes (one for each side), delimited by the pre-printed side name (BLUE or RED) and corresponding HALTS. This permits independent identification of the attributes for each side. A foldout sample of this form is located on page 35.

Key:	1
Name:	SD.ENCRYPTION.INTELLIGENCE
Spaces:	5
Columns:	7-11
Entries:	NUMERIC
Description:	A multiplier which modifies the intelligence value of an intercepted encrypted message.

Key:	2
Name:	SD.EW.INTEL.THRESHOLD
Spaces:	5
Columns:	13-17
Entries:	Integer in the range 0-100
Description:	A threshold above which the opposing force net type changes from UNKNOWN to a known type.

Key:	3
Name:	SD.SUPPORT.THRESHOLD
Spaces:	5
Columns:	19-15
Entries:	Integer
Description:	The target stength threshold, above which an artillery unit which cannot provide requested artillery support requests such support from another fire direction center.

Key:	4
Name:	SD.FIRE.SUPPORT.THRESHOLD
Spaces:	5
Columns:	25-29
Entries:	Integer
Description:	The target strength threshold, above which a unit from which artillery support has been requested, in turn asks for additional artillery support from another fire direction center.

Key:	5
Name:	SD.COORDINATION.INTERVAL
Spaces:	5
Columns:	31-35
Entries:	Integer or decimal
Description:	The time interval in minutes separating messages between any two units on a side. Typical values would be in the range of 5 to 15 minutes.

Key:	6
Name:	SD.MIN.UNIT.STRENGTH
Spaces:	5
Columns:	37-41
Entries:	Integer in the range 0 to 100
Description:	A percentage value, representing a percent of normal unit strength, below which a unit ceases to be a factor in the simulation.

Key:	7
Name:	SD.ARTY.RESET.TIME
Spaces:	5
Columns:	43-47
Entries:	Integer
Description:	The minimum time interval after firing in minutes required for an artillery unit to accept a new target.

Key:	8
Name:	SD.ARTY.CONTACT.RANGE
Spaces:	5
Columns:	49-53
Entries:	None
Description:	The current version of the model does not use this variable. It should be left blank.

Key:	9
Name:	SD.MIN.ARTY.DISTANCE
Spaces:	5
Columns:	55-59
Entries:	Integer
Description:	The threshold distance in meters between an artillery unit and the FEBA, below which the artillery unit moves away from the FEBA.

Key:	10
Name:	SD.MAX.ARTY.DISTANCE
Spaces:	5
Columns:	7-11
Entries:	Integer
Description:	The threshold distance in meters between an artillery unit and the FEBA, above which the artillery unit moves toward the FEBA.

Key:	11
Name:	SD.MIN.EW.DISTANCE
Spaces:	5
Columns:	13-17
Entries:	Integer
Description:	The threshold distance in meters between an EW unit and the FEBA, below which the EW unit moves away from the FEBA.

Key:	12
Name:	SD.MAX.EW.DISTANCE
Spaces:	5
Columns:	19-23
Entries:	Integer
Description:	The threshold distance in meters between an EW unit and the FEBA, above which the EW unit moves toward the FEBA.

Key:	13
Name:	SD.WIRE.FAILURE.RATE
Spaces:	5
Columns:	25-29
Entries:	Integer
Description:	The mean time between failures (in hours) of a wire link.

Key:	14
Name:	SD.WIRE.MTTR
Spaces:	5
Columns:	31-35
Entries:	Integer
Description:	The mean time to repair a wire link (in hours).

Key:	15
Name:	SD.DF.RATE.1.UNIT.OUT
Spaces:	5
Columns:	37-41
Entires:	Integer
Description:	The decreased intelligence gathering capability of a DF unit when one of its DF sites becomes inoperable, expressed as a percentage of its capability when all sites are operational.

Key:	16
Name:	SD.DF.RATE.2.UNITS.OUT
Spaces:	5
Columns:	43-47
Entries:	Integer
Description:	The decreased intelligence gathering capability of a DF unit when two of its DF sites become inoperable, expressed as a percentage of its capability when all sites are operational.

Key:	17
Name:	SD.PCT.OVER.TRUE.STRENGTH
Spaces:	5
Column:	49-53
Entries:	Integer
Description:	A modifier reflecting the maximum percentage over its normal strength that an opposing unit's strength will be perceived by a unit on this side.

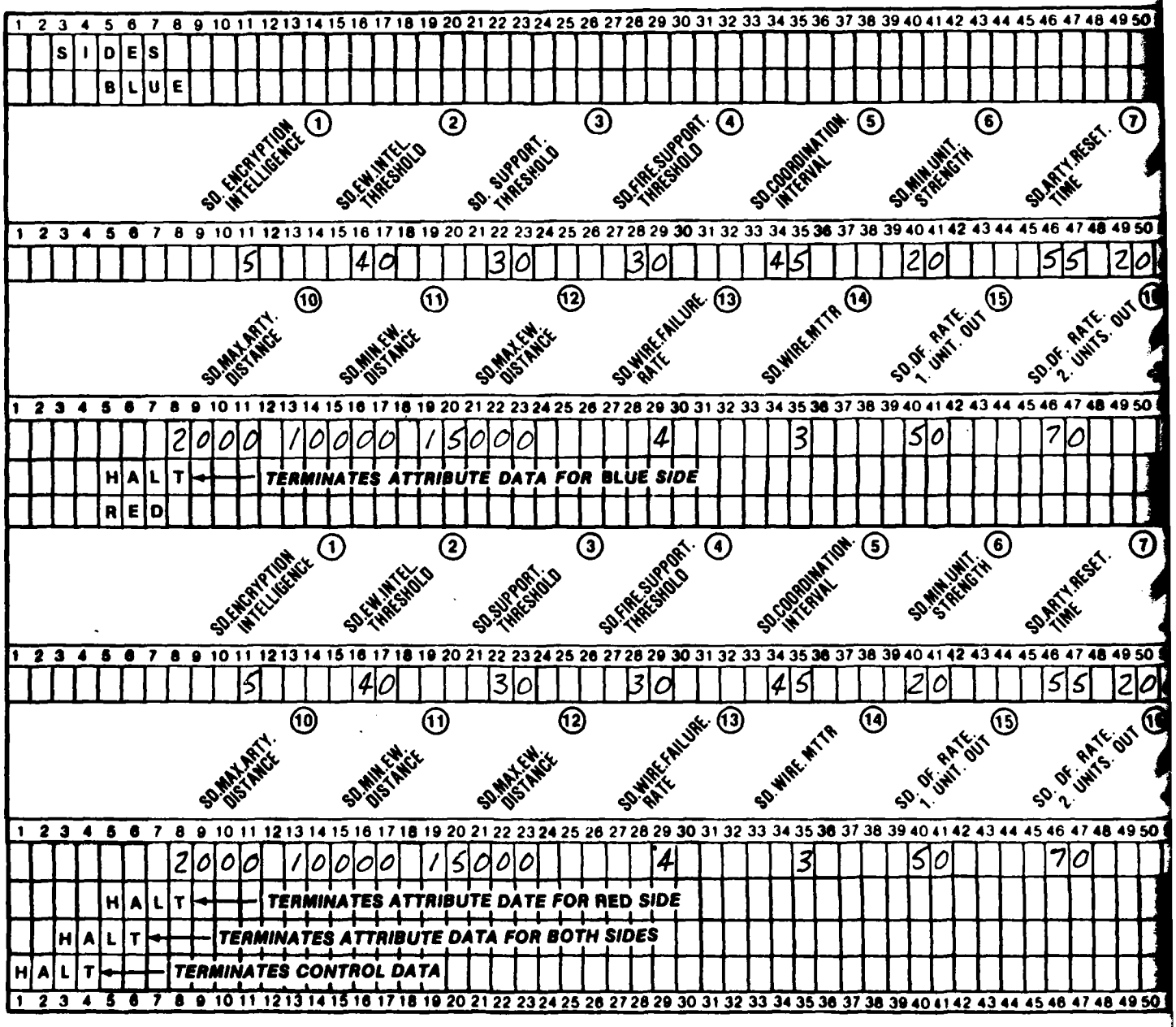
Key:	18
Name:	SD.PCT.UNDER.TRUE.STRENGTH
Spaces:	5
Columns:	55-59
Entries:	Integer
Description:	A modifier reflecting the maximum percentage under its normal strength that an opposing unit's strength will be perceived by a unit on this side.

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DEWCOM MODE

INPUT DATA PREPARATION FO



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DEWCOM MODEL

PAGE _____ OF _____

I. CONTROLS

INPUT DATA PREPARATION FORM

2. SIDE ATTRIBUTE DATA

	4	5	6	7	8	9
SUPPORT. SHOLD	SD.COORDINATION. INTERVAL	SD.MIN.UNIT. STRENGTH	SD.ARTY.RESET. TIME	SD.ARTY.CONTACT. RANGE	SD.MIN.ARTY. DISTANCE	
	45	20	55	2000	1000	
AILURE.	13	14	15	16	17	18
	SD.WIRE.MTTR	SD.DF. RATE. 1. UNIT. OUT	SD.DF. RATE. 2. UNITS. OUT	SD. PCT. OVER. TRUE. STRENGTH	SD. PCT. UNDER. TRUE. STRENGTH	
	3	50	70	15	10	
T. D	4	5	6	7	8	9
	SD.COORDINATION. INTERVAL	SD.MIN.UNIT. STRENGTH	SD.ARTY.RESET. TIME	SD.ARTY.CONTACT. RANGE	SD.MIN.ARTY. DISTANCE	
	45	20	55	2000	1000	
AILURE.	13	14	15	16	17	18
	SD.WIRE.MTTR	SD. DF. RATE. 1. UNIT. OUT	SD. DF. RATE. 2. UNITS. OUT	SD. PCT. OVER. TRUE. STRENGTH	SD. PCT. UNDER. TRUE STRENGTH	
	3	50	70	15	10	

2

3.6.3 Form II.1 (TERRAIN; Mobility Data)

This is the first of several forms used to describe the terrain on which the simulated encounter occurs. It is used to identify characteristics of the terrain affecting mobility of units. Map coordinates referred to are Universal Transverse Mercator (UTM) coordinates. Each pair (X and Y) of the 6 digit UTM coordinates refers to the lower left corner of a specific grid square on the map. Foldout samples of this form are located on pages 41 and 43.

Key:	1
Name:	SIZE
Spaces:	3 for each direction
Columns:	8-10 and 12-14
Entries:	Integer
Description:	This entry helps describe the dimensions of the map. The first field (column 8-10) identifies the number of grid squares on the map in the X (horizontal) direction being used for the simulation. The second field (column 12-14) identifies the number of grid squares in the Y (vertical) direction being used.

Key:	2
Name:	GRID.SIZE
Spaces:	5
Columns:	13-17
Entries:	Integer
Description:	Defines the distance represented by the length of a side of one grid square of the map, expressed in meters.

Key:	3
Name:	ORIGIN
Spaces:	6 for each of two entries
Entries:	Integer
Column:	10-15 and 17-22
Description:	Identifies the UTM coordinates of the lower left corner of the map. The first entry (column 10-15) contains the last six digits of the X coordinate of the map origin (X. ORIGIN) and the seccnd (columns 17-22) contains the Y coordinate (Y.ORIGIN). The grid square identified by these coordinates is grid square Ø (zero) for purposes of the simulation.

Key:	4
Name:	MOBILITY
Spaces:	Grid Coordinate - 6 Mobility Index - 1 each
Columns:	Grid Coordinate - 5-10 Mobility Index - 13, 16, 19,...70
Entries:	Grid Coordinate - 6 digits Mobility Index - 1, 2, 3, 4, or 5
Description:	Describes characteristics of the terrain affecting mobility. A one digit index (MOBILITY INDEX) is assigned to each grid square on the map, identifying its mobility characteristics:

Index	Characteristics
1.	Generally flat, open terrain with good maneuvering; may or may not have roads.
2.	Moderately open, rolling terrain; good maneuverability.

3. Moderately closed terrain, one-third to one-half covered by heavy woods or steep grades. Tank movement restricted.
4. Close terrain; tank movement limited.
5. Rugged terrain. Tank movement limited to reconnoitered routes; engineer assistance necessary.

Mobility index values are grouped by Y coordinate, beginning at the origin (lower left corner) of the map and working upward (increasing Y coordinate values).

Enter the six digit Y coordinate of the grid square in columns 5-10. Follow this with the Mobility Index value for each grid square (from left to right) along the X axis having that Y coordinate.

Enter one index value for every grid square along the X axis (as many as were shown in the X direction for field name SIZE, Key #1, column 8-10). If there are more than 20 grid squares in the X direction, continue the index values on the next line(s) until the proper number have been entered. DO NOT enter the Y coordinate (column 5-10) for second and succeeding lines relating to the same Y coordinate.

Continue the entries for as many Y coordinates as were reflected for field name SIZE (Key #1, column 12-14).

If there are more entries than will fit on a form, continue as follows:

1. Line out the keyword HALT at the bottom of the full sheet.
2. Using another sheet, line out the keywords TERRAIN, SIZE, GRID.SIZE, ORIGIN, and MOBILITY, and the blank fields on the same lines as those keywords.

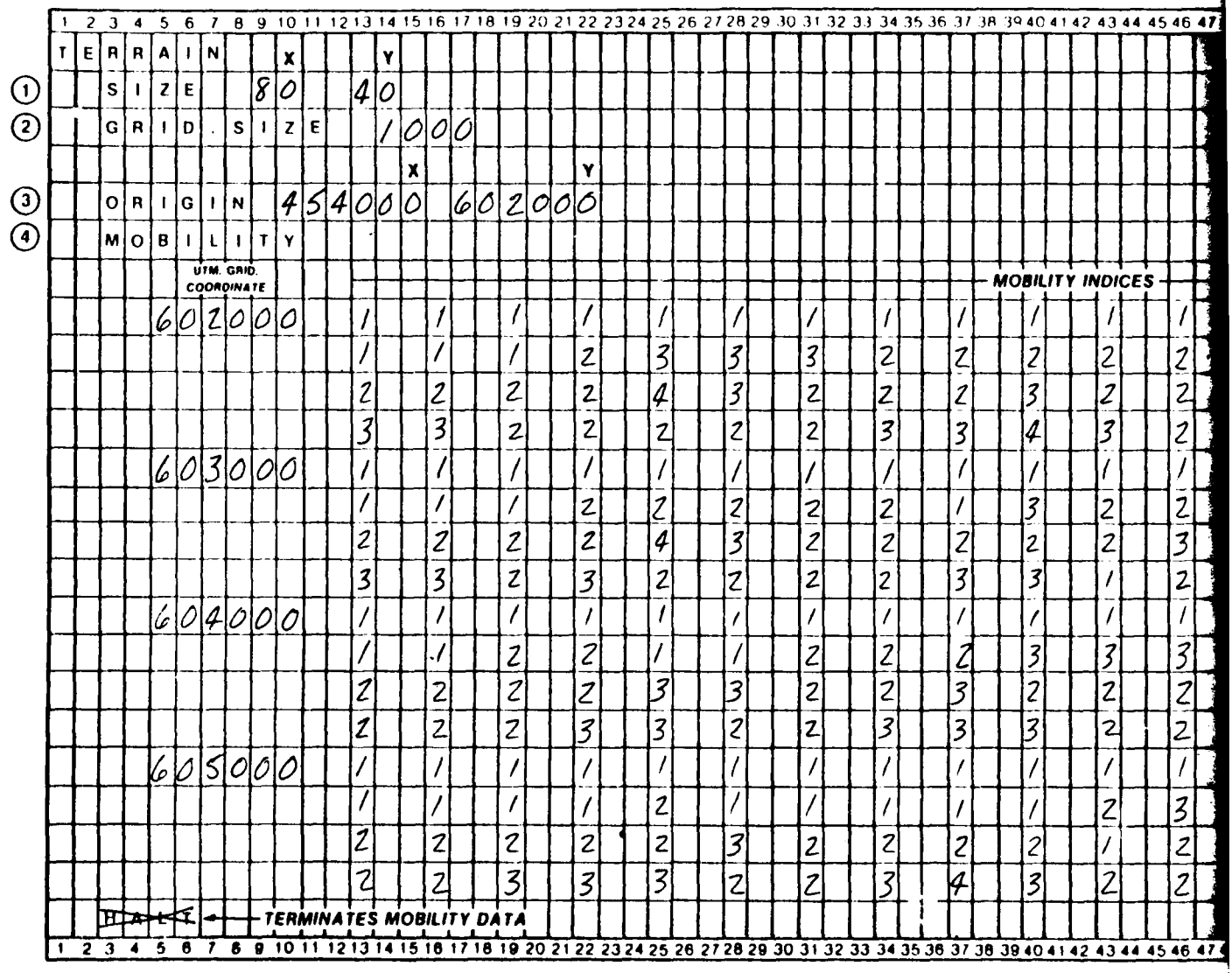
3. Continue entries in the body of the form in the same manner as the preceding page. If mobility index values for a Y coordinate must be continued on another page, DO NOT reenter the Y coordinate (columns 5-10) on the continuation page.
4. Do not line out the keyword "HALT" at the bottom of the last form used.

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DEWCOM MOD

INPUT DATA PREPARATION



DEWCOM MODEL

INPUT DATA PREPARATION FORM

II. TERRAIN

1 MOBILITY DATA

27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

MOBILITY INDICES

1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	3	2	2	2	2	2	2	1	1	2	3	2	3	2					
3	2	2	2	3	2	2	2	2	2	2	2	2	2	2					
2	2	3	3	4	3	2	2	3	3	4	4	4	4	5					
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
2	2	2	1	3	2	2	2	3	2	2	2	2	3	4					
3	2	2	2	2	2	3	2	2	2	2	2	2	3	3					
2	2	2	3	3	1	2	2	3	3	3	4	4	4	4					
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
1	2	2	2	3	3	3	2	2	2	3	2	2	2	2					
3	2	2	3	2	2	2	2	2	2	2	2	2	2	2					
2	2	3	3	3	2	2	2	2	2	3	3	4	4	3					
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
1	1	1	1	1	2	3	3	3	3	2	3	4	2	2					
3	2	2	2	2	1	2	2	2	2	2	2	2	2	2					
2	2	3	4	3	2	2	2	3	3	3	3	3	2	2					

28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

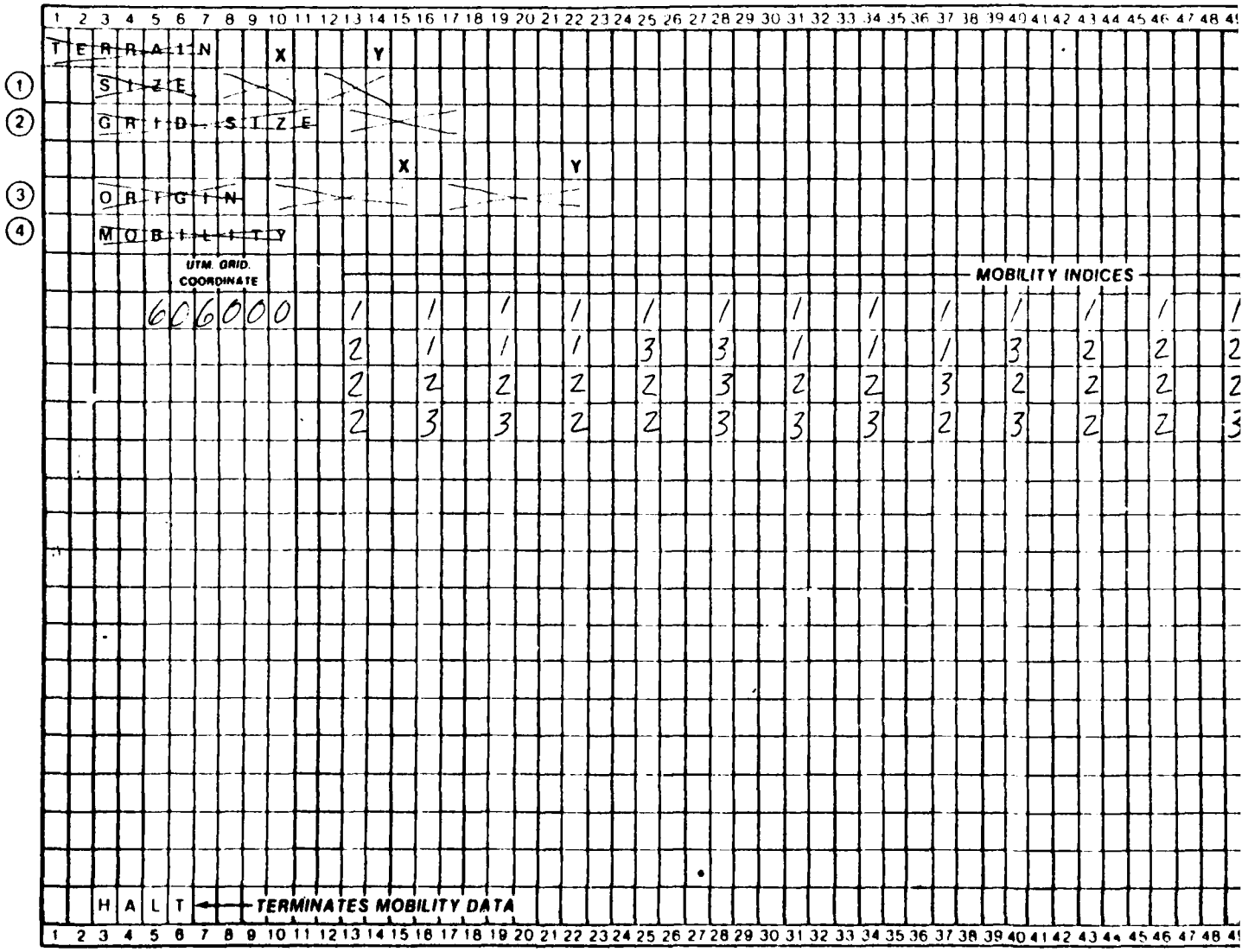
2

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PHONE _____ DATE _____

DEWCOM MODE

INPUT DATA PREPARATION F

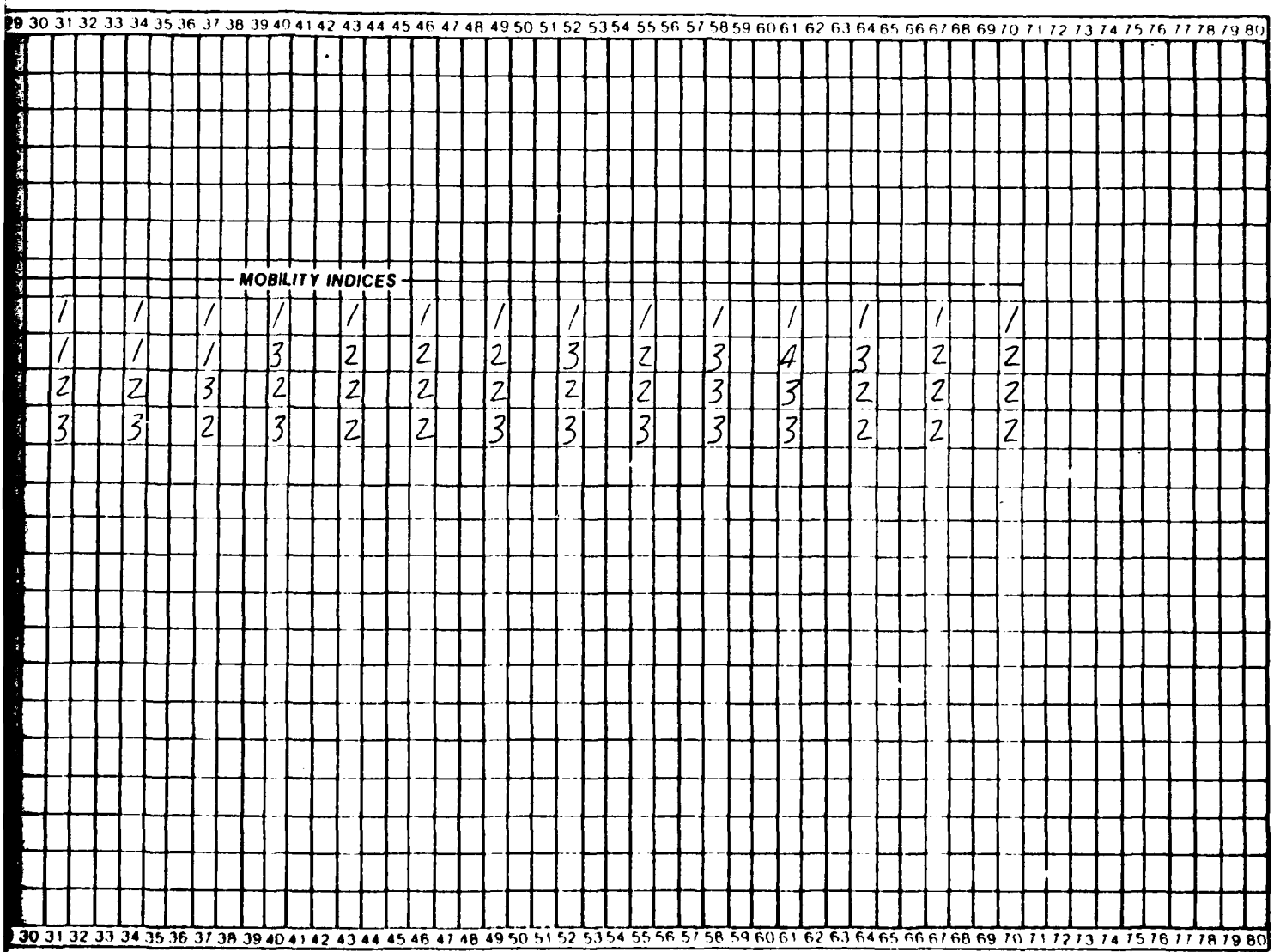


DEWCOM MODEL

NPUT DATA PREPARATION FORM

II. TERRAIN

1. MOBILITY DATA



2

3.6.4 Form II.2 (TERRAIN; Obstacle Data)

This form continues the description of the terrain selected for the simulation. It identifies the severity and extent of the terrain obstacles present in each grid square. Foldout samples of this form are located on pages 47 and 49.

Key: 1

Name: OBSTACLE

Spaces: Grid Coordinate - 6
Obstacle Index - 2 each

Columns: Grid Coordinate - 5-10
Obstacle Index - 12-13, 15-16, 18-19, ...69-70

Entries: Grid Coordinate - 6 digits
Obstacle Index - Integer

Description: A two digit index (OBSTACLES.INDEX) ranging from 0 to 50 is assigned to each grid square on the map, describing its characteristics in terms of obstacles present. Examples of obstacle index values which might be assigned are as follow:

Obstacle	Maximum Value	Obstacle Index based on fraction of grid square affected 1/4	1/2	3/4	Full
Marsh	50	12	25	37	50
Stream-fordable	25	06	12	18	25
Stream-bridge	37	09	18	28	37
Defile	12	03	06	09	12
Woods	37	09	18	28	37

NOTE THAT THESE ARE EXAMPLES ONLY.

Obstacle index values are grouped by Y coordinate in a manner similar to the Mobility indices described in the preceding subsection (3.6.3). Beginning at the origin, enter the Y coordinate of the grid square in columns 5-10,

followed by the two digit obstacle index values for every grid square along the X axis. Continue index values on successive lines as required until the proper number have been entered for a given Y coordinate. DO NOT reenter the Y coordinate (column 5-10) for continuation lines relating to the same Y coordinate.

Continue the entries for as many Y coordinates as were reflected on Form II.1 (TERRAIN; Mobility Data) for field name SIZE (Key #1, columns 12-14).

If there are more entries than will fit on one form, continue as follows:

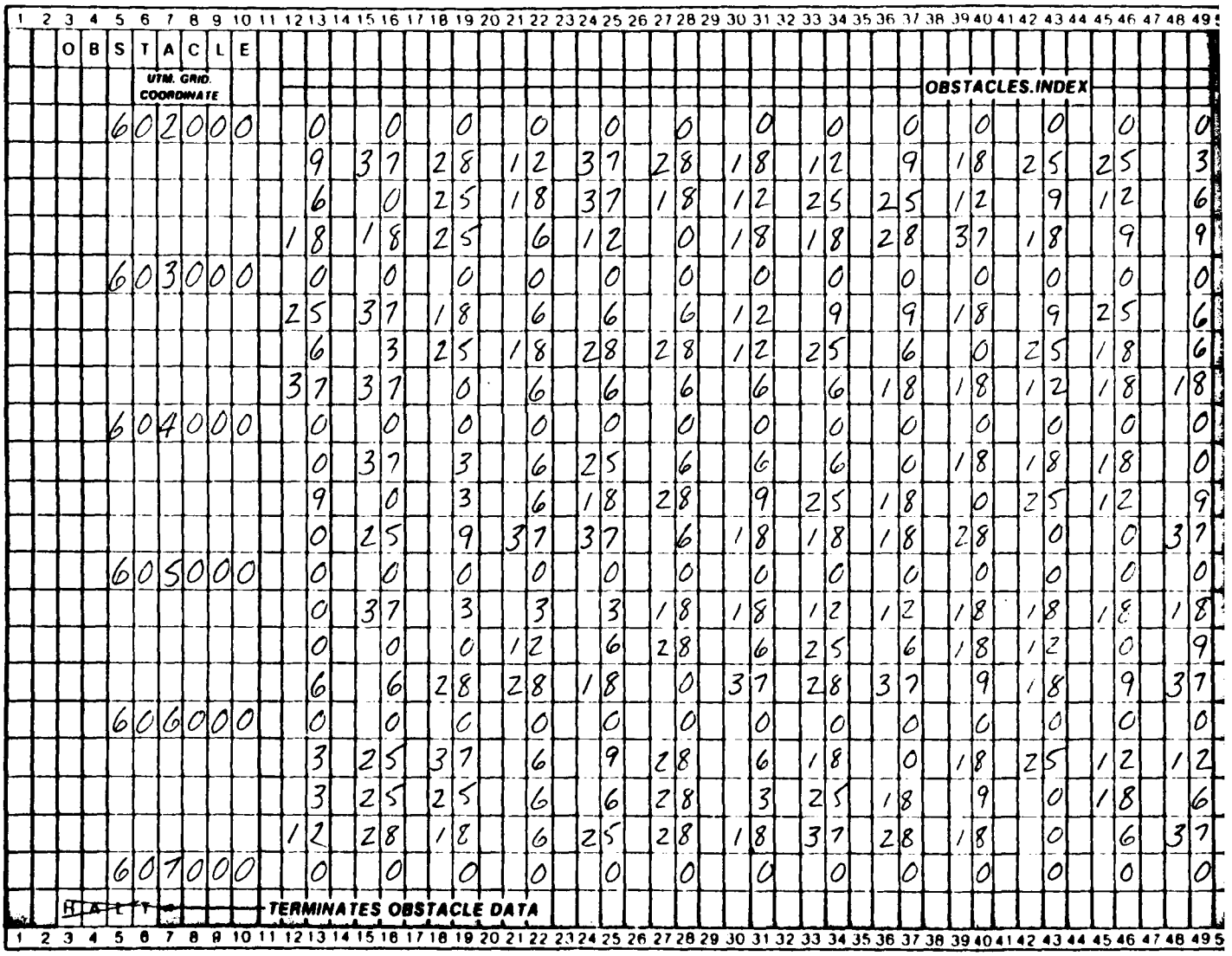
1. Line out the keyword HALT at the bottom of the full sheet.
2. Using another sheet, line out the keyword OBSTACLE in the first line of the body of the form.
3. Continue entries in the body of the form in the same manner as the preceding page. If obstacle index values for a Y coordinate must be continued on another page, DO NOT reenter the Y coordinate (column 5-10) on the continuation sheet.
4. Do not line out the keyword HALT at the bottom of the last form used.

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INPUT DATA PREPARATION FO

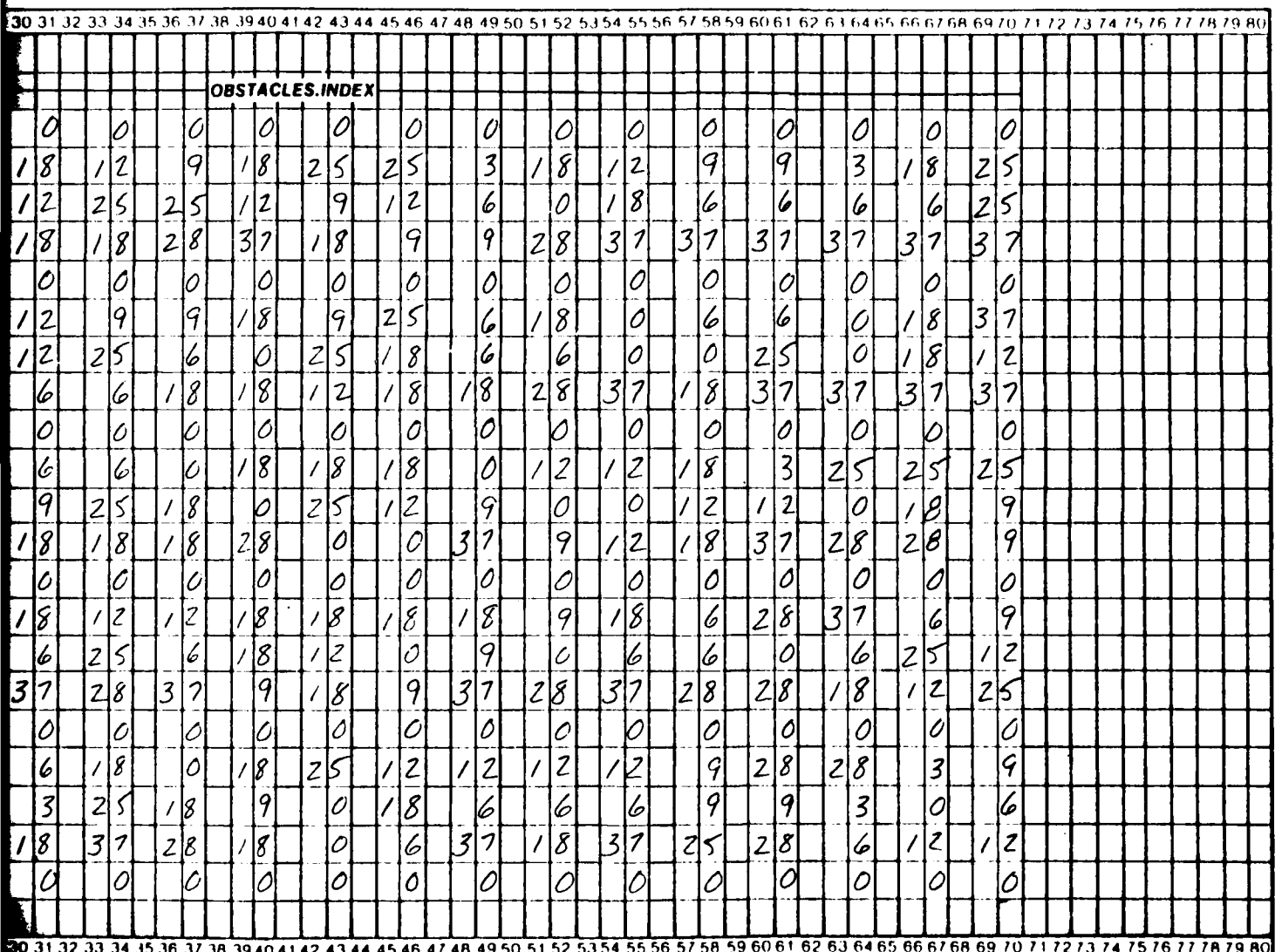


II. TERRAIN

· 2. OBSTACLE DATA

DEWCOM MODEL

PUT DATA PREPARATION FORM



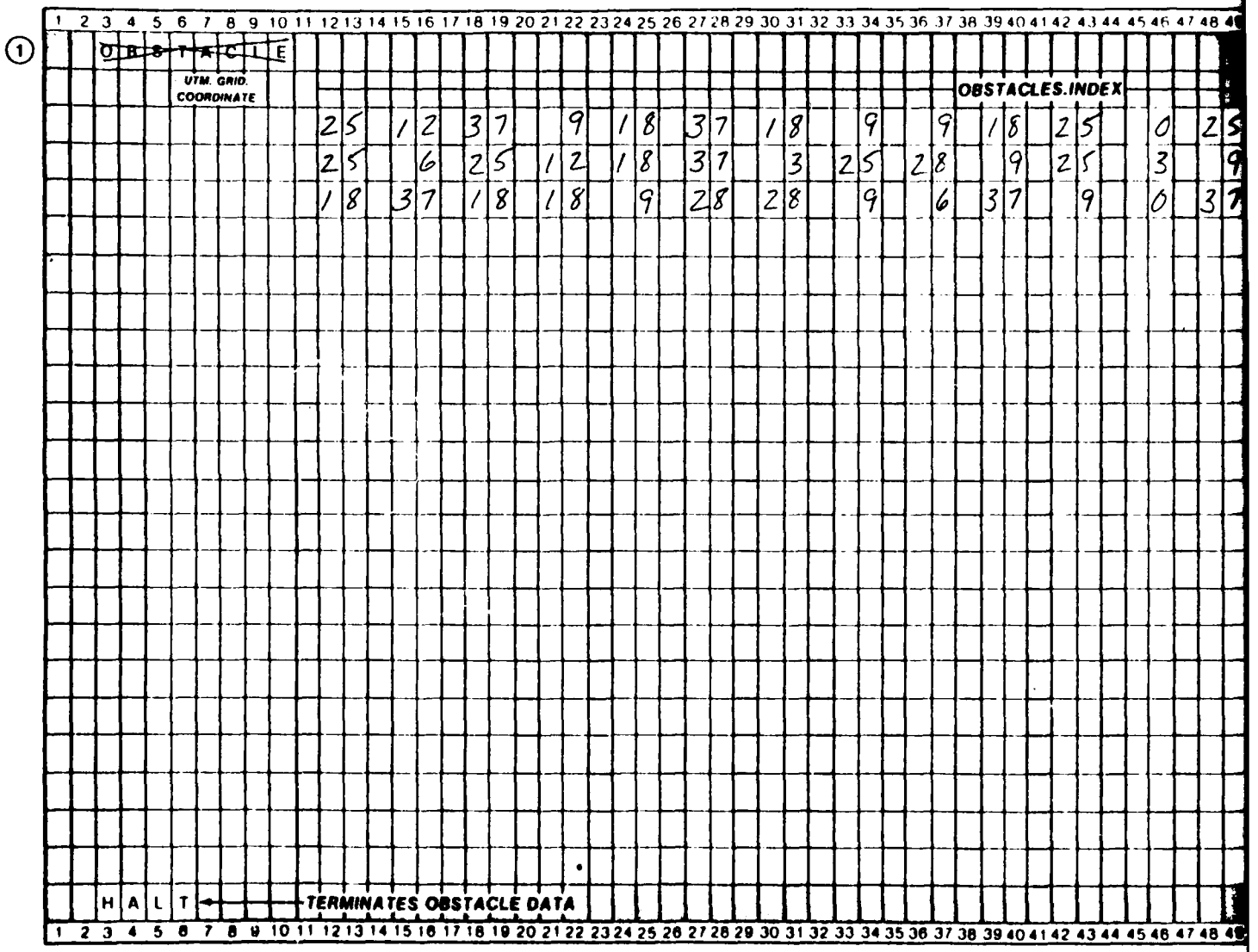
2

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DEWCOM MODE

INPUT DATA PREPARATION F



DEWCOM MODEL

INPUT DATA PREPARATION FORM

II. TERRAIN

2. OBSTACLE DATA

OBSTACLES.INDEX

28	29–31	32–34	35–37	38–40	41–43	44–46	47–49	50–52	53–55	56–58	59–61	62–64	65–67	68–70	71–80
7	18	9	9	18	25	0	25	0	9	18	37	37	25	28	
7	3	25	28	9	25	3	9	9	0	9	6	25	18	25	
8	28	9	6	37	9	0	37	0	18	12	25	25	12	18	

3.6.5 Form II.3 (TERRAIN: Base Height Data)

This form continues the description of the terrain selected for the simulation. It specifies the base height or altitude of each grid square, and is used as a point of reference in conjunction with hill location and hill characteristics data which will be entered using subsequent forms. Foldout samples of this form are located on page 53 and 55.

Key:	1
Name:	BASE
Spaces:	Grid Coordinate - 6
	Base Height - 4 each
Columns:	Grid Coordinate - 5-10
	Base Height - 12-15, 17-20, 22-25,...57-60
Entries:	Grid Coordinate - 6 digits
	Base Height - A four digit integer value
Description:	Each entry identifies a minimum elevation above sea level in meters for the grid square as a whole. Base height data are grouped by Y coordinate in a manner similar to Mobility and Obstacle data in preceding subsections.
	Beginning at the origin, enter the Y coordinate of the grid square in columns 5-10, followed by the base height in meters of every grid square along the X axis. Continue on successive lines until a height has been entered for every grid square in the X direction for a given Y coordinate. DO NOT reenter the Y coordinate (column 5-10) for continuation lines relating to the same Y coordinate.
	Continue the entries for as many Y coordinates as were reflected on Form II.1 (TERRAIN; Mobility Data) for field name SIZE (Key #1, column 12-14).

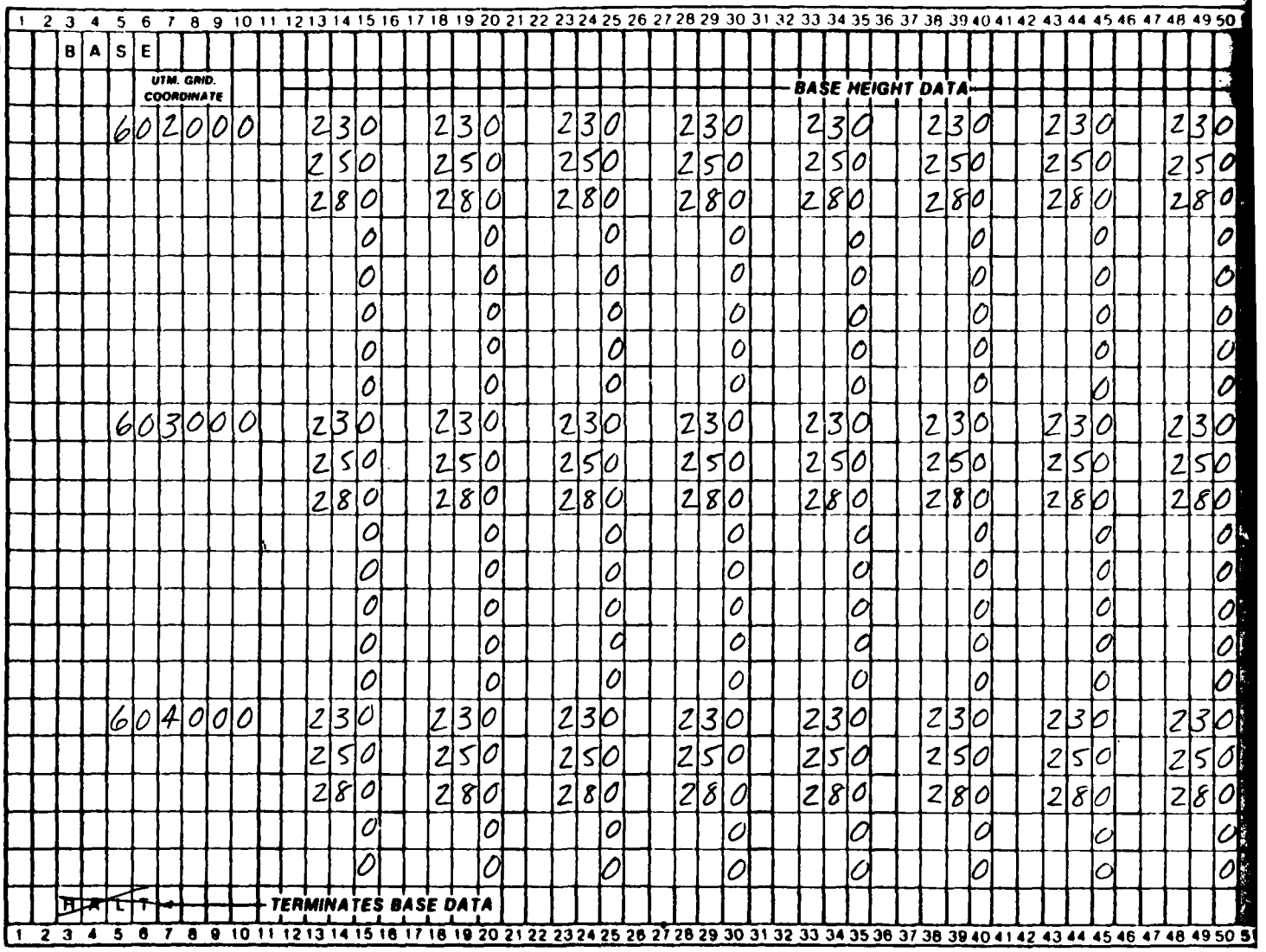
If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described in the preceding subsections. (Line out the keyword HALT in all but the last sheet line and keyword BASE on the first line of all sheets after the first, etc.)

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DEWCOM MODEL

INPUT DATA PREPARATION FO

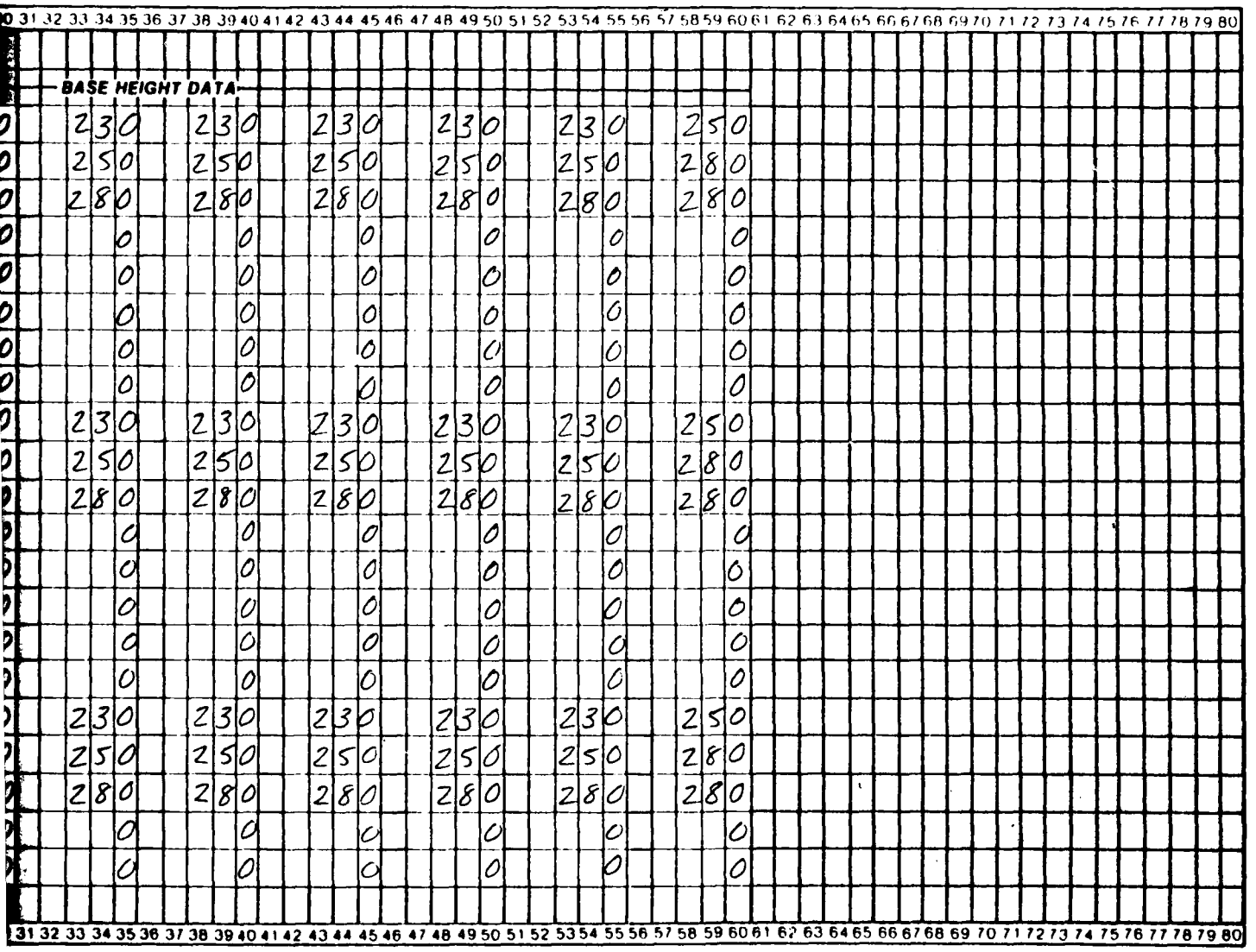


II. TERRAIN

3. BASE HEIGHT DATA

DEWCOM MODEL

PUT DATA PREPARATION FORM

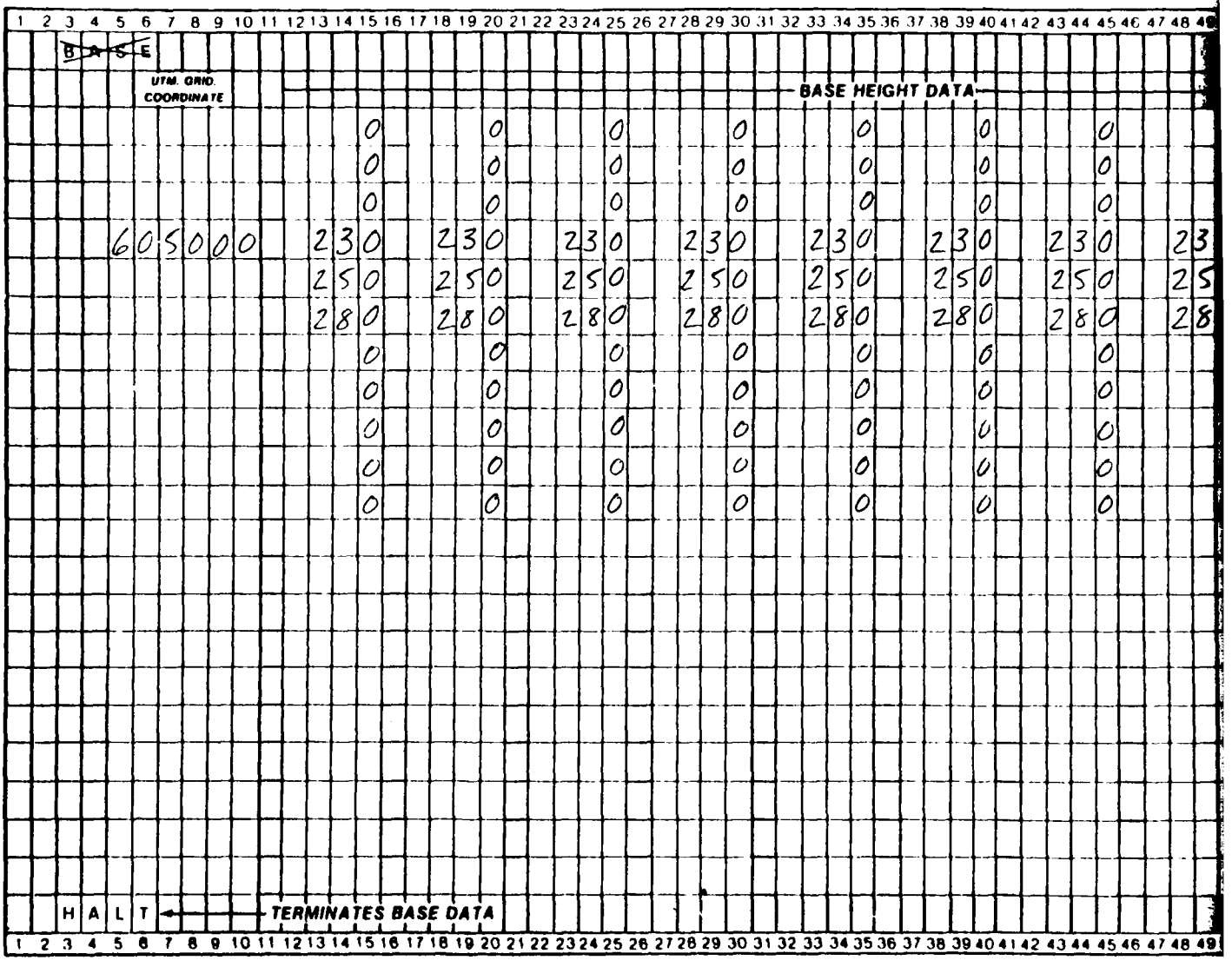


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DEWCOM MODE

INPUT DATA PREPARATION F



II. TERRAIN

3 BASE HEIGHT DATA

DEWCOM MODEL

INPUT DATA PREPARATION FORM

28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

BASE HEIGHT DATA

0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
230	230	230	230	230	230	230
250	250	250	250	250	250	250
280	280	280	280	280	280	280
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

2

3.6.6 Form II.4 (TERRAIN; Hills Data)

This form continues the description of the terrain selected for the simulation. It describes and locates hills, and, in conjunction with other data, is used to determine line of sight between various points on the terrain. Definitions of the fields identified by Keys 4 through 11 correspond to those in the STAR (Simulation of Tactical Alternative Responses) terrain model developed at the Naval Postgraduate School. Foldout samples of this form are located on pages 61 and 63.

Key:	1
Name:	HILLS
Spaces:	4
Columns:	9-12
Entries:	Integer
Description:	Identifies the total number of hills on the entire map. Each hill is located and described through the entries on the remainder of the form (Keys 2-11). The number of subsequent entries (for Keys 2-11) must exactly correspond to the entry in this field.

Key:	2
Name:	HILL INDEX
Spaces:	3
Columns:	4-6
Entries:	Integer
Description:	A sequential number, beginning with 1 for the first entry identifying the relationship of this hill to the first hill listed. If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described previously (Line out the keyword HALT on all but the last sheet used; line out keyword HILLS and the value entered on the first line of all sheets after the first; etc.)

Key:	3
Name:	HILL ID
Spaces:	9
Columns:	8-16
Entries:	Alphanumeric
Description:	A unique identifier for a hill.

Key:	4
Name:	XC.H
Spaces:	6
Columns:	18-23
Entries:	6 digit grid coordinate
Description:	The X coordinate of the center location of the hill identified by the HILL INDEX and HILL ID on this line (Keys 2 and 3).

Key:	5
Name:	XC.Y
Spaces:	6
Columns:	26-31
Entries:	6 digit grid coordinate
Description:	The Y coordinate of the center location of the hill identified by the HILL INDEX and HILL ID on this line (Keys 2 and 3)

Key:	6
Name:	PEAK.H
Spaces:	6
Columns:	34-39
Entries:	Integer
Description:	The elevation of the hilltop in meters, measured from zero = sea level.

Key:	7
Name:	ANG.H
Spaces:	6
Columns:	42-47
Entries:	Integer in the range of 0 to 360
Description:	The orientation angle of an ellipse representing a horizonal cross-section of the hill, measured in degrees counter-clockwise from EAST to the major axis.

Key:	8
Name:	ECC.H
Spaces:	4
Columns:	52-55
Entries:	A ratio, greater than or equal to 1
Description:	The eccentricity of an ellipse representing the hill, defined as the ratio of major axis length to minor axis length.

Key:	9
Name:	SPRD.H
Spaces:	7
Columns:	58-64
Entries:	Integer
Description:	A measure of the hill size defined as the distance in meters measured along the major axis from hill center to a contour line which is 50 meters below the peak.

Key:	9
Name:	SPRD.H
Spaces:	7
Columns:	58-64
Entries:	Integer
Description:	A measure of the hill size defined as the distance in meters measured along the major axis from hill center to a contour line which is 50 meters below the peak.

Key:	10
Name:	HT.H
Spaces:	6
Columns:	67-72
Entries:	Integer, greater than or equal to 50
Description:	The maximum height of a "normal" curve describing this hill mass, expressed in meters.

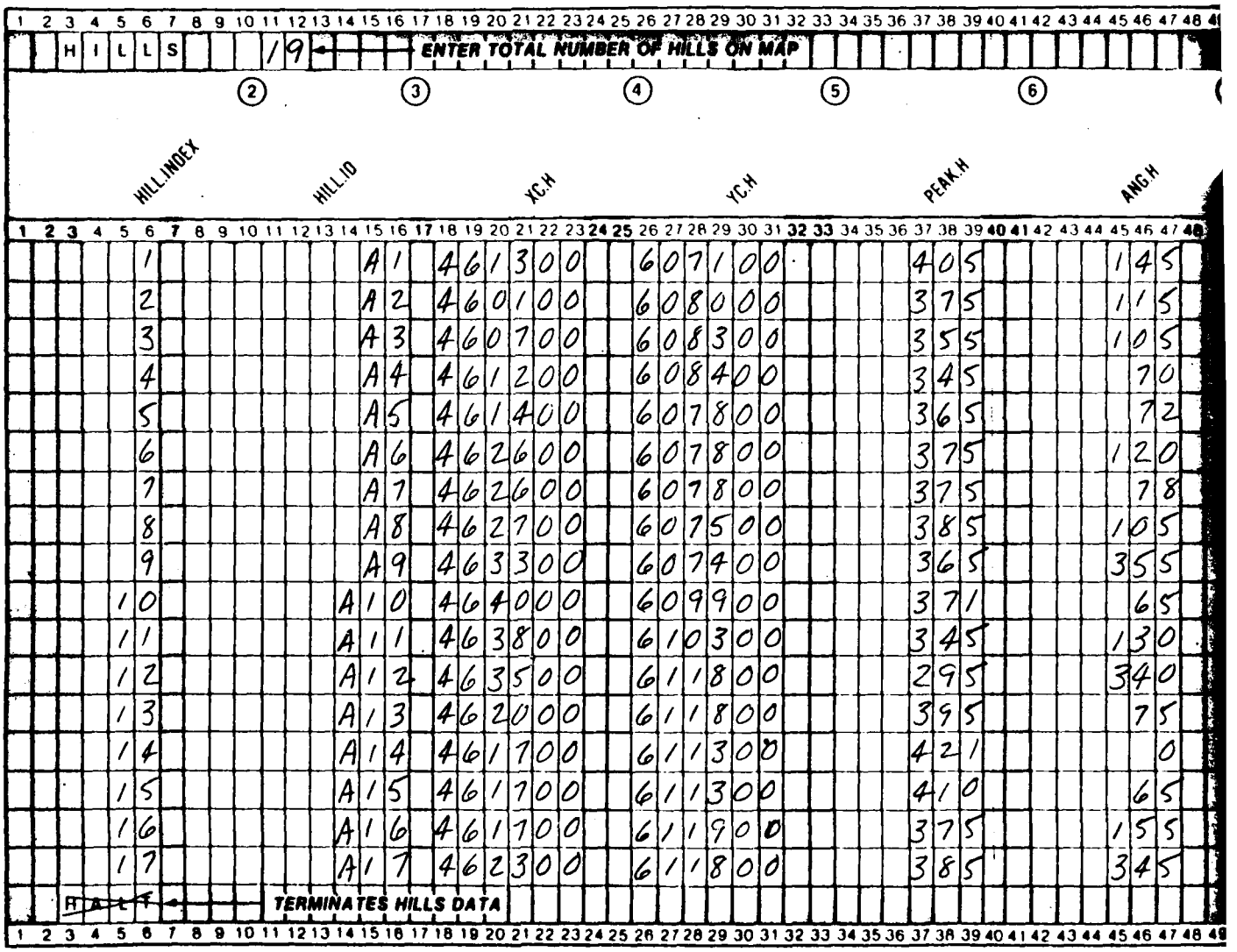
Key:	11
Name:	CUT.H
Spaces:	6
Columns:	75-80
Entries:	Integer
Description:	A vertical distance measured down from the peak of the hill, beyond which this hill mass is no longer considered in the computations of the model.

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DEWCOM MODE

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DEWCOM MODEL

NPUT DATA PREPARATION FORM

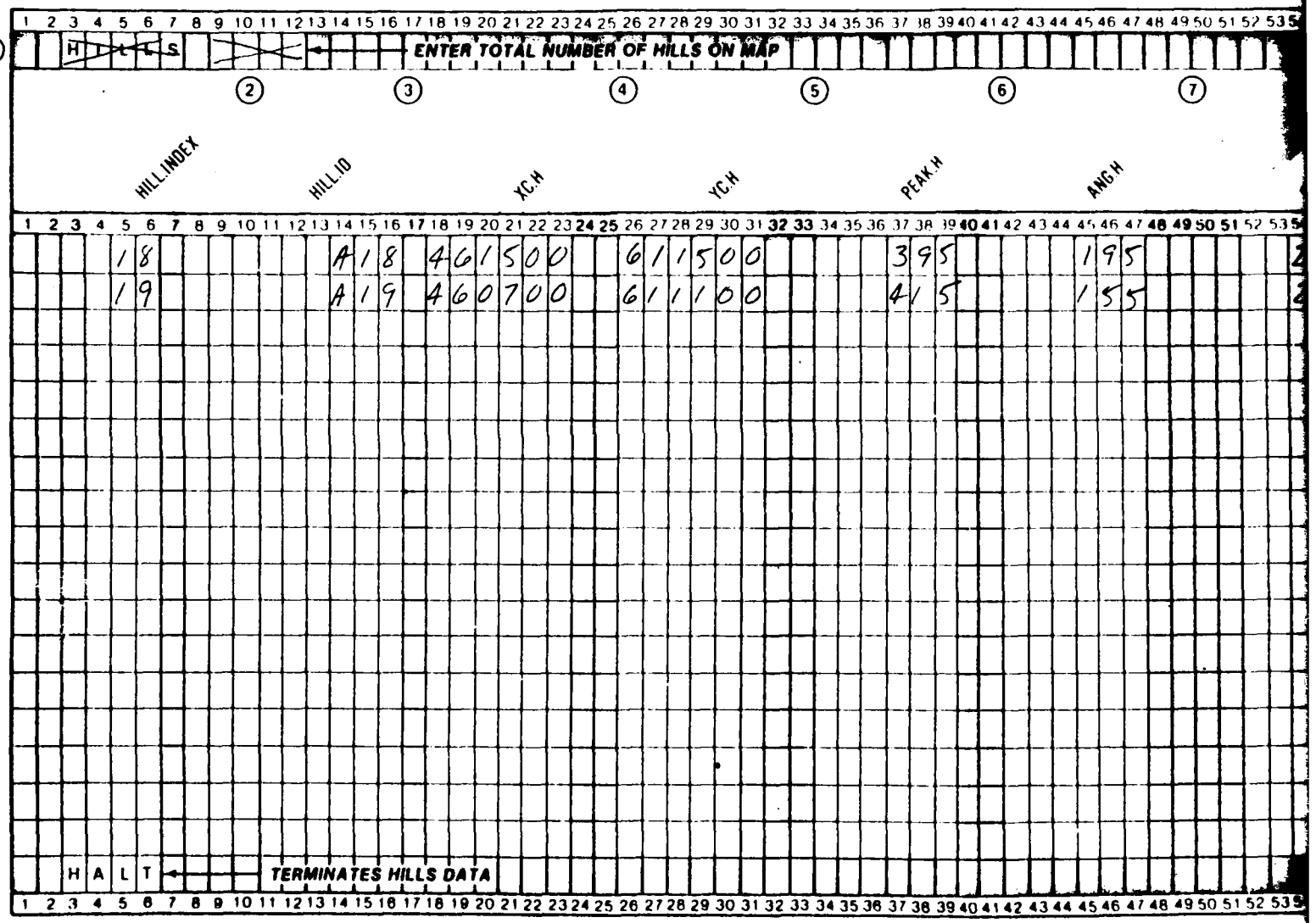
MAP	YC.H	PEAK.H	ANG.H	ECC.H	SPRD.H	HT.H	CUT.H
	00	405	145	3.0	1000	155	155
	00	375	115	2.0	700	125	125
	00	355	105	2.0	700	105	105
	00	345	70	3.0	800	95	73.61
	00	365	72	3.0	800	115	70.38
	00	375	120	2.0	1200	125	92.52
	00	375	78	2.0	1200	125	125.0
	00	385	105	2.0	1200	135	94.47
	00	365	355	3.0	700	113	74.48
	00	371	65	2.0	800	121	121
	00	345	130	2.0	400	95	75.75
	00	295	340	2.0	500	51	51.0
	00	395	75	2.0	600	145	77.73
	00	421	0	1.0	350	171	141.61
	00	410	65	2.0	700	160	115.06
	00	375	155	2.0	400	125	98.31
	00	385	345	2.0	400	135	135.

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DEWCOM MODEL

INPUT DATA PREPARATION FORM



II. TERRAIN

4. HILLS DATA

DEWCOM MODEL

NPUT DATA PREPARATION FORM

MAP	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YC.H	PEAK.H	ANG.H	ECC.H	SPRD.H	HT.H	CUT.H	
10	395	195	2.	400	145	82.060	
10	415	155	2.	900	165	161.162	

2

3.6.7 Form II.5 (TERRAIN; Hill List Data)

This form continues the description of the terrain selected for the simulation. It identifies hills (by grid square) which have an effect on the simulation. Each entry consists of two lines, the first containing data described in Keys 1-4 and the second described in Key 5. A foldout sample of this form is located on page 67.

Key:	1
Name:	# SQUARES IN X DIRECTION
Spaces:	3
Columns:	3-5
Entries:	Integer
Description:	An index value which locates a particular grid square in terms of its distance from the origin, expressed in the number of grid squares in the X direction.

Key:	2
Name:	# SQUARES IN Y DIRECTION
Spaces:	3
Columns:	9-11
Entries:	Integer
Description:	An index value which locates a particular grid square in terms of its distance from the origin expressed in the number of grid squares in the Y direction.

Key:	3
Name:	# HILLS
Spaces:	3
Columns:	15-17
Entries:	Integer
Description:	The number of hills having an effect on the grid square defined by Keys 1 and 2 of this record.

Key:	4
Name:	BASELINE ELEVATION
Spaces:	4
Columns:	20-23
Entries:	Integer
Description:	The base height of the grid square defined by Keys 1 and 2. This corresponds to the base height or altitude (expressed in meters) entered on Form II.3 (Base Height Data) for this same grid square.

Key:	5
Name:	HILL IDs
Spaces:	4 each
Columns:	2-5, 7-10, 12-15,...77-80
Entries:	Integer
Description:	The second line of each entry lists the HILL INDEX number identifying each of the hills having an effect on the grid square defined by Keys 1 and 2. The number of entries must correspond exactly to the number of hills identified in Key 3 of this record (# HILLS). The HILL INDEX numbers are those on Form II.4 (Hill Data) (Key #2) having an effect on this grid square.

If the number of hills exceeds the number that can be entered on one line (more than 16 for a particular square), continue on subsequent HILL IDs lines (Key #5), lining out the intervening line normally used in conjunction with Keys 1-4.

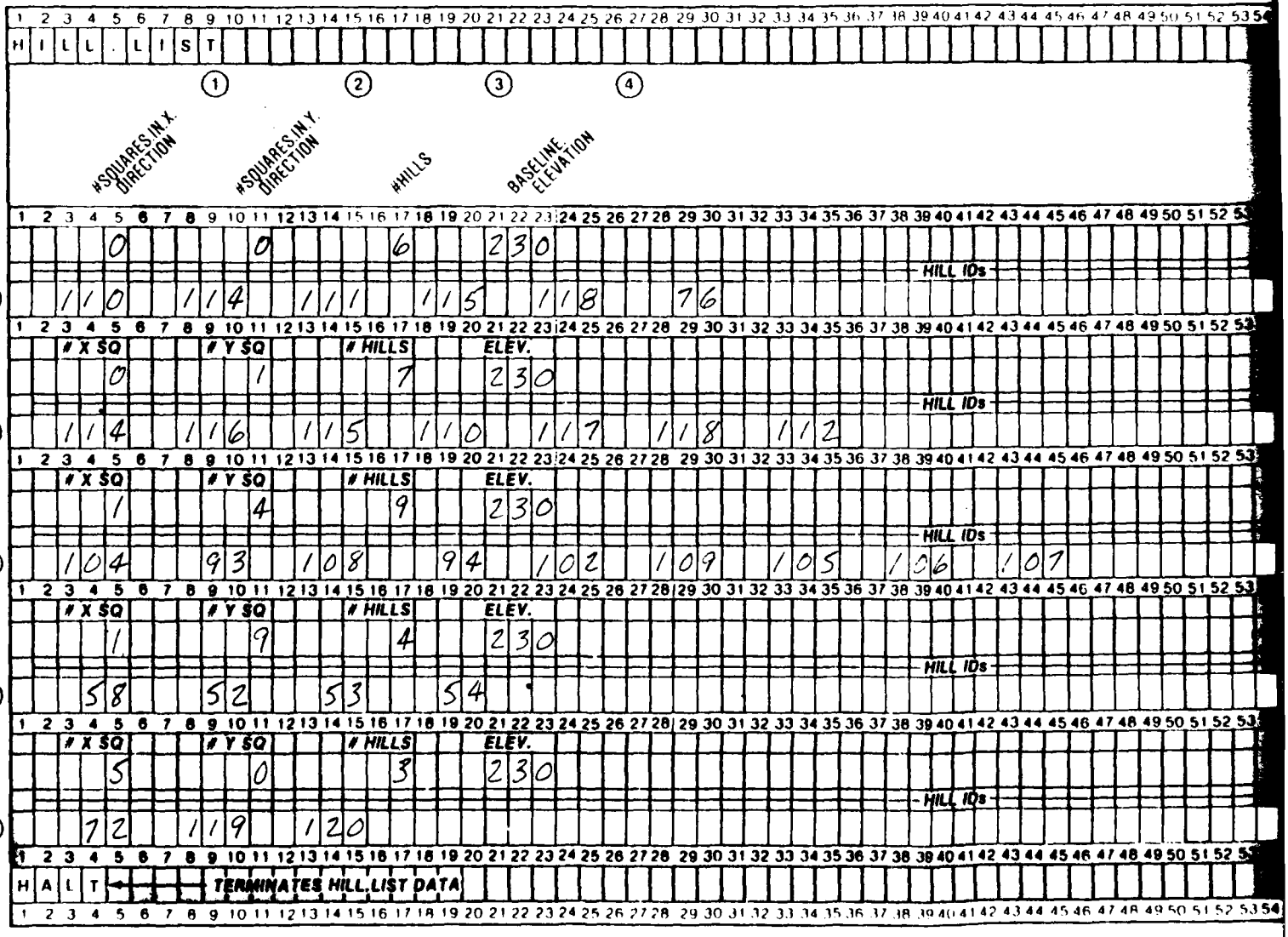
If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described in preceding subsections (line out the keyword HALT on all but the last sheet used; line out keyword HILL.LIST on the first line of all sheets after the first, etc.)

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DEWCOM MODEL

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II. TERRAIN

5 HILL LIST DATA

HILL IDs

7 6

HILL IDs

1 8 1 1 2

HILL IDs

1 0 9 1 0 5 1 0 6 1 0 7

HILL IDs

HILL IDs

3.6.8 Form II.6 (TERRAIN; Covers Data)

This form continues the description of the terrain selected for the simulation. It identifies shape, location, and height of covers on the map. Definitions of the fields identified by Keys 2 through 7 correspond to those in the STAR terrain model. A foldout sample of this form is contained on page 71.

Key:	1
Name:	COVERS
Spaces:	3
Columns:	10-12
Entries:	Integer
Description:	The number of separately identified cover areas on the map. Each is located and described by Keys 2 through 7 below. The number of subsequent entries (for Key 2-7) must exactly correspond to the entry in this field.

Key:	2
Name:	XC.E
Spaces:	6
Columns:	5-10
Entries:	6 digit grid coordinate
Description:	The X coordinate of the center of an ellipse representing the area of cover. If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described previously (line out the TWO keywords HALT on all but the last sheet used; line out the keyword COVERS and the spaces for its value on the first line of all sheets after the first etc.).

Key:	3
Name:	YC.E
Spaces:	6
Columns:	13-18
Entries:	6 digit grid coordinate
Description:	The Y coordinate of the center of an ellipse representing the area of cover.

Key:	4
Name:	HT.E
Spaces:	6
Columns:	21-26
Entries:	Integer
Description:	The height in meters of the trees or other cover in this ellipse above the terrain elevation

Key:	5
Name:	ANG.E
Spaces:	6
Columns:	29-34
Entries:	Integer in the range of 0 to 360
Description:	The orientation angle in degrees measured counter-clockwise from East to the major axis of the ellipse.

Key:	6
Name:	AMAJ.E
Spaces:	6
Columns:	37-42
Entries:	Integer
Description:	Length in meters of the semi-major axis of the ellipse.

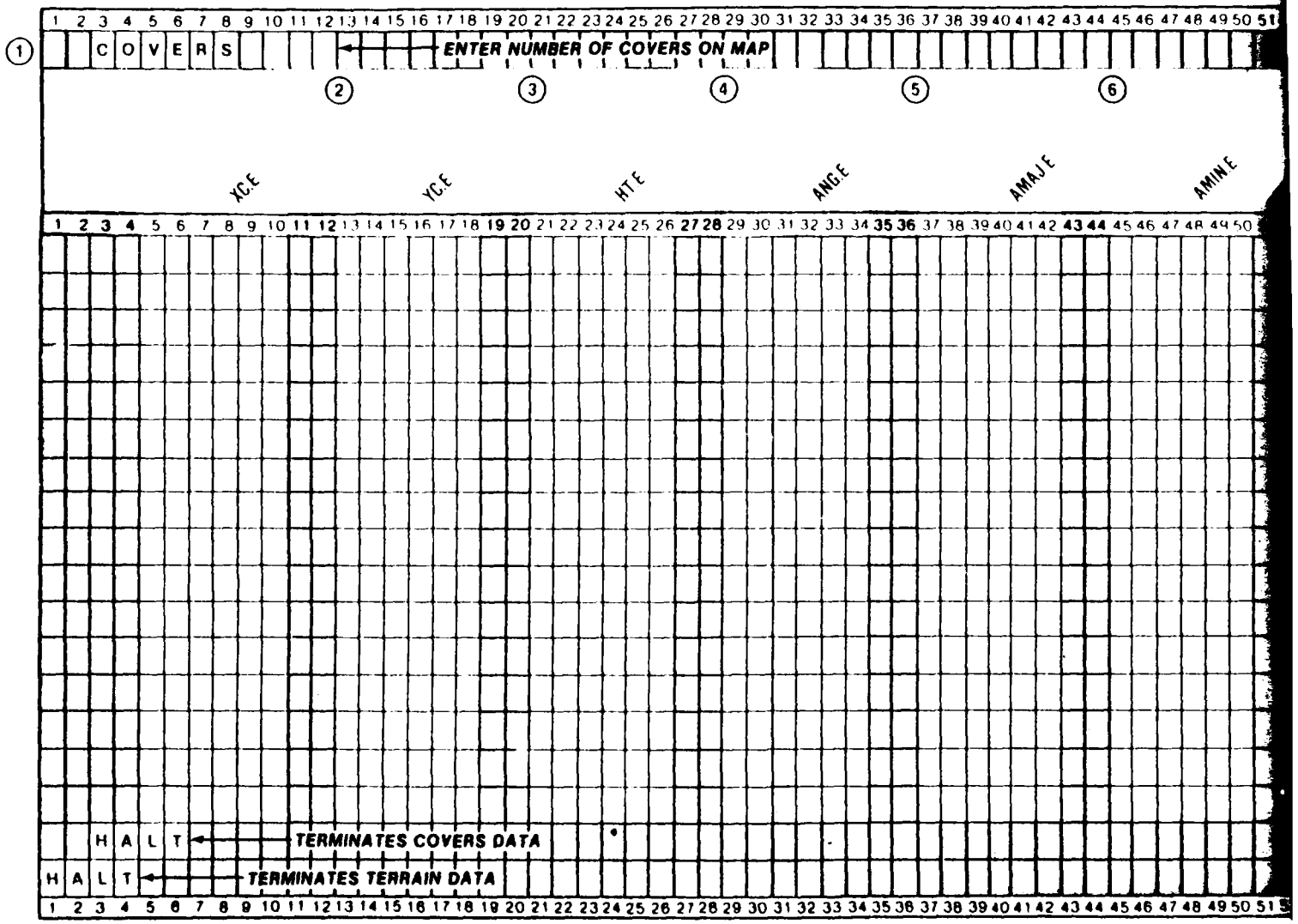
Key:	7
Name:	AMIN.E
Spaces:	6
Columns:	45-50
Entries:	Integer
Description:	Length in meters of the semi-minor axis of the ellipse.

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DEWCOM MODEL

INPUT DATA PREPARATION FOR

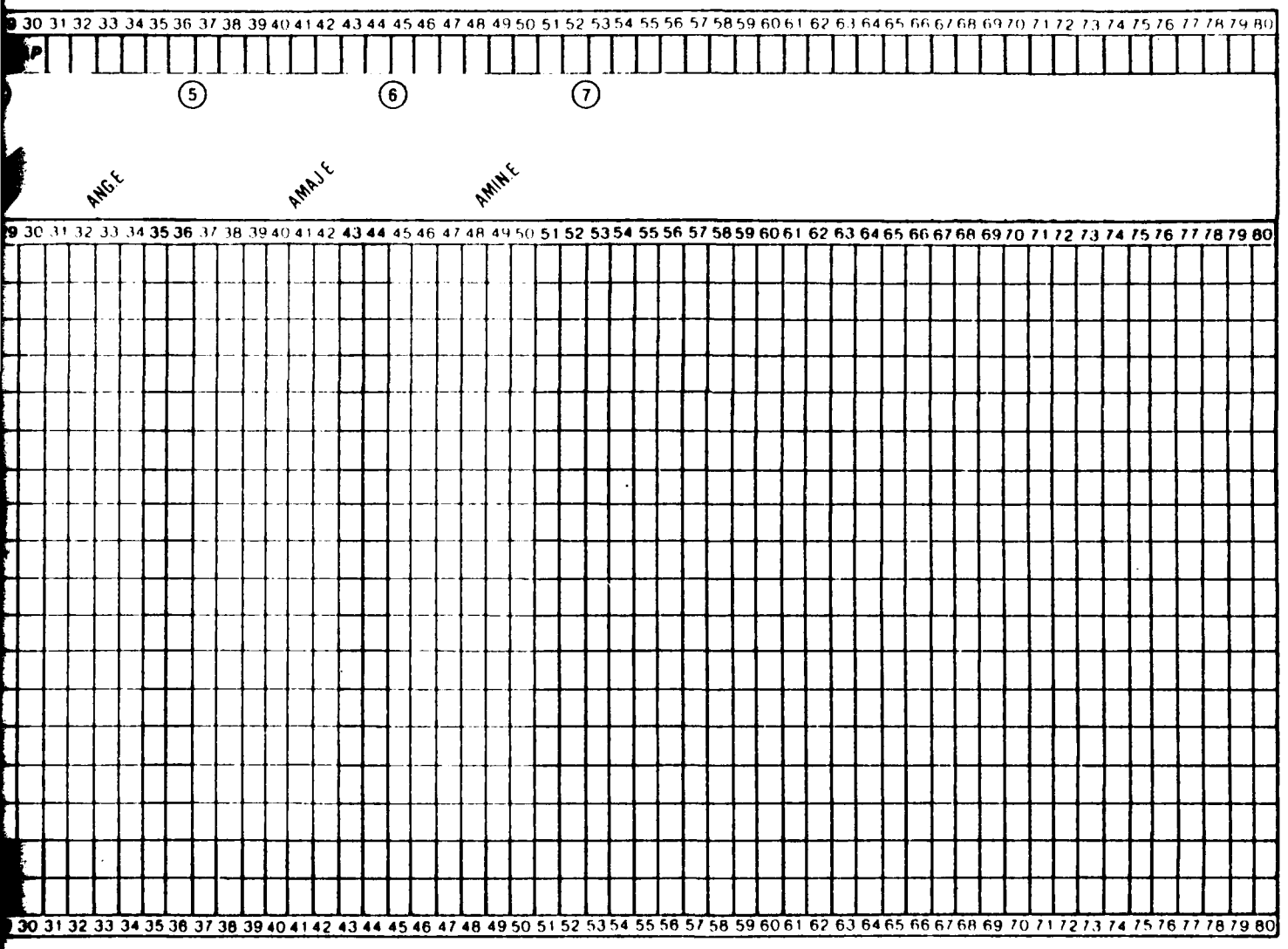


II. TERRAIN

6. COVERS DATA

DEWCOM MODEL

NPUT DATA PREPARATION FORM



3.6.9 Form III.1 (EQUIPMENT; Damage Class Data; Communications Equipment Data)

This form describes damage classes and communications equipment capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 77 and 79.

Key:	1
Name:	DAMAGE.CLASS
Spaces:	3
Columns:	16-18
Entries:	Integer
Description:	The total number of damage classes in the simulation. The number of DC.VALUE entries on the lines immediately below must correspond exactly to the value in this field.

Key:	n/a
Name:	DC.VALUE
Spaces:	3 each
Columns:	5-7, 9-11, 13-15,...61-63
Entries:	Integer in the range 0 to 99 inclusive
Description:	A damage class value for each of the damage classes in the simulation. The first value corresponds to damage class #1, the second to damage class #2, etc. The number of entries must correspond exactly to the value entered for Key 1 above.

Key:	2
Name:	COMM.EQUIP
Spaces:	3
Columns:	14-16
Entries:	Integer
Description:	The total number of types of communications equipment in the simulation.

Separate sheets are used for each side (BLUE or RED) to enter the description and characteristics of their communications equipment. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this type form (III.1). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all entries for the first side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out all keywords and related spaces in the top portion of the form EXCEPT for the entry identifying the side (BLUE or RED) (last line in top portion of form). If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Terminate all communications equipment data for the simulation with a HALT on the last sheet for the second side (corresponding to the keyword COMM.EQUIP on the first sheet for the first side).

Key:	3
Name:	CET.NAME
Spaces:	12
Columns:	7-18
Entries:	Alphanumeric
Description:	The name for the type of communications equipment described on this line.

Key:	4
Name:	CET.CLASS
Spaces:	5
Columns:	20-24
Entries:	RADIO or WIRE
Description:	A general classification for this type of communications equipment

Key:	5
Name:	CET.DAMAGE.CLASS
Spaces:	2
Columns:	26-27
Entries:	Integer
Description:	The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed Form III.1 relates to this type equipment, enter 1; if the second value relates, enter 2, etc.

Key:	6
Name:	CET.MTBF
Spaces:	2
Columns:	29-30
Entries:	Integer
Description:	A value in hours expressing the mean time between failures for this type equipment.

Key:	7
Name:	CET.MTTR
Spaces:	2
Columns:	32-33
Entries:	Integer
Description:	A value in hours giving the mean time to repair this type equipment.

Key:	8
Name:	CET.RANGE
Spaces:	6
Columns:	35-40
Entries:	Integer
Description:	A value in meters giving the range for this type equipment.

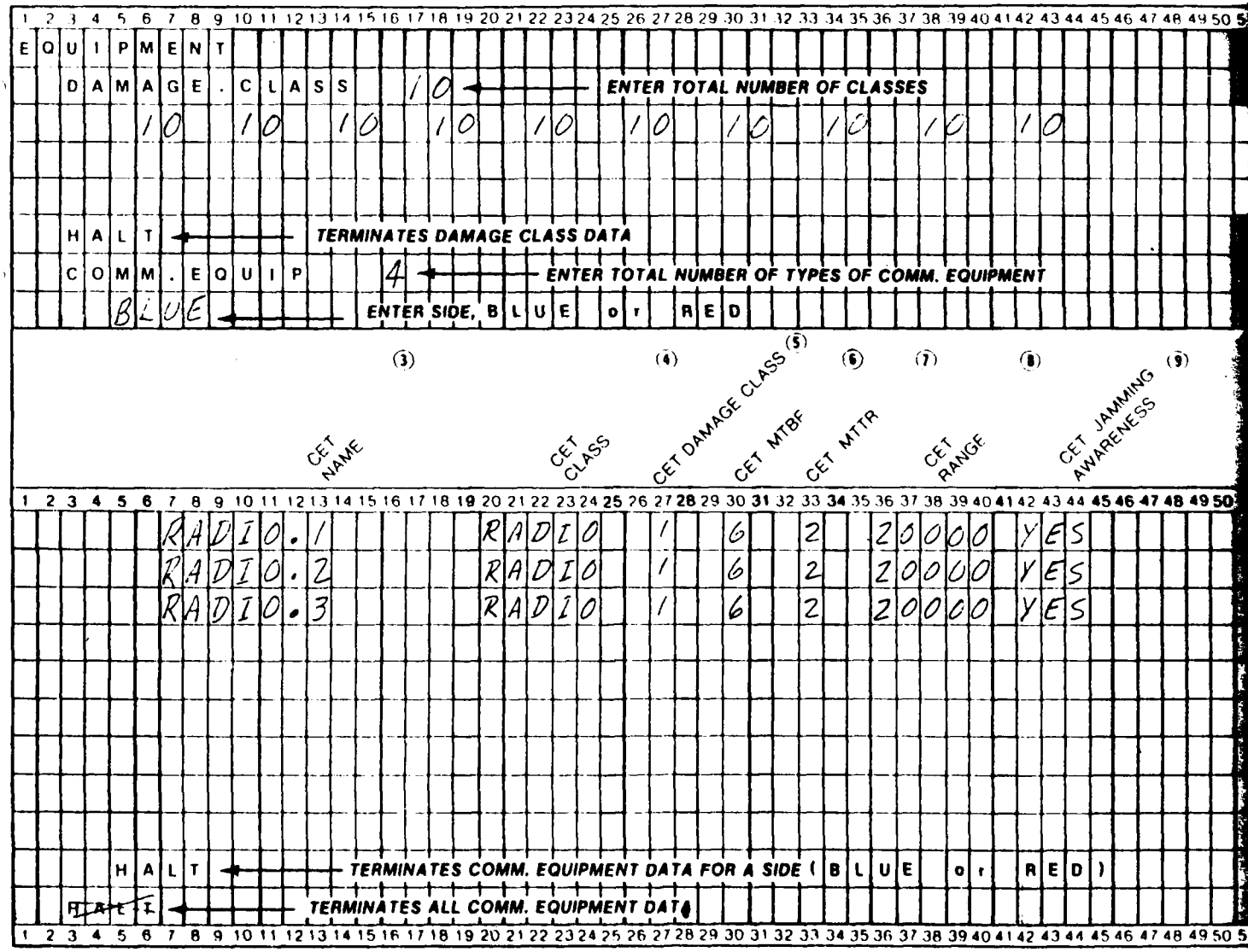
Key:	9
Name:	CET.JAMMING.AWARENESS
Spaces:	3
Columns:	42-44
Entries:	YES or NO
Description:	An entry indicating whether the user of this type equipment can be aware of being jammed.

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INPUT DATA PREPARATION FOR



EWCOM MODEL

T DATA PREPARATION FORM

III EQUIPMENT

1 DAMAGE CLASS DATA
COMMUNICATIONS EQUIPMENT DATA

R OF CLASSES

1	1	1

YPES OF COMM. EQUIPMENT

(5) TBF	(6) CET MTTR	(7) CET RANGE	(8) CET JAMMING AWARENESS	(9)
2	20000	YES		
2	20000	YES		
2	20000	YES		

E (BLUE or RED)

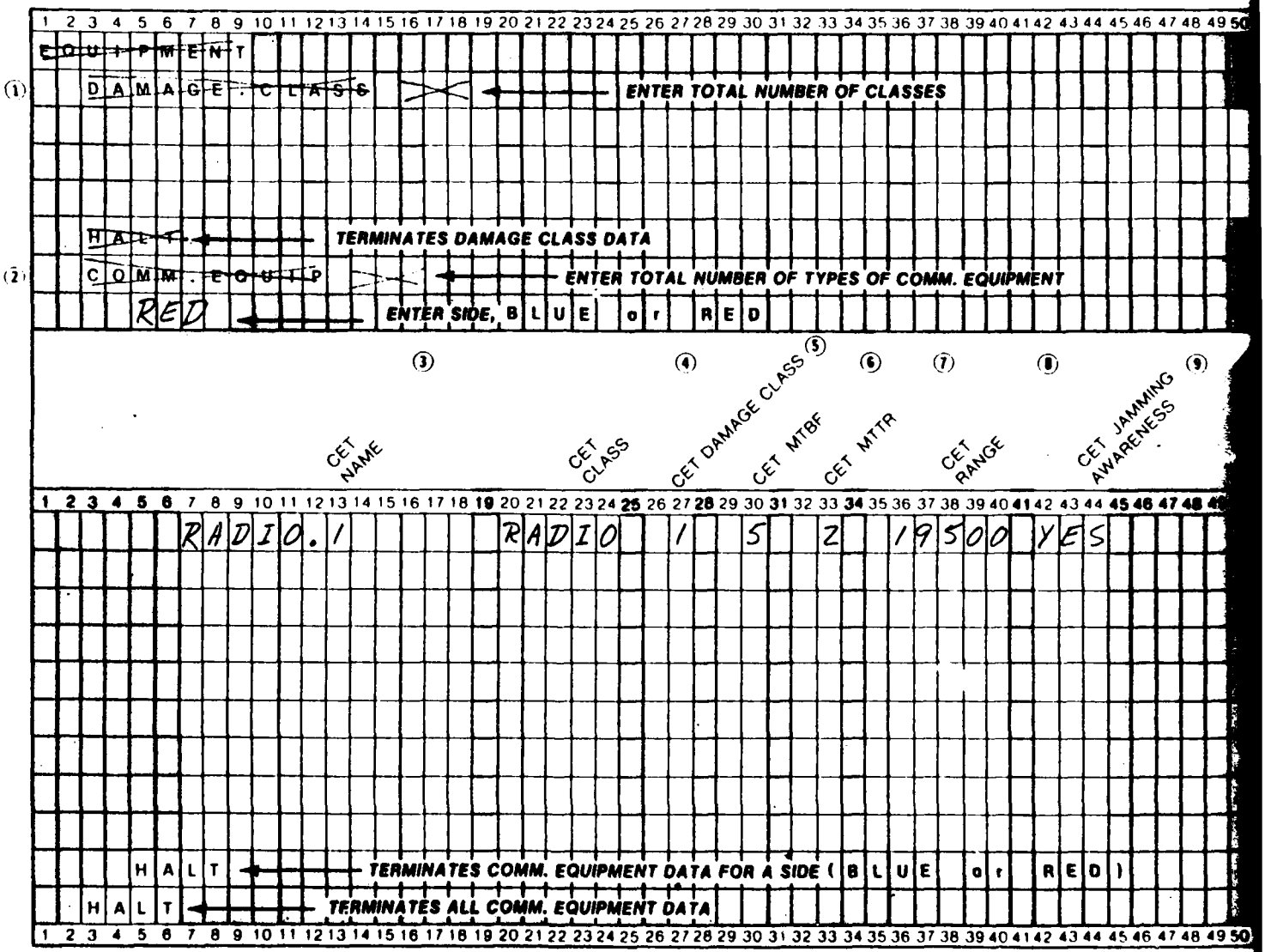
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DEWCOM MODE

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III EQUIPMENT

1. DAMAGE CLASS DATA
   COMMUNICATIONS EQUIPMENT DATA

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

BER OF CLASSES

TYPES OF COMM. EQUIPMENT

(5) ASS — MTBF
(6) CET MTTR
(7) CET RANGE
(8) CET JAMMING AWARENESS
(9)

32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

2   19500   YES

DE (BLUE or RED)

32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

2

3.6.10 Form III.2 (EQUIPMENT; EW Equipment Data)

This form is used to describe electronic warfare equipment capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 85 and 87.

Separate sheets are used for each side (BLUE and RED) to enter the description and characteristics of their electronic warfare (EW) equipment. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this type form (III.2). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable key words and spaces so that all EW equipment for the side is delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword EW.EQUIP and the space for its value near the top.

If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Delimit all EW equipment data for the simulation with the keyword EW.EQUIP and its corresponding HALT.

Key:	1
Name:	EW.EQUIP
Spaces:	3
Columns:	12-14
Entries:	Integer
Description:	The total number of types of communications equipment in the simulation.

Key:	2
Name:	EWT.NAME
Spaces:	12
Columns:	7-18
Entries:	Alphanumeric
Description:	The name for the type of EW equipment described on this line.

Key:	3
Name:	EWT.CLASS
Spaces:	11
Columns:	20-30
Entries:	One of the following:

Name	Meaning
LOCATOR	Locator Equipment
INTERCEPTOR	Interceptor Equipment
LT.SPOT	Look Thru Spot Jammer
NL.SPOT	Non-look Thru Spot Jammer
LT.BARRAGE	Look Thru Barrage Jammer
NL.BARRAGE	Non-look Thru Barrage Jammer
CB.RADAR	Counterbattery Radar
RADAR	Radar
EX.SPOT	Expendable Spot Jammer
EX.BARRAGE	Expendable Barrage Jammer

Description: The class of EW equipment being described, using the above class names.

Key:	4
Name:	EWT.DAMAGE.CLASS
Spaces:	2
Columns:	32-33
Entries:	Integer
Description:	The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed on Form III.1 corresponds to this type of equipment, enter 1; if the fifth value correponds, enter 5, etc.

Key:	5
Name:	EWT.MTBF
Spaces:	2
Columns:	35-36
Entries:	Integer
Description:	A value in hours expressing the mean time between failures for this type equipment.

Key:	6
Name:	EWT.MTTR
Spaces:	2
Columns:	38-39
Entries:	Integer
Description:	A value in hours expressing the mean time to repair this type equipment.

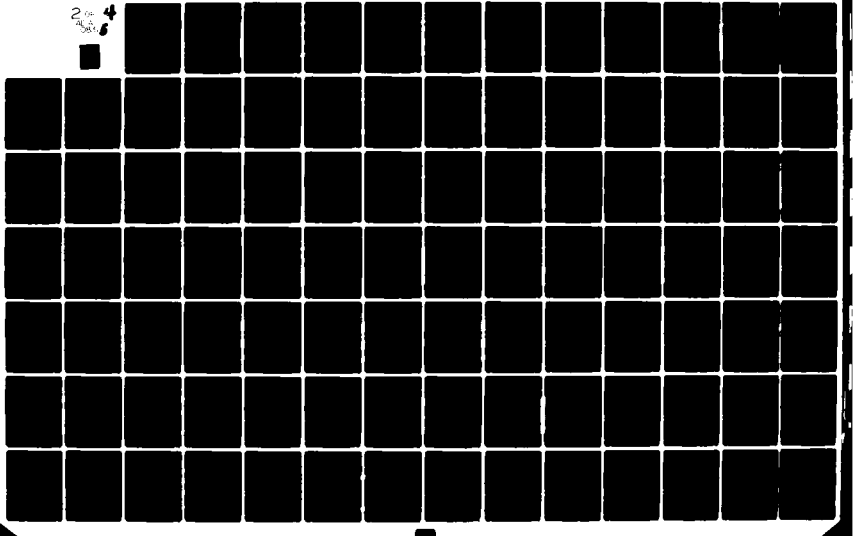
Key:	7
Name:	EWT.RANGE
Spaces:	6
Columns:	41-46
Entries:	Integer
Description:	A value in meters giving the range for this type equipment.

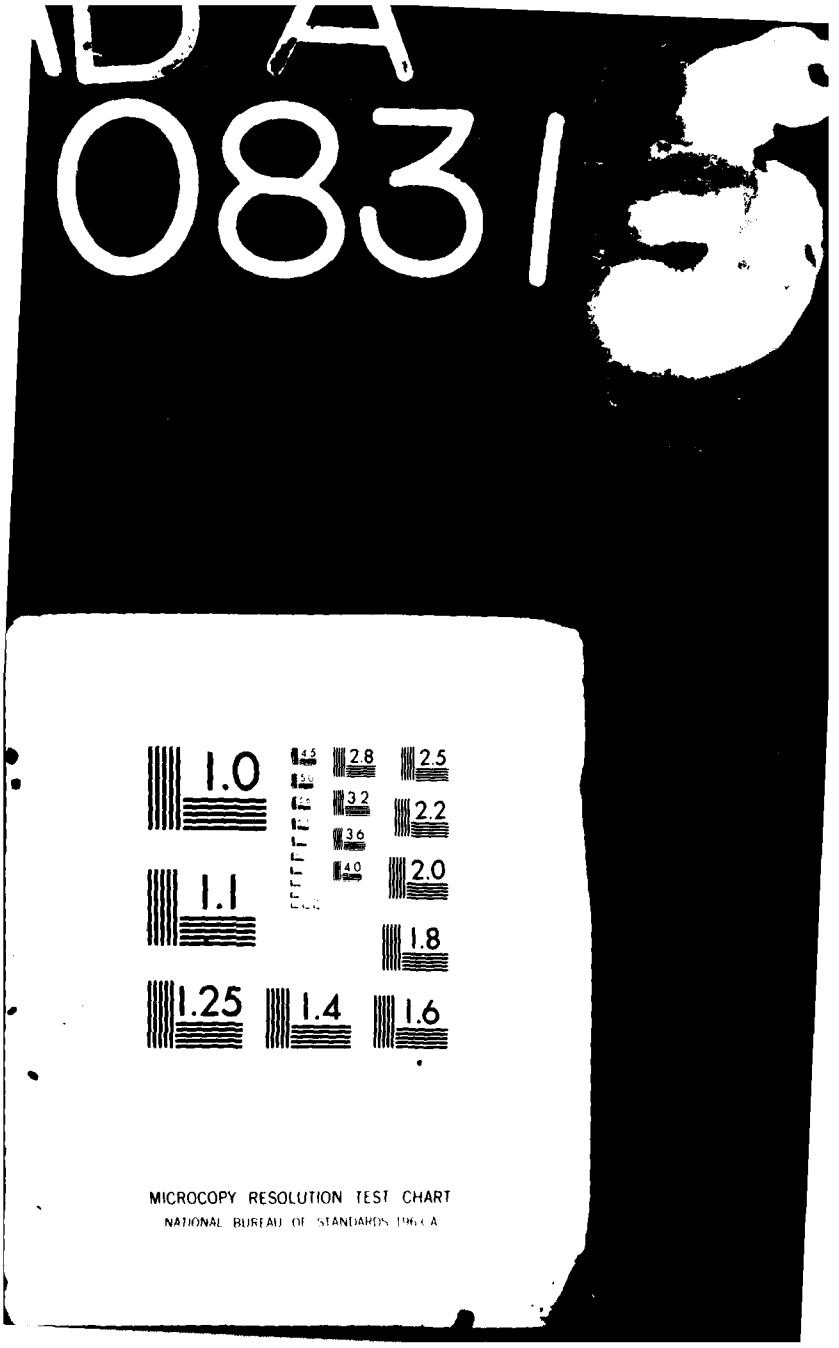
AD-A108 315 CACI INC-FEDERAL ARLINGTON VA F/G 17/4

DIVISIONAL ELECTRONIC WARFARE COMBAT (DEWCOM) MODEL - USER MANU--ETC(U)

SEP 80 R T CAMPBELL, R S FAIRBROTHER DAAK21-79-C-0057

UNCLASSIFIED CAA-D-80-5 NL




0831
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

Key:	8
Name:	EWT.DF.TIME
Spaces:	3
Columns:	48-50
Entries:	Integer
Description:	The time period (in seconds) required to perform a direction finding function.

Key:	9
Name:	EWT.INTELLIGENCE.RATE
Spaces:	3
Columns:	52-54
Entries:	Integer in the range 0 to 100
Description:	The rate of gain (per second) of intelligence information by an intercept function.

Key:	10
Name:	EWT.HIGH.FREQ
Spaces:	4
Columns:	56-59
Entries:	Integer
Description:	The high limit of the communications frequency range (in megahertz) for which this equipment is effective.

Key:	11
Name:	EWT.LOW.FREQ
Spaces:	4
Columns:	61-64
Entries:	Integer
Description:	The low limit of the communications frequency range (in megahertz) for which this equipment is effective.

Key:	12
Name:	EWT.RADAR.DURATION
Spaces:	3
Columns:	66-68
Entries:	Integer
Description:	For other than counter-battery radar, the time period (in minutes) during which the unit normally transmits pulses and receives the return.

Key:	13
Name:	EWT.RADAR.INTERVAL
Spaces:	3
Columns:	70-72
Entries:	Integer
Description:	For other than counter-battery radar, the time interval (in minutes) between the intermittent transmission and return periods of pulses.

Key:	14
Name:	EWT.PROB.OF.SAFE.ARRIVAL
Spaces:	3
Columns:	74-76
Entries:	none
Description:	The current version of the model does not use this variable. It should be left blank.

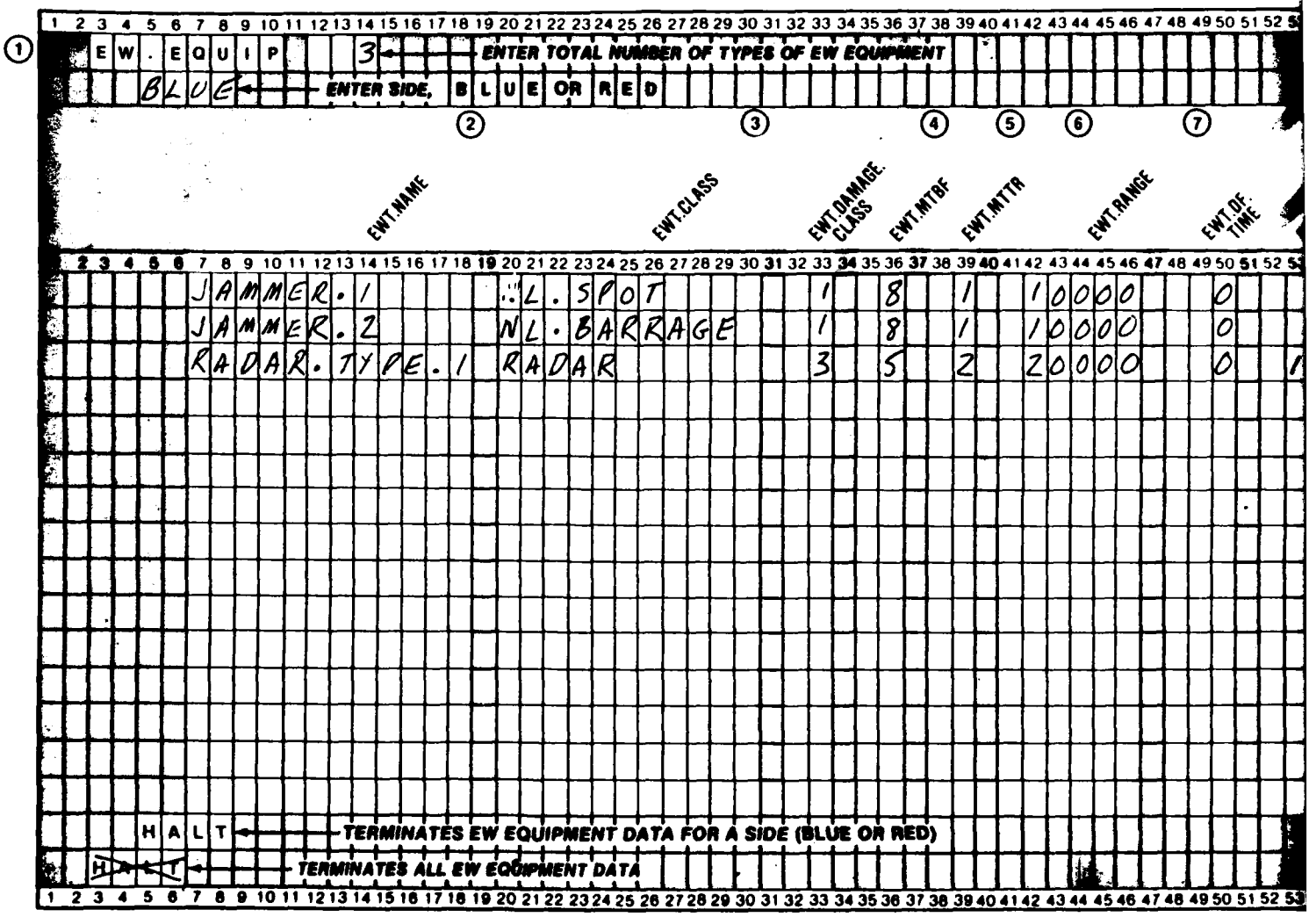
Key:	15
Name:	EWT.PROB.OF.ARRIVING.ON.TARGET
Spaces:	3
Columns:	78-80
Entries:	none
Description:	The current version of the model does not use this variable. It should be left blank.

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DEWCOM MODEL

INPUT DATA PREPARATION FORM



III. EQUIPMENT

2. EW EQUIPMENT DATA

EWCOM MODEL

DATA PREPARATION FORM

EQUIPMENT	EWT.DAMAGE CLASS	EWT.MTBF	EWT.MTTR	EWT.RANGE	EWT.OF TIME	EWT.INTELLIGENCE RATE	EWT.HIGH.FREQ	EWT.LOW.FREQ	EWT.RADAR DURATION	EWT.RADAR INTERVAL	EWT.PROB.OF SAFE.ARRIVAL	EWT.PROB.OF ARRIVING.ON.TARGET
(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1	8	1	10000	0	0	35	15	0	0	0	0	
1	8	1	10000	0	0	25	20	0	0	0	0	
3	5	2	20000	0	10	40000	30000	2	5	0	0	

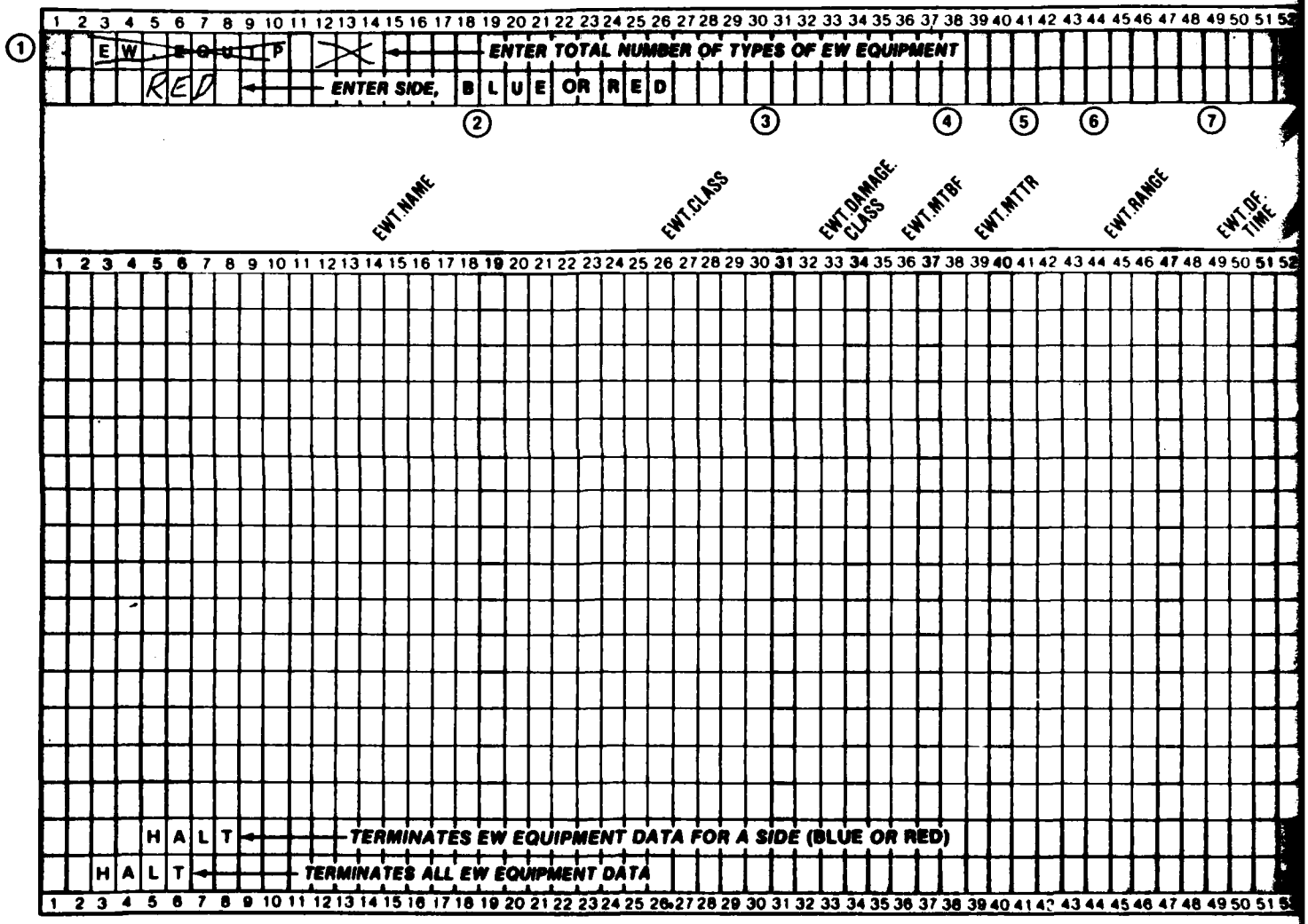
OR RED)

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PHONE: _____ DATE: _____

DEWCOM MODEL

INPUT DATA PREPARATION FORM

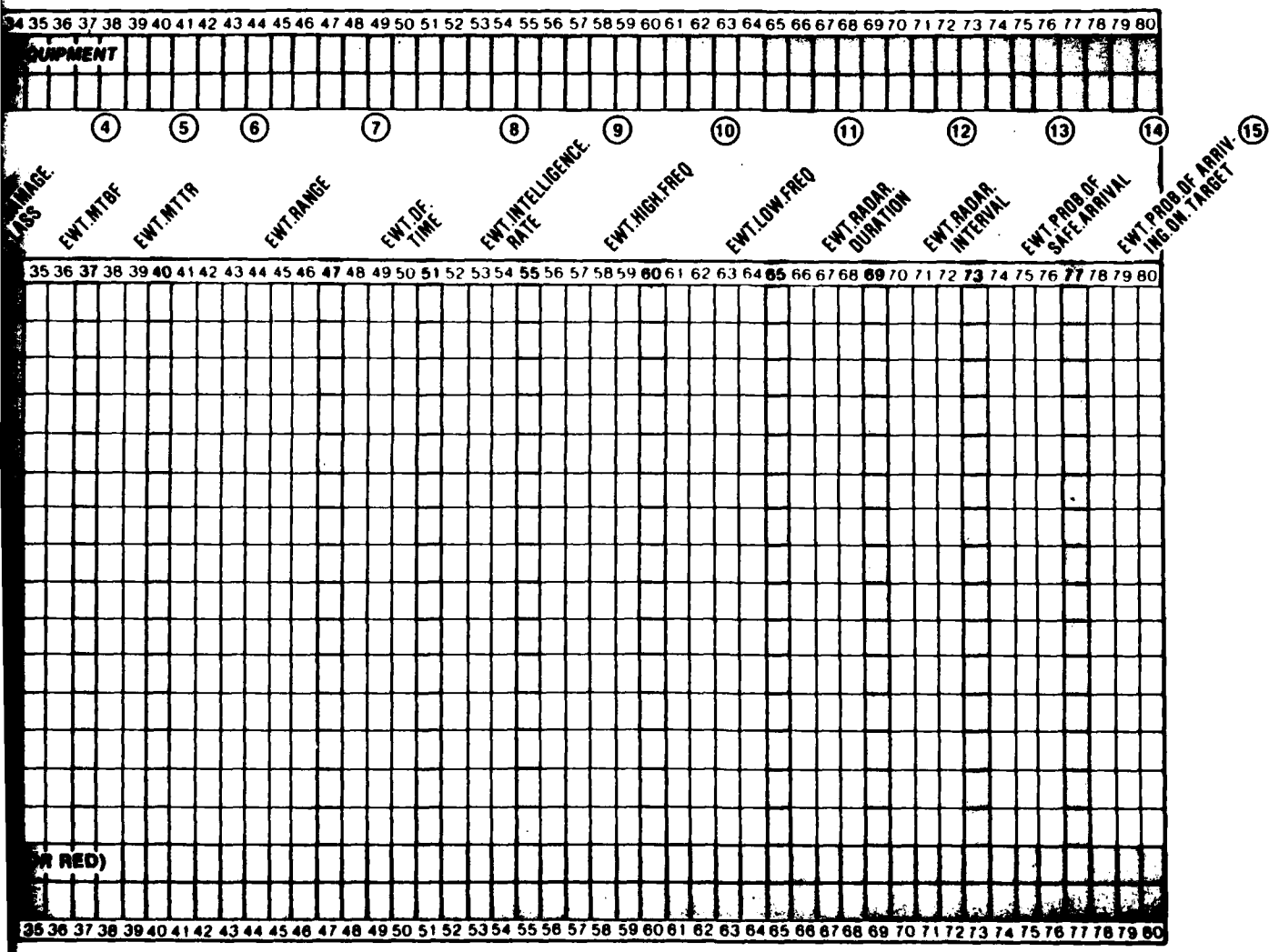


III. EQUIPMENT

2. EW EQUIPMENT DATA

WCOM MODEL

ATA PREPARATION FORM



3.6.11 Form III.3 (EQUIPMENT; Weapons Data)

This form is used to describe weapons capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 91 and 93.

Separate sheets are used for each side (BLUE and RED) to enter the description and characteristics of their weapons. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this type form (III.3). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all weapons data for the side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword WEAPONS and the space for its value near the top. If necessary, continue entries on successive sheets for the second side as instructed previously for the first.

Delimit all weapons data for the simulation with the keyword WEAPONS and its corresponding HALT.

Key:	1
Name:	WEAPONS
Spaces:	3
Columns:	11-13
Entries:	Integer
Description:	The total number of types of weapons in the simulation.

Key:	2
Name:	WT.NAME
Spaces:	12
Columns:	7-18
Entries:	Alphanumeric
Description:	The name for the type of weapon described on this line.

Key:	3
Name:	WT.COMBAT.VALUE
Spaces:	3
Columns:	20-22
Entries:	Integer in the range 0 to 100
Description:	The relative value of this weapon among all available weapons.

Key:	4
Name:	WT.DAMAGE.CLASS
Spaces:	2
Columns:	24-25
Entries:	Integer
Description:	The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed on Form III.1 corresponds to this type of equipment, enter 1; if the seventh value corresponds, enter 7, etc.

Key:	5
Name:	WT.RANGE
Spaces:	5
Columns:	27-31
Entries:	Integer
Description:	A value in meters giving the range for this type weapon.

Key:	6
Name:	WT.ATTRITION.CLASS
Spaces:	5
Columns:	33-37
Entries:	LIGHT or HEAVY
Description:	A rate at which attrition of this type weapon is incurred.

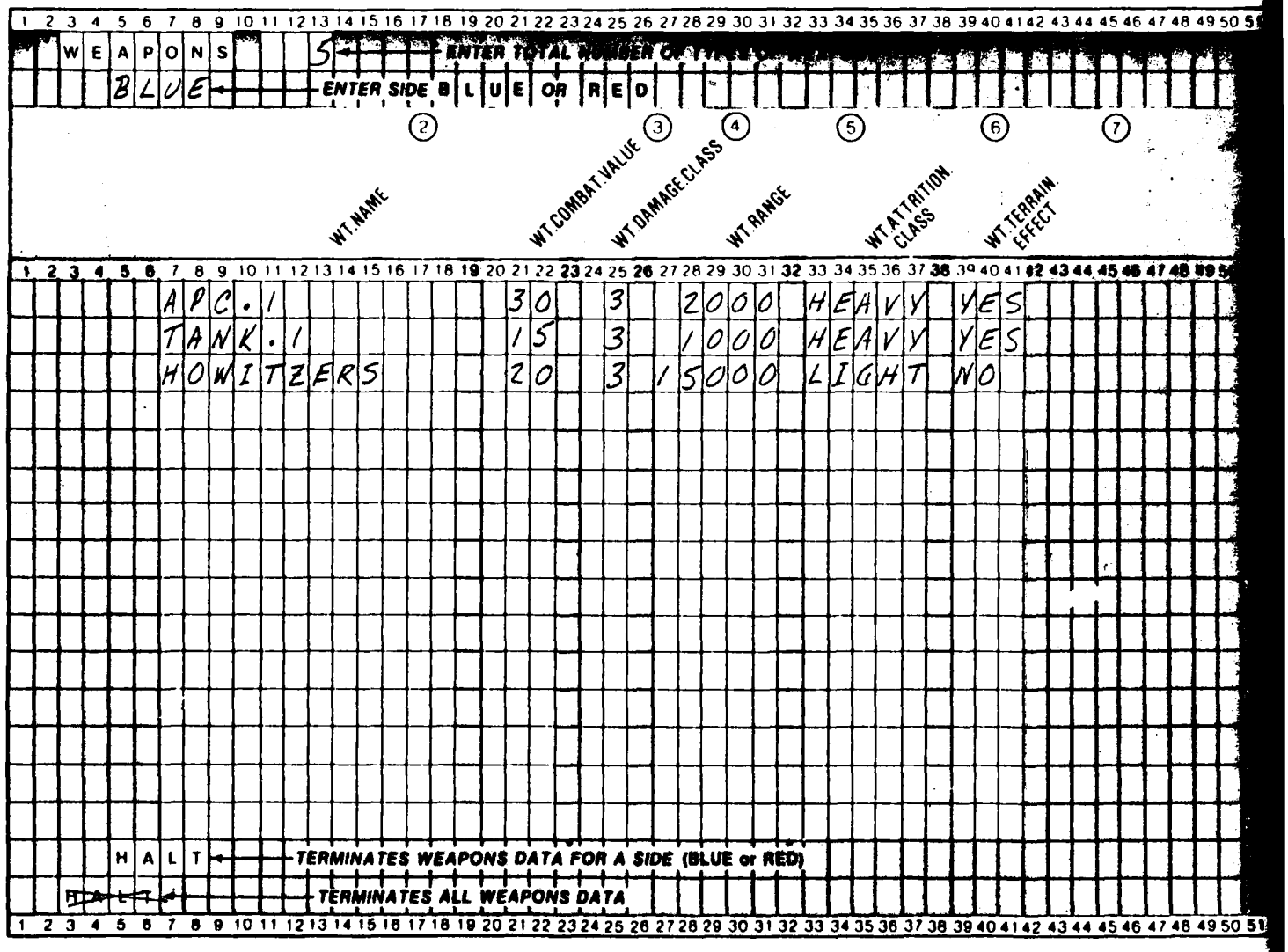
Key:	7
Name:	WT.TERRAIN.EFFECT
Spaces:	3
Columns:	39-41
Entries:	YES or NO
Description:	An indication of whether or not terrain is a factor which affects the attrition rate of this type weapon.

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DEWCOM MODEL

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III. EQUIPMENT

3. WEAPONS DATA

EWCOM MODEL

T DATA PREPARATION FORM

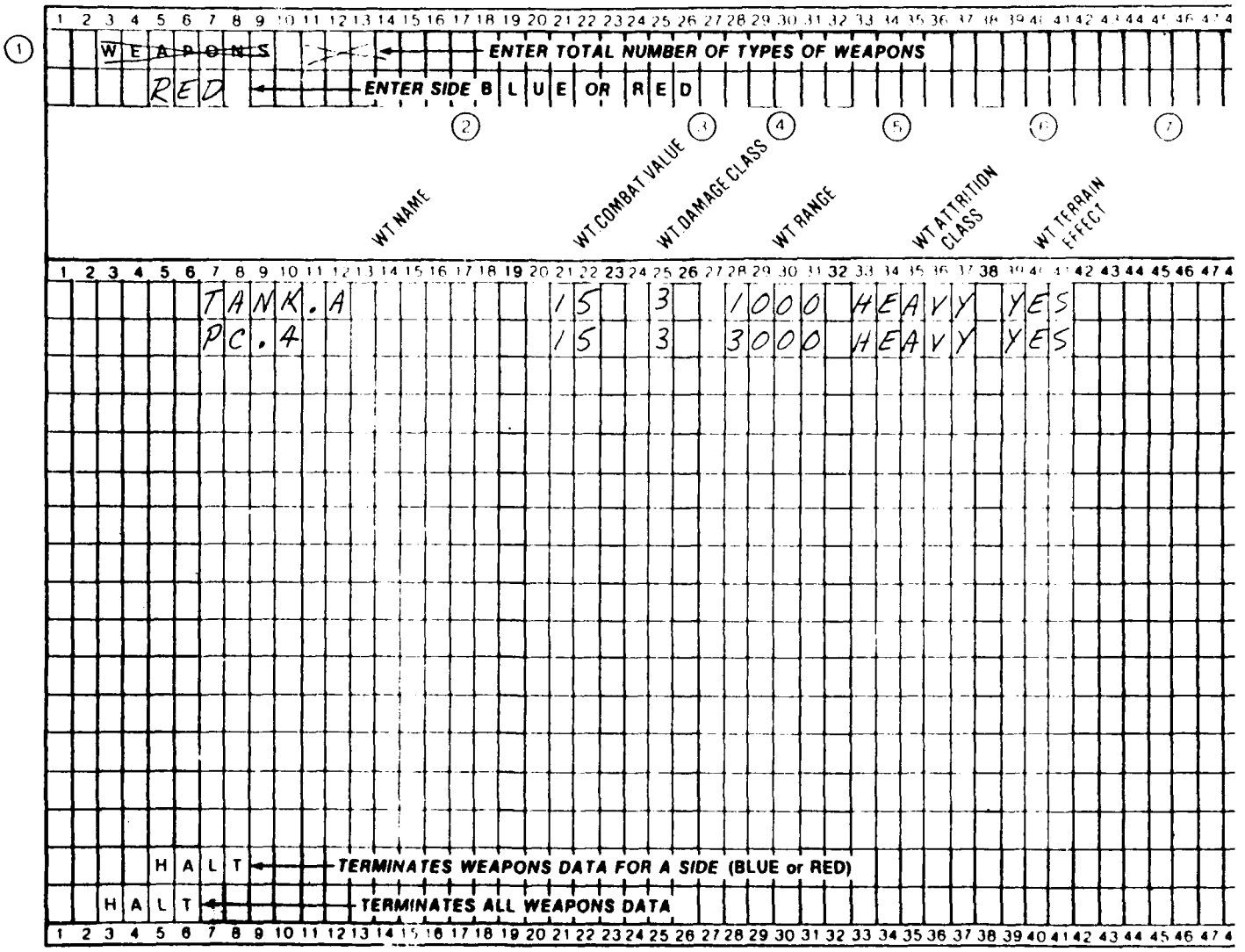
5	6	7
WT ATTRITION CLASS	WT TERRAIN EFFECT	
HEAVY	YES	
HEAVY	YES	
LIGHT	NO	

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PHONE _____ DATE _____

DEWCOM MOD

INPUT DATA PREPARATION



DEWCOM MODEL

UT DATA PREPARATION FORM

...F WEAPONS

...ANGE — WT. ATTRITION CLASS (5) — WT. TERRAIN EFFECT (6) — (7)

31	32	33	34	35	36	37	38	39	40	41	42
0		H	E	A	V	Y		Y	E	S	
0		H	E	A	V	Y		Y	E	S	

...RED)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

3.6.12 Form III.4 (EQUIPMENT; Type Sortie Data)

This form is used to describe the types of air sorties employed in the simulation by each side (BLUE and RED). Foldout samples of this form are located on pages 99 and 101.

Separate sheets are used for each side (BLUE and RED) to indicate the types of air sorties each employs. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this form (III.4). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all air sortie types for the side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword TYPE.SORTIE and the space for its value near the top. If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Delimit all air sortie data for the simulation with the keyword TYPE.SORTIE and its corresponding HALT.

Terminate all equipment data for the simulation with a HALT on the last sheet for the second side (corresponding to the keyword EQUIPMENT at the top of Form III.1) following the termination of type sortie data for the simulation.

Key:	1
Name:	TYPE.SORTIE
Spaces:	3
Columns:	15-17
Entries:	Integer
Description:	The total number of types of air sorties employed in the simulation.

Key:	2
Name:	TAS.NAME
Spaces:	12
Columns:	7-18
Entries:	Alphanumeric
Description:	The name for the type of air sortie described on this line.

Key:	3
Name:	TAS.CLASS
Spaces:	6
Columns:	20-25
Entries:	ROTARY or FIXED
Description:	The class name for the type of air sortie described on this line.

Key:	4
Name:	TAS.GROUND.COORDINATION
Spaces:	3
Columns:	27-29
Entries:	YES or NO
Description:	An indication of whether or not contact with a ground controller is required after arrival on target. If "YES" and contact does not occur within the loiter time specified (see Key 6), the mission is aborted.

Key:	5
Name:	TAS.TRANSIT.TIME
Spaces:	3
Columns:	31-33
Entries:	Integer
Description:	The time in minutes from dispatch until arrival in the vicinity of the target.

Key:	6
Name:	TAS.LOITER.TIME
Spaces:	3
Columns:	35-37
Entries:	Integer
Description:	The time in minutes after arrival in the vicinity of the target, after which the mission is aborted.

Key:	7
Name:	TAS.EFFECTIVENESS
Spaces:	3
Columns:	39-41
Entries:	Integer in the range 0 to 100
Description:	A value expressing the effectiveness of this type air sortie.

Key:	8
Name:	TAS.TRANSIT.ATTRITION
Spaces:	3
Columns:	43-45
Entries:	Integer in the range 0-100
Description:	The percentage of sorties which incur attrition during transit time to the target.

Key:	9
Name:	TAS.LOITER.ATTRITION
Spaces:	3
Columns:	47-49
Entries:	Integer in the range 0-100
Description:	The percentage of sorties which incur attrition during loiter time in the vicinity of the target.

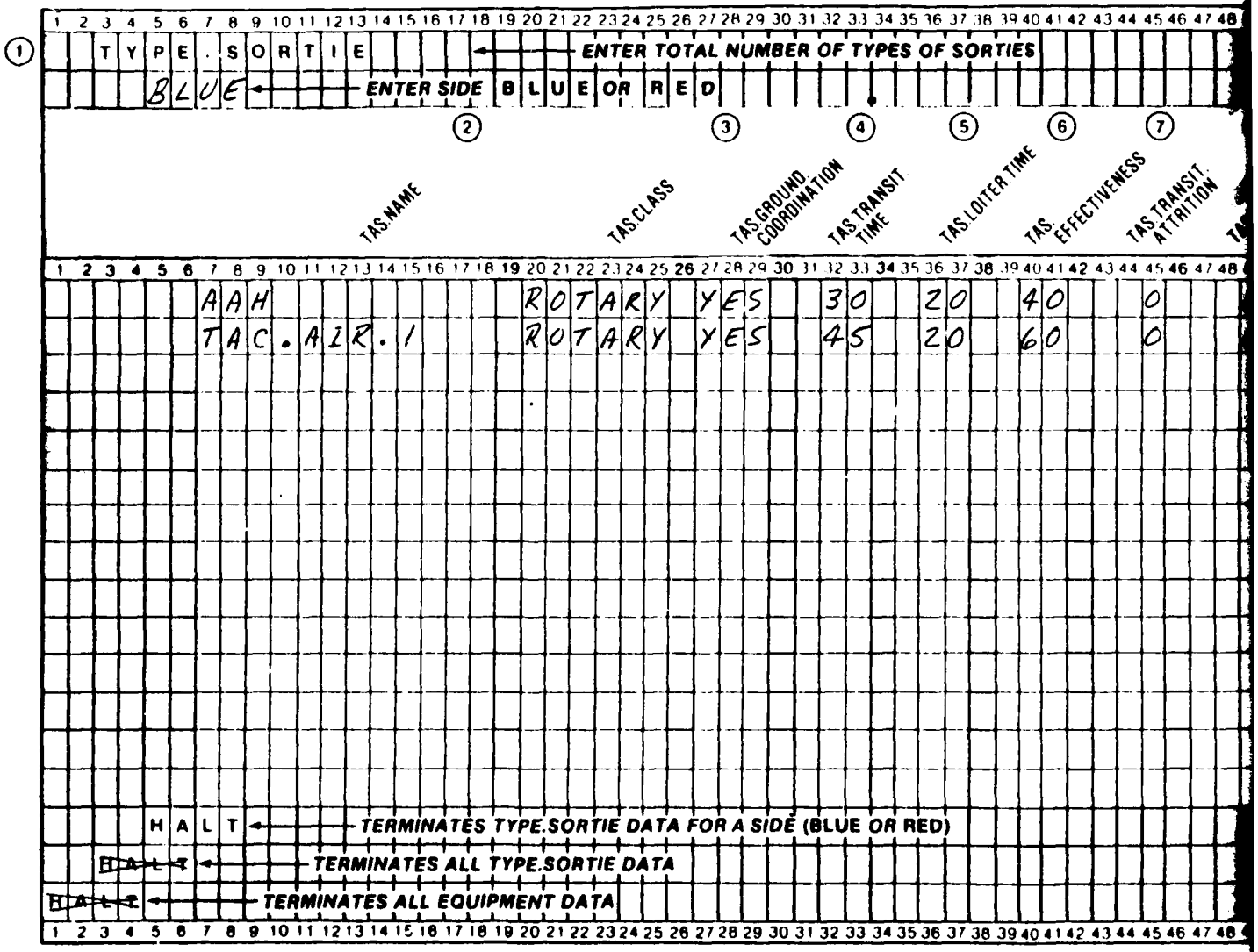
Key:	10
Name:	TAS.RENEWAL.TIME
Spaces:	4
Columns:	51-54
Entries:	Integer
Description:	The time interval (in minutes) before an expended sortie is again available for use.

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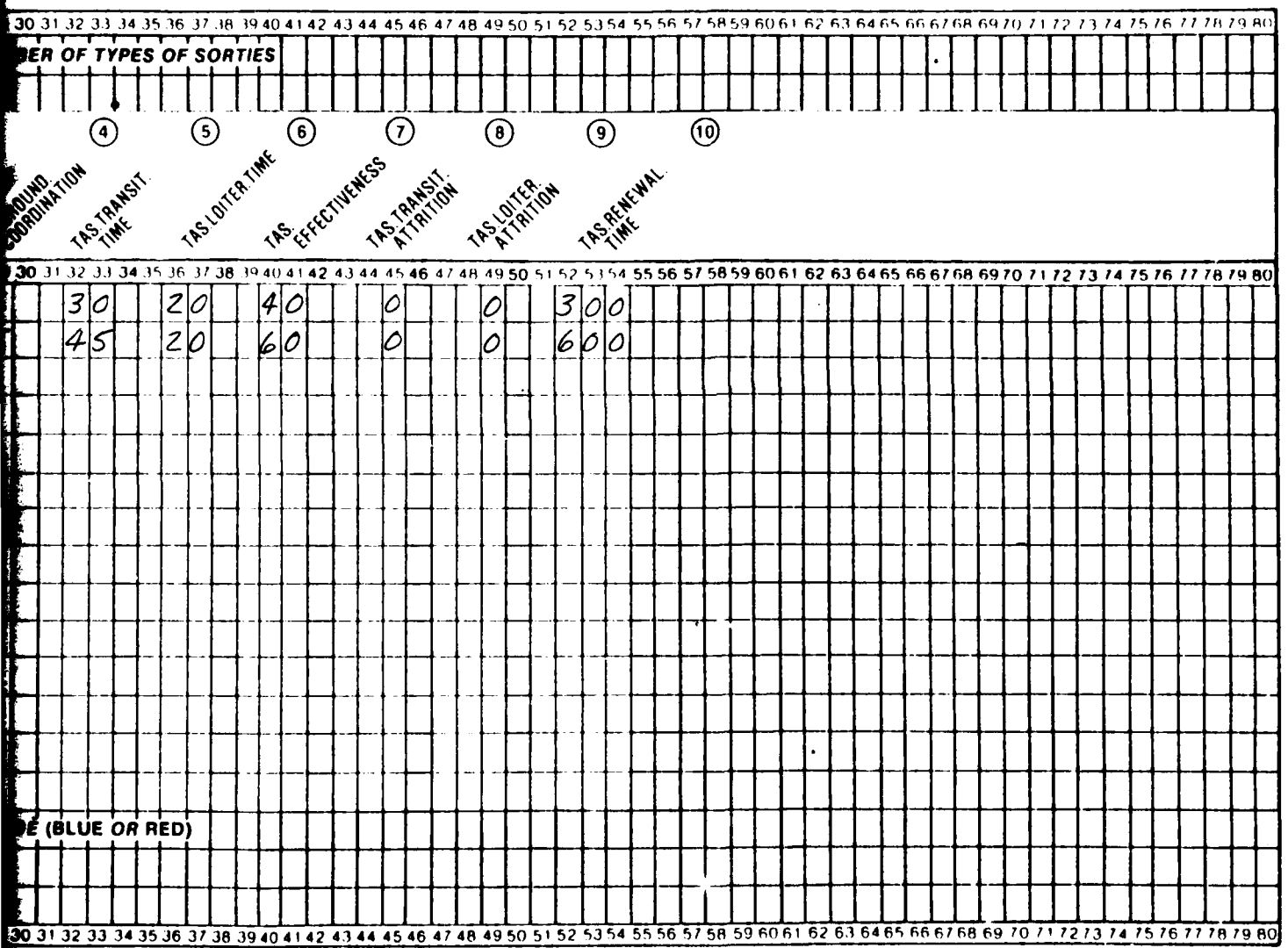


III. EQUIPMENT

4. TYPE SORTIE DATA

DEWCOM MODEL

PUT DATA PREPARATION FORM

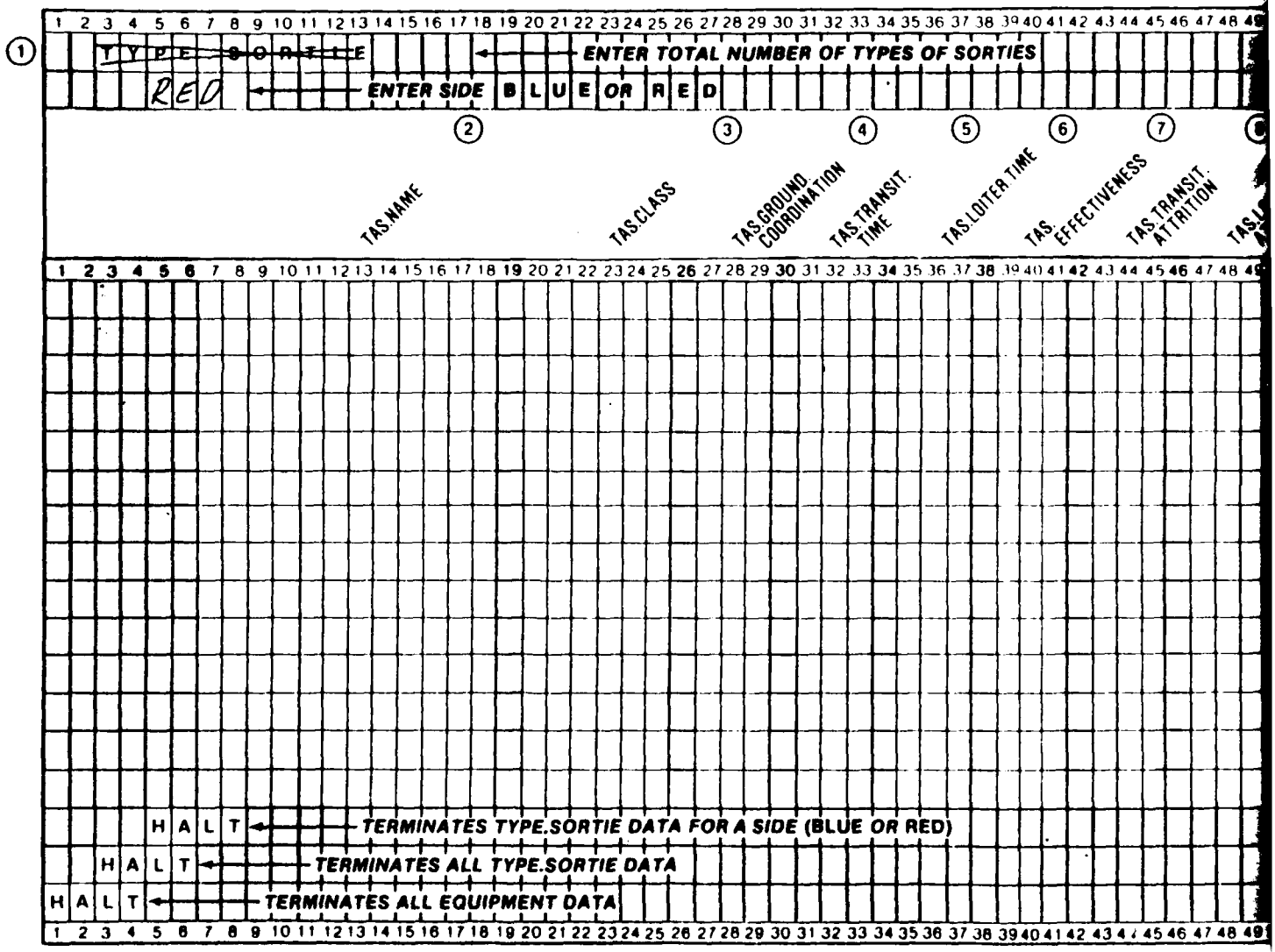


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INPUT DATA PREPARATION F

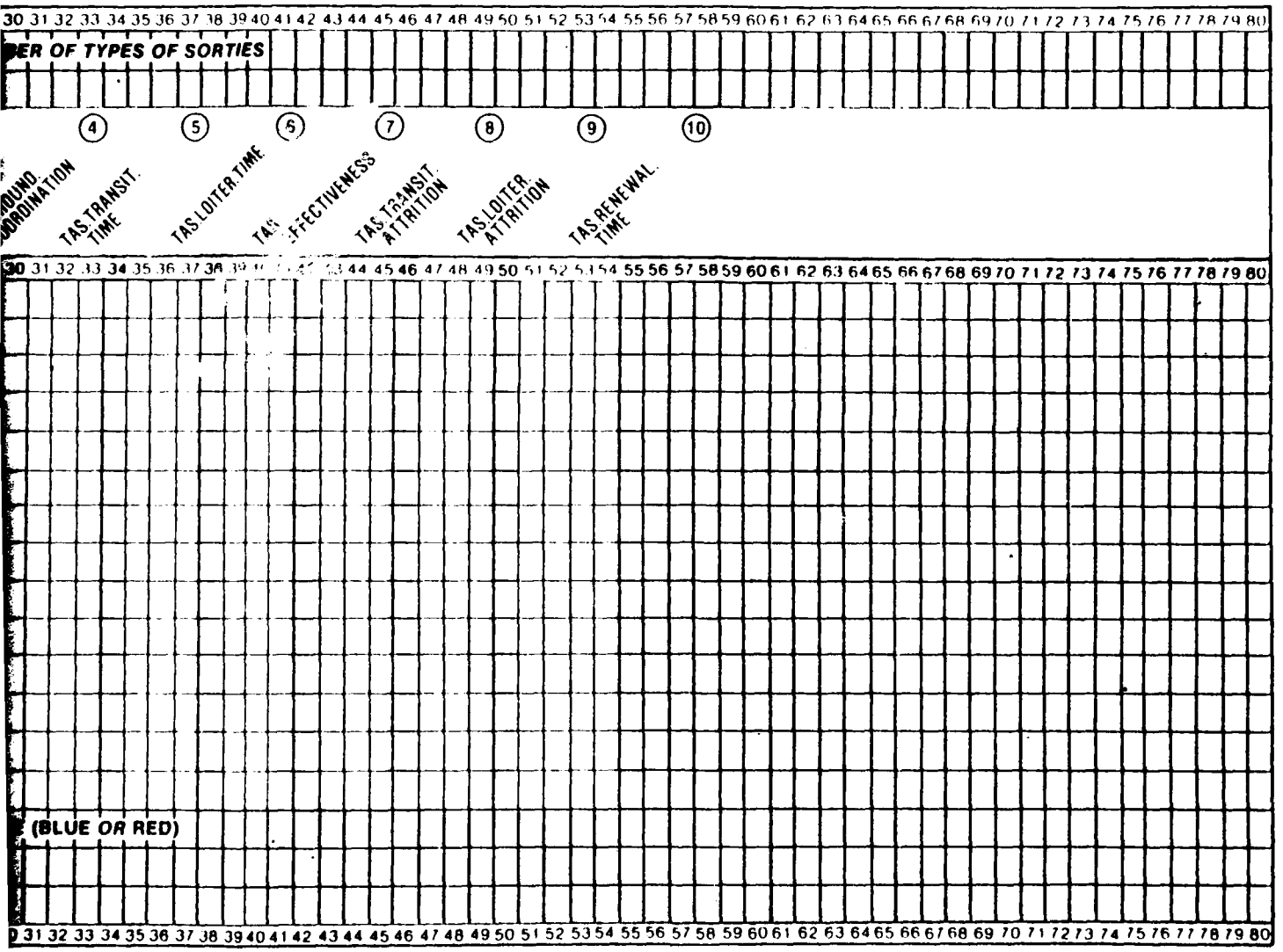


III. EQUIPMENT

4. TYPE SORTIE DATA

DEWCOM MODEL

PUT DATA PREPARATION FORM



2

3.6.13 Form IV.1 (TYPE UNITS; Unit Attribute Data, Communications Equipment Owned Data)

This form is used to describe the types of units assigned to each side and the names and quantities of communications equipment owned by each type unit. The form described in the next subparagraph (Form IV.2) is essentially a continuation of this form and it is used to describe the EW equipment and weapons owned by each type unit.

A minimum of one sheet of this form and one of Form IV.2 is required to describe the attributes and the types and quantities of equipment owned by each type unit on each side. For each type unit, Form IV.2 should follow immediately after this form.

On all forms of this type except the first, line out the keyword TYPE.UNITS and the space for its value near the top of the sheet.

On all forms of this type except the first for one side (BLUE or RED), line out the space for entering side designation (BLUE or RED) near the top of the sheet. Foldout samples of this form and IV.2 are located on pages 113 through 131.

Key:	1
Name:	TYPE.UNITS
Spaces:	3
Columns:	12-14
Entries:	Integer
Description:	The total number of types of units in the simulation.

Key:	2
Name:	TU.NAME
Spaces:	12
Columns:	5-16
Entries:	Alphanumeric
Description:	The name of the type of unit described on this form and the next type form (Form IV.2)

Key:	3		
Name:	TU.CLASS		
Spaces:	9		
Columns:	18-26		
Entries:	One of the follow:		
	HQ	CORPS.HQ	DIV.HQ
	BDE.HQ	REGT.HQ	BN.HQ
	CO.HQ	ALT.CP	FDC
	ARTILLERY	MANEUVER	SUPPORT
	EW.UNIT	COMM.UNIT	OTHER
Description:	The type or class of unit described on this form and the corresponding Form IV.2.		

Key:	4
Name:	TU.ALTERNATE.CP
Spaces:	3
Columns:	28-30
Entries:	YES or NO
Description:	An indication of whether an alternate command post exists for this type unit.

Key:	5
Name:	TU.MOVE.RATE
Spaces:	4
Columns:	32-35
Entries:	Integer
Description:	The rate, in meters per minute, at which this type unit can move.

Key:	6
Name:	TU.RADIUS
Spaces:	3
Columns:	37-39
Entries:	Integer
Description:	The distance in meters from the location of the center of the unit to its periphery (used to determine when opposing units come into contact with each other).

Key:	7
Name:	TU.INTELLIGENCE.FADE.RATE
Spaces:	3
Columns:	41-43
Entries:	Integer
Description:	The percentage rate per minute at which intelligence information relating to this type unit decreases in value.

Key:	8
Name:	TU.MAX.ENCRYPTION.CAPABILTY
Spaces:	3
Columns:	45-47
Entries:	Integer
Description:	The maximum number of messages which can be encrypted simultaneously by this type unit.

Key:	9
Name:	TU.ENCRYPTION.FACTOR
Spaces:	3
Columns:	49-51
Entries:	Integer
Description:	A multiplier used with message length to determine the time in minutes required to encrypt a message.

Key:	10
Name:	TU.SUPPRESSION.FACTOR
Spaces:	3
Columns:	53-55
Entries:	Integer
Description:	The percentage decrease in a unit's effectiveness resulting from it being subjected to opposing artillery fire.

Key:	11
Name:	TU.DURATION.OF.SUPPRESSION
Spaces:	3
Columns:	57-59
Entries:	Integer
Description:	The time in minutes, during which a unit's effectiveness is decreased because of opposing artillery fire.

Key:	12
Name:	TU.ARTY.DURATION
Spaces:	3
Columns:	61-63
Entries:	Integer
Description:	The duration of fire in minutes, of an opposing artillery unit against this type unit.

Key:	13
Name:	TU.ARTY.INTERVAL
Spaces:	4
Columns:	28-31
Entries:	Integer
Description:	The time in minutes, between periods of fire by an opposing artillery unit against this type unit.

Key:	14
Name:	TU.COMM.SETUP.TIME
Spaces:	3
Columns:	33-35
Entries:	Integer
Description:	The time in minutes, required for this type unit to establish wire communications after change from a moving posture (Attack, Move, Withdraw) to a static posture (Defend, Delay).

Key:	15
Name:	TU.COMM.TEARDOWN.TIME
Spaces:	3
Columns:	37-39
Entries:	Integer
Description:	The time in minutes, required for this type unit to discontinue wire communications before changing from a static posture (Defend, Delay) to a moving posture (Attack, Move, Withdraw).

Key:	16
Name:	TU.EW.SETUP.TIME
Spaces:	3
Columns:	41-43
Entries:	Integer
Description:	The time in minutes, before this type unit can initiate EW functions after changing from a moving posture to a static posture.

Key:	17
Name:	TU.EW.TEARDOWN.TIME
Spaces:	3
Columns:	45-47
Entries:	Integer
Description:	The time in minutes, required for this type unit to discontinued EW functions in preparation for change from a static posture to a moving posture.

Key:	18
Name:	TU.TACTICAL.SETUP.TIME
Spaces:	3
Columns:	49-51
Entries:	Integer
Description:	The time in minutes, required before an artillery unit can be prepared to function after change from a moving posture to a static posture.

Key:	19
Name:	TU.TACTICAL.TEARDOWN.TIME
Spaces:	3
Columns:	53-55
Entries:	Integer
Description:	The time in minutes, required before an artillery unit can prepare for a change from a static posture to a moving posture.

Key:	20
Name:	TU.EW.PRIORITY
Spaces:	3
Columns:	57-59
Entries:	Integer
Description:	The relative priority of this type unit for EW actions by an opposing unit.

Key:	21
Name:	TU.IF.PRIORITY
Spaces:	3
Columns:	61-63
Entries:	Integer
Description:	The relative priority of this type unit for indirect fire by an opposing unit.

Key:	22
Name:	COMM.EQUIP
Spaces:	CEP.ID -12
	CEP.QUANTITY - 3
Columns:	CEP.ID - 9-20
	CEP.QUANTITY - 22-24
Entries:	CEP.ID - Alphanumeric
	CEP.QUANTITY - Integer

Description: For the type unit identified in Key 2, list the equipment name for each type of communications equipment owned (CEP.ID) and the quantity owned (CEP.QUANTITY). If there is no communications equipment for this type unit, the keyword COMM.EQUIP and its corresponding HALT must still appear in the data stream.

If there are more entries for this type unit than will fit on one sheet, continue on successive sheets as follows:

1. Line out the keyword HALT near the bottom of all but the last sheet used for this type unit.
2. Line out all keywords and spaces through the keyword COMM.EQUIP on all sheets except the first.

Follow the last page of this type form for each type unit with the next form (IV.2) describing EW equipment and weapons owned by this type unit.

3.6.14 Form IV.2 (TYPE UNITS; EW Equipment Owned Data; Weapons Owned Data)

This form is used to describe the names and quantities of EW equipment and weapons owned by each type unit on each side. This form is a continuation of the previously described form (IV.1) in that this one is used to list EW equipment and weapons for the type unit described on Form IV.1, on which names and quantities of communications equipment owned were also listed. Foldout samples of this form and IV.1 are located on pages 113 through 131.

Key:	1
Name:	EW.EQUIP
Spaces:	EWP.ID - 12
	EWP.QUANTITY -3
Columns:	EWP.ID - 9-20
	EWP.QUANTITY - 22-24
Entries:	EWP.ID - Alphanumeric
	EWP.QUANTITY - Integer
Description:	For the type unit identified in Key 2 of the corresponding Form IV.1, list the equipment name for each type of EW equipment owned (EWP.ID) and the quantity owned (EWP. QUANTITY)
	If there is no EW equipment for a type unit, the keyword EW.EQUIP and its corresponding HALT must still appear in the data stream.
	If there are more entries for EW equipment for a type unit than will fit on this sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all EW equipment for each type unit on each side is delimited by the keyword EW.EQUIP and its corresponding HALT. On the last sheet listing EW equipment for a type unit, begin listing WEAPONS data for that type unit in accordance with instructions in Key 2 which follows.

Key:	2
Name:	WEAPONS
Spaces:	WP.ID - 12
	WP.QUANTITY - 3
Columns:	WP.ID - 9-20
	WP.QUANTITY - 22-24
Entries:	WP.ID - Alphanumeric
	WP.QUANTITY - Integer

Description: For the type unit identified in Key 2 of the corresponding Form IV.1, list the name for each type weapon owned (WP.ID) and the quantity owned (WP.QUANTITY).

If there are no weapons for a type unit, the keyword WEAPONS and its corresponding HALT must still appear in the data stream.

If there are more entries for weapons for a type unit than will fit on one sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that:

1. All weapons for each type unit on each side are delimited by the keyword WEAPONS and its corresponding HALT.
2. All equipment of all types (Communications, EW, and Weapons) for a type unit is delimited by its type unit name (TU.NAME) on Form IV.1, Key 2 and the correponding HALT on this sheet.

The last sheet used for listing weapons for the last unit being described for a side must contain the HALT corresponding to the side name (BLUE or RED) on Form IV.1.

Complete Forms IV.1 and IV.2 for each type unit on each side.

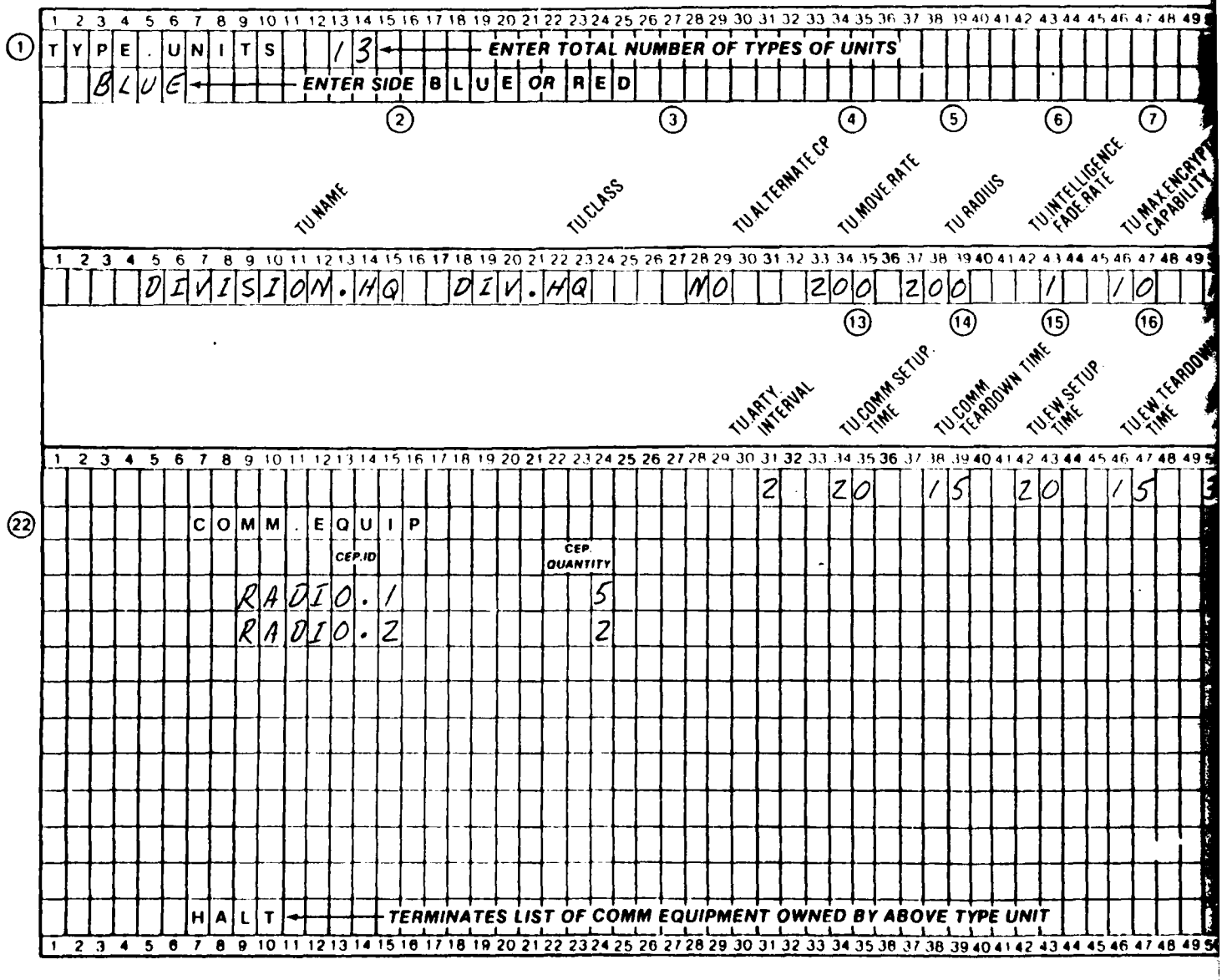
When all communications equipment, EW equipment, and weapons have been listed for one side (BLUE or RED), begin for the other side on Form IV.1, lining out the keyword TYPE. UNITS and the space for its value at the top, and proceeding as above.

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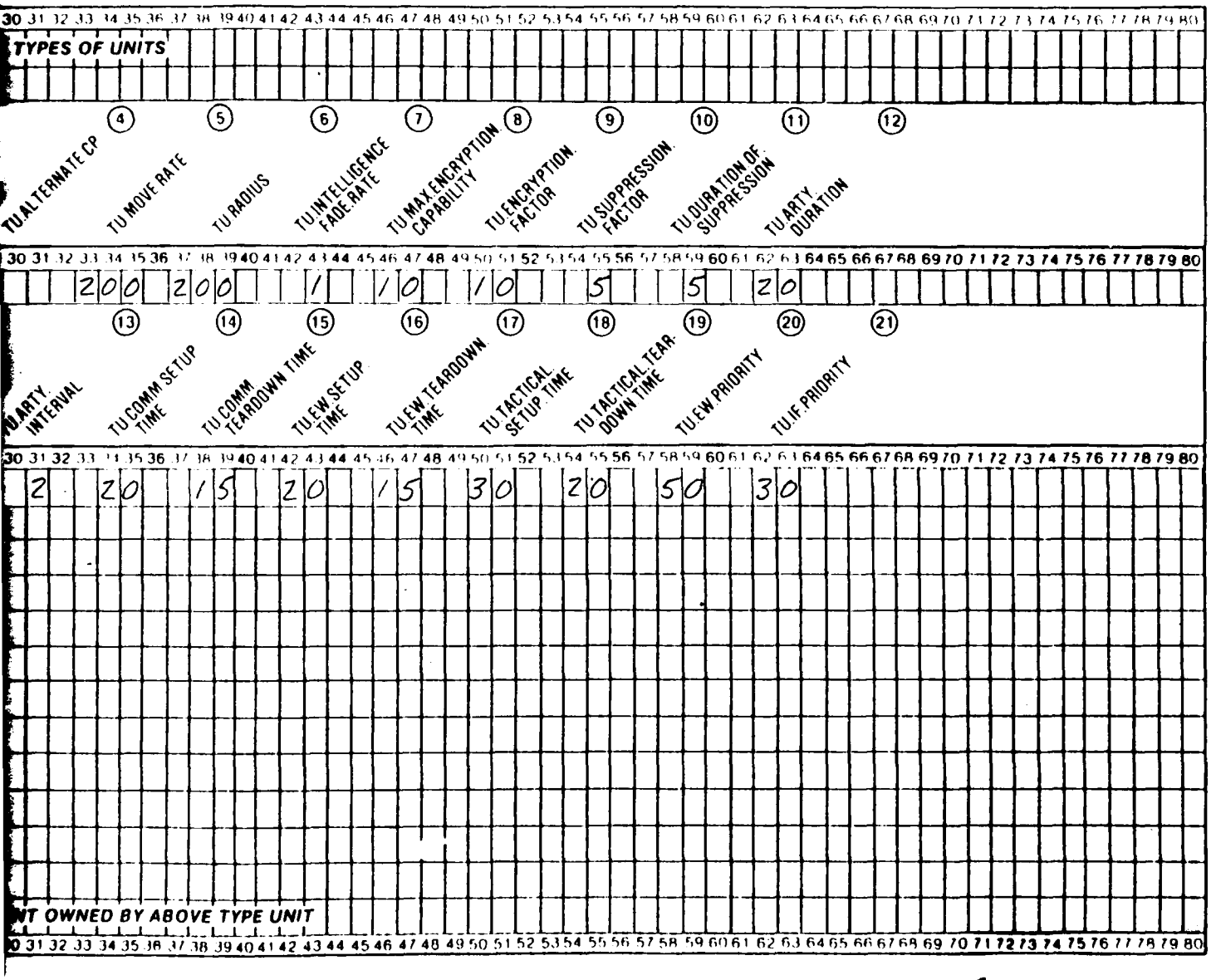


DEWCOM MODEL

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IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
   COMMUNICATIONS EQUIPMENT
   OWNED DATA

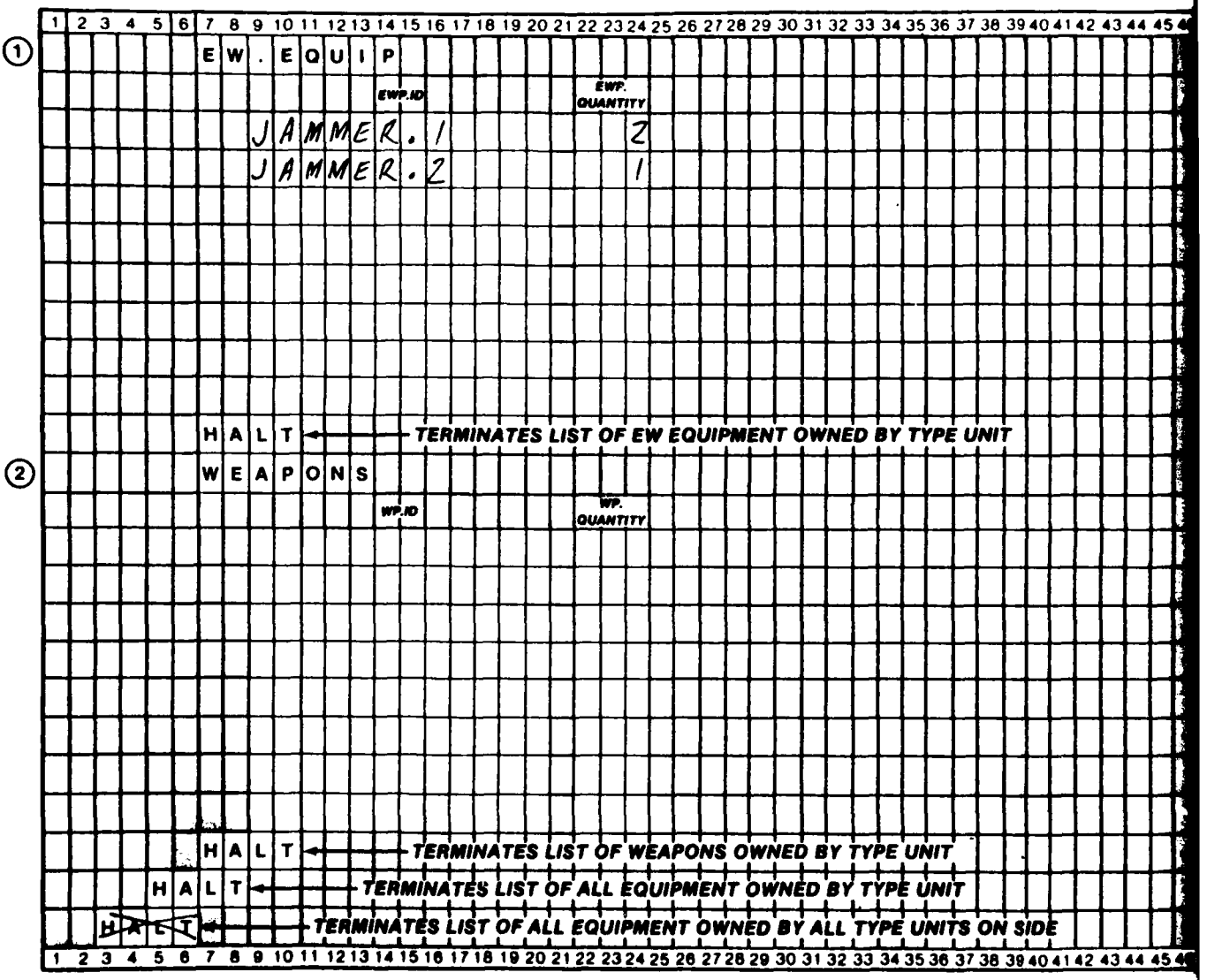


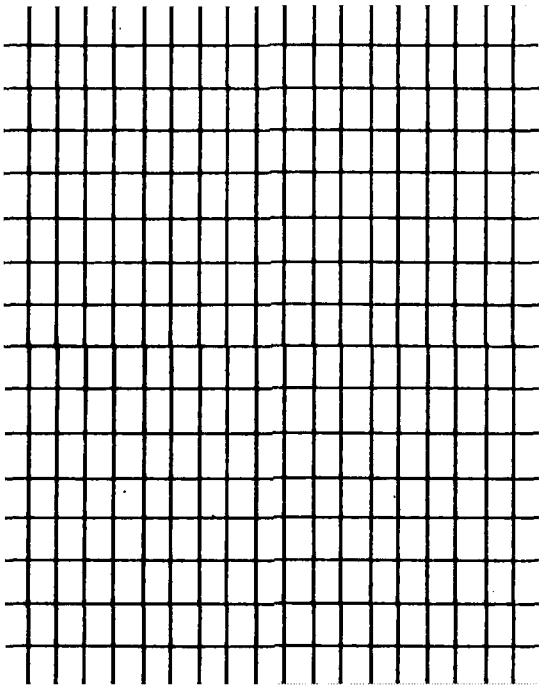
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DEWCOM MO

INPUT DATA PREPARATI



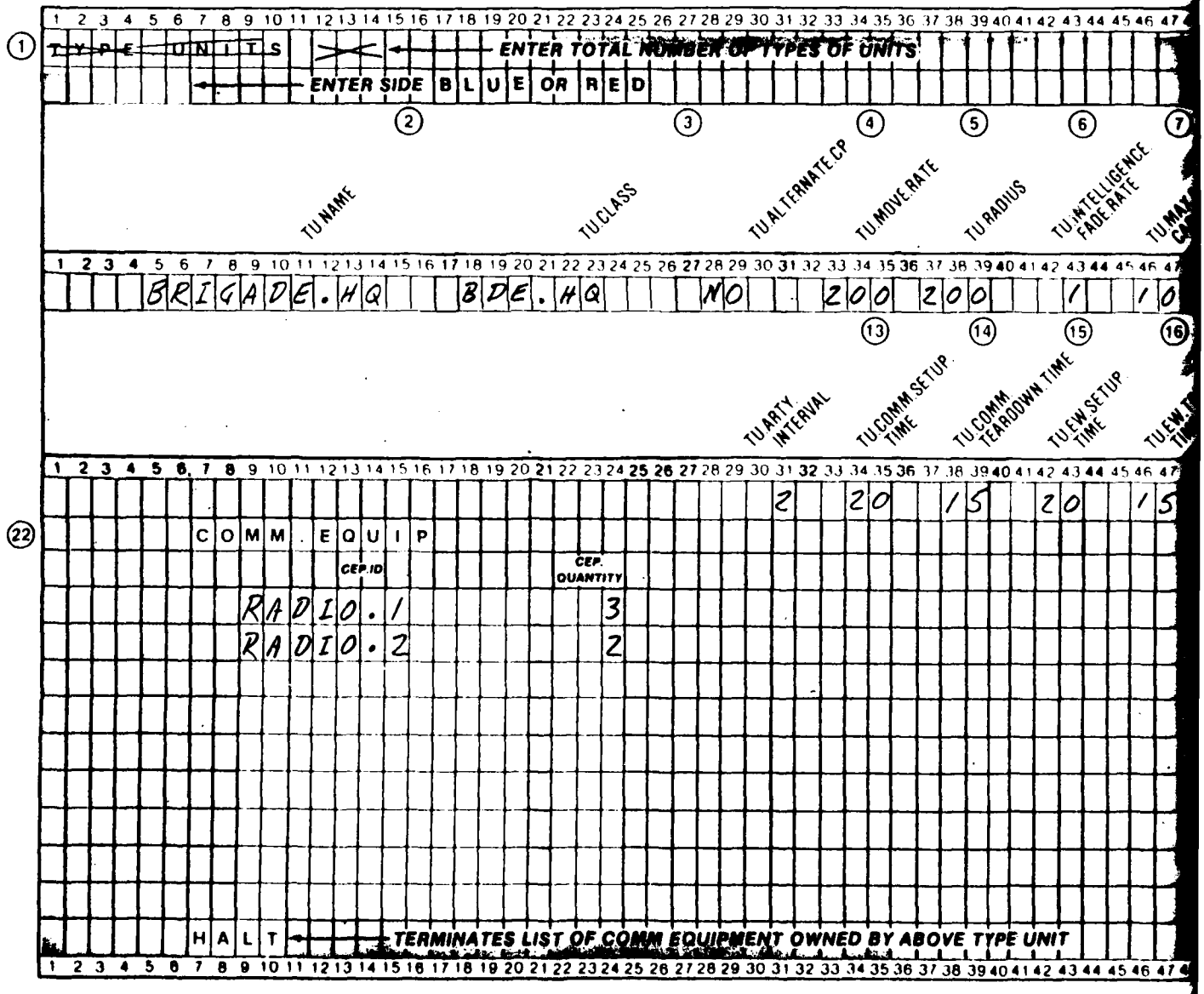


PREPARED BY: _____

PHONE _____ DATE _____

DEWCOM MOD

INPUT DATA PREPARATION

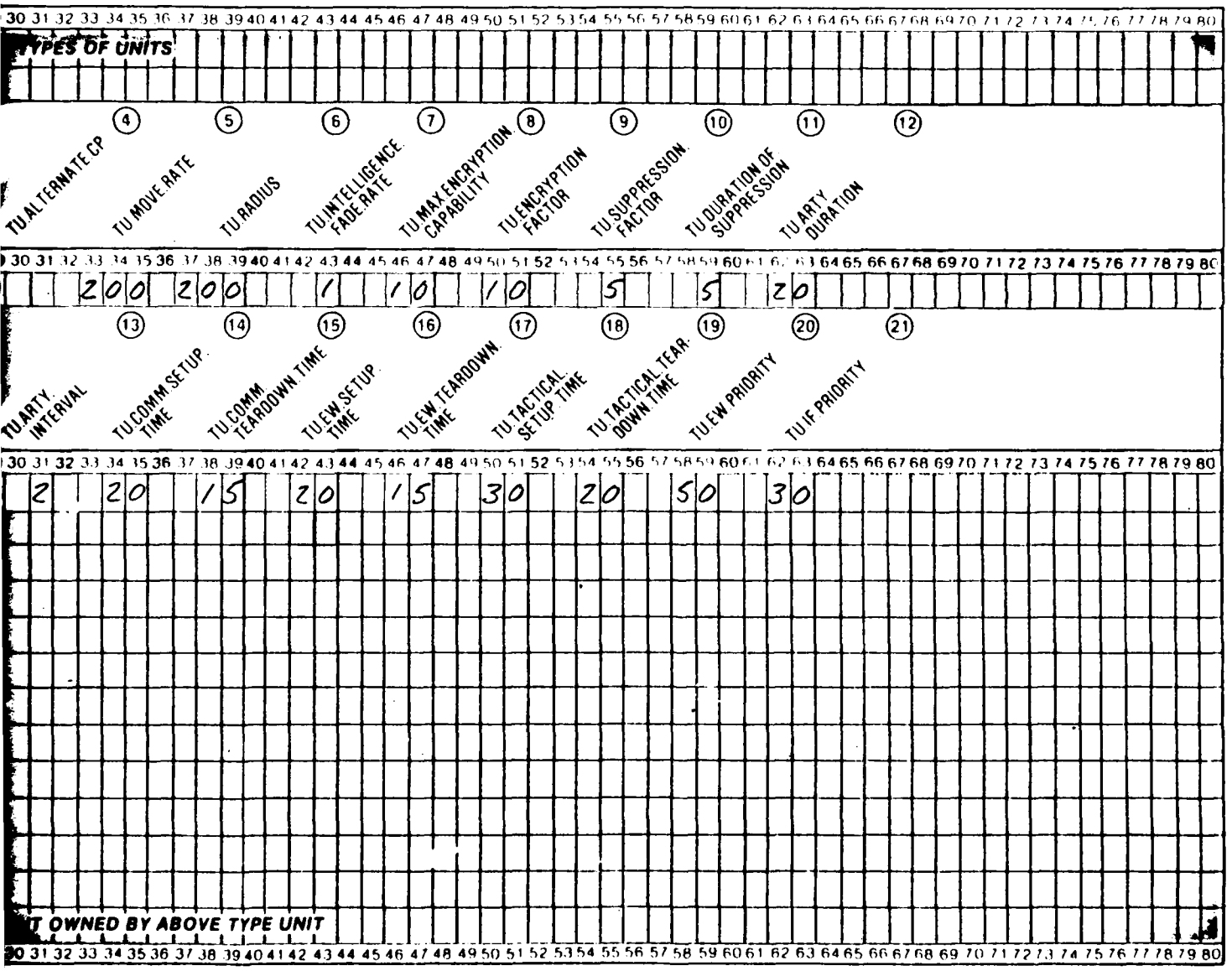


DEWCOM MODEL

IPUT DATA PREPARATION FORM

IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
   COMMUNICATIONS EQUIPMENT
   OWNED DATA

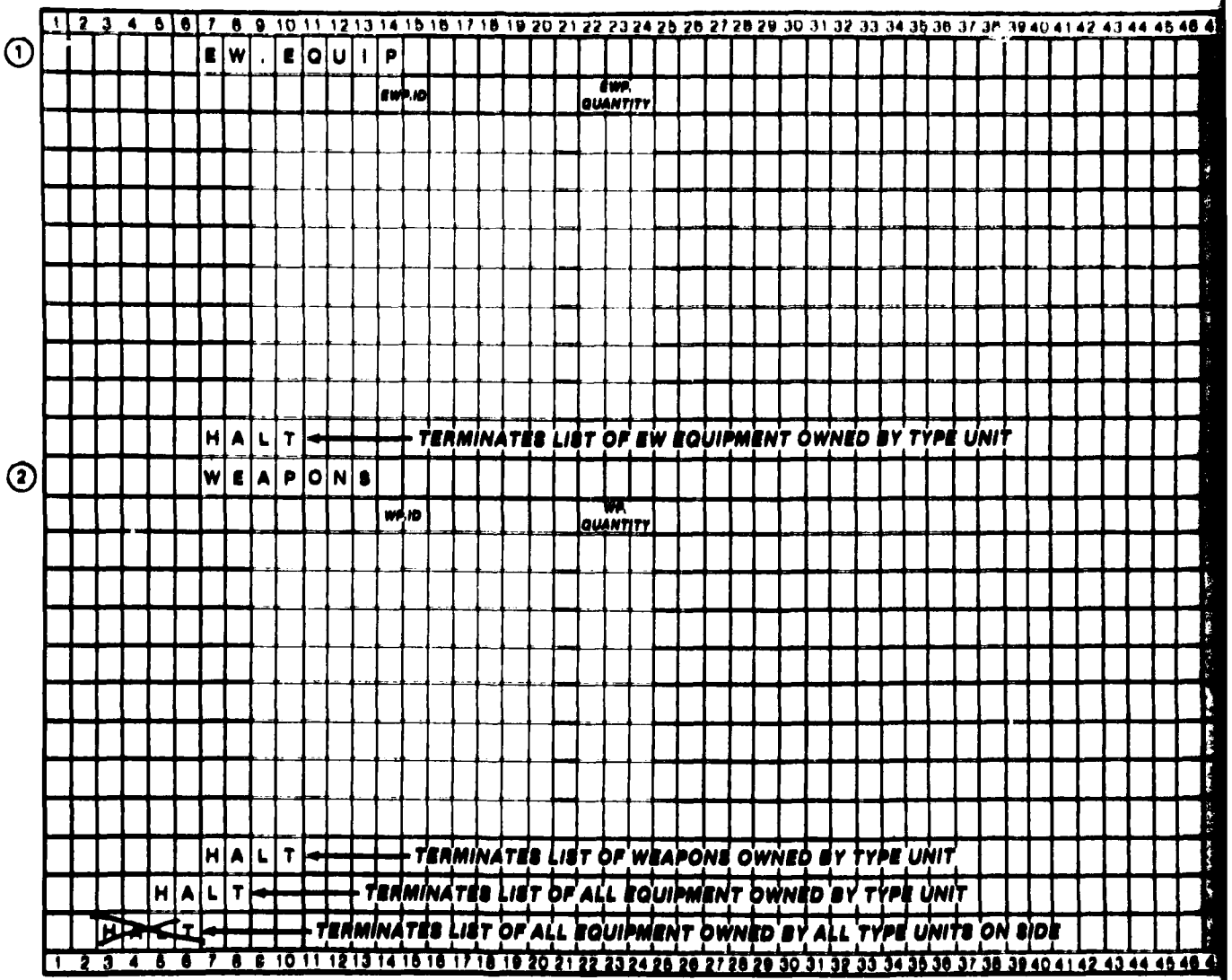


PREPARED BY _____

PHONE _____ DATE _____

DEWCOM MOD

INPUT DATA PREPARATIO

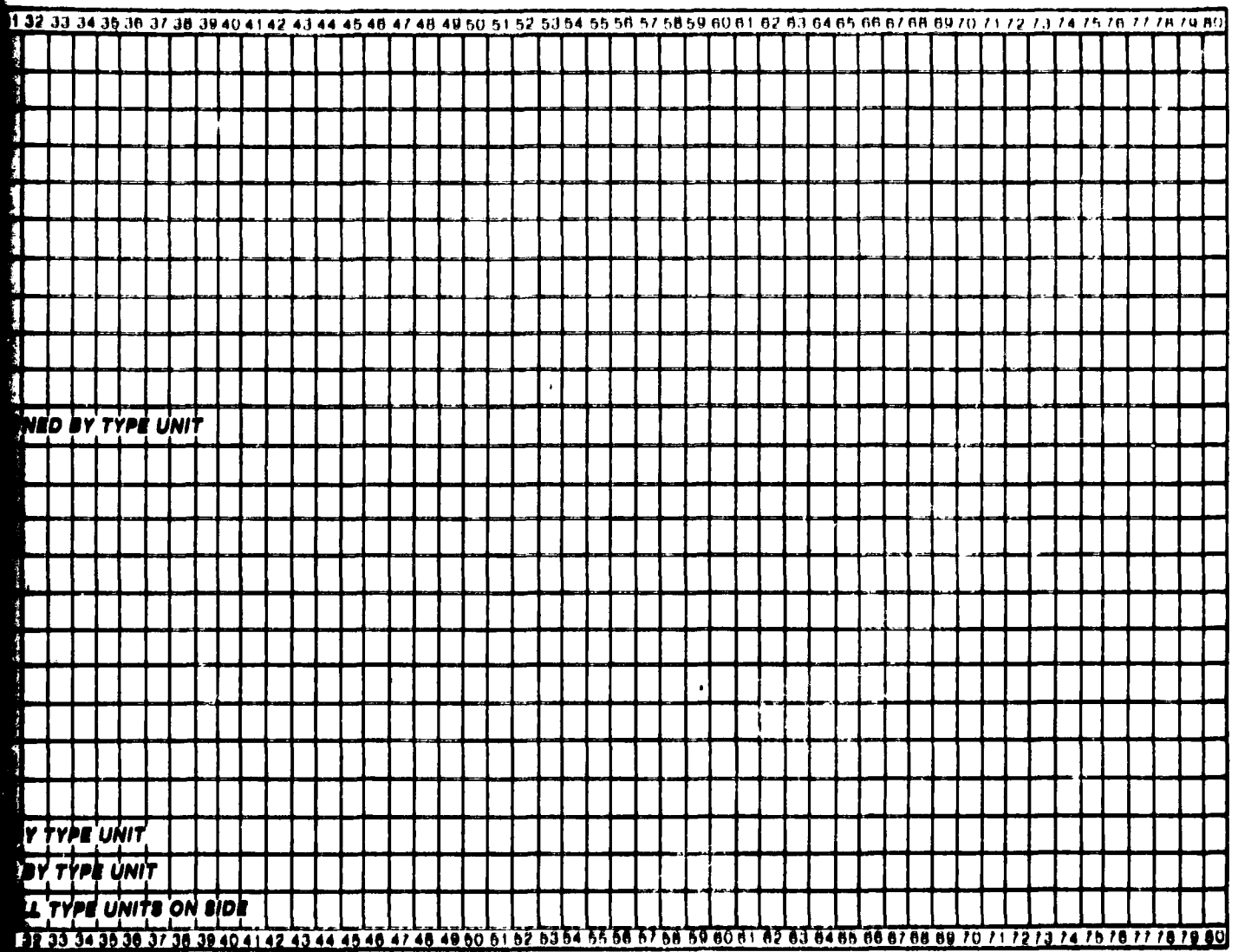


DEWCOM MODEL

UT DATA PREPARATION FORM

IV. TYPE UNITS

2 EW EQUIPMENT OWNED DATA
WEAPONS OWNED DATA

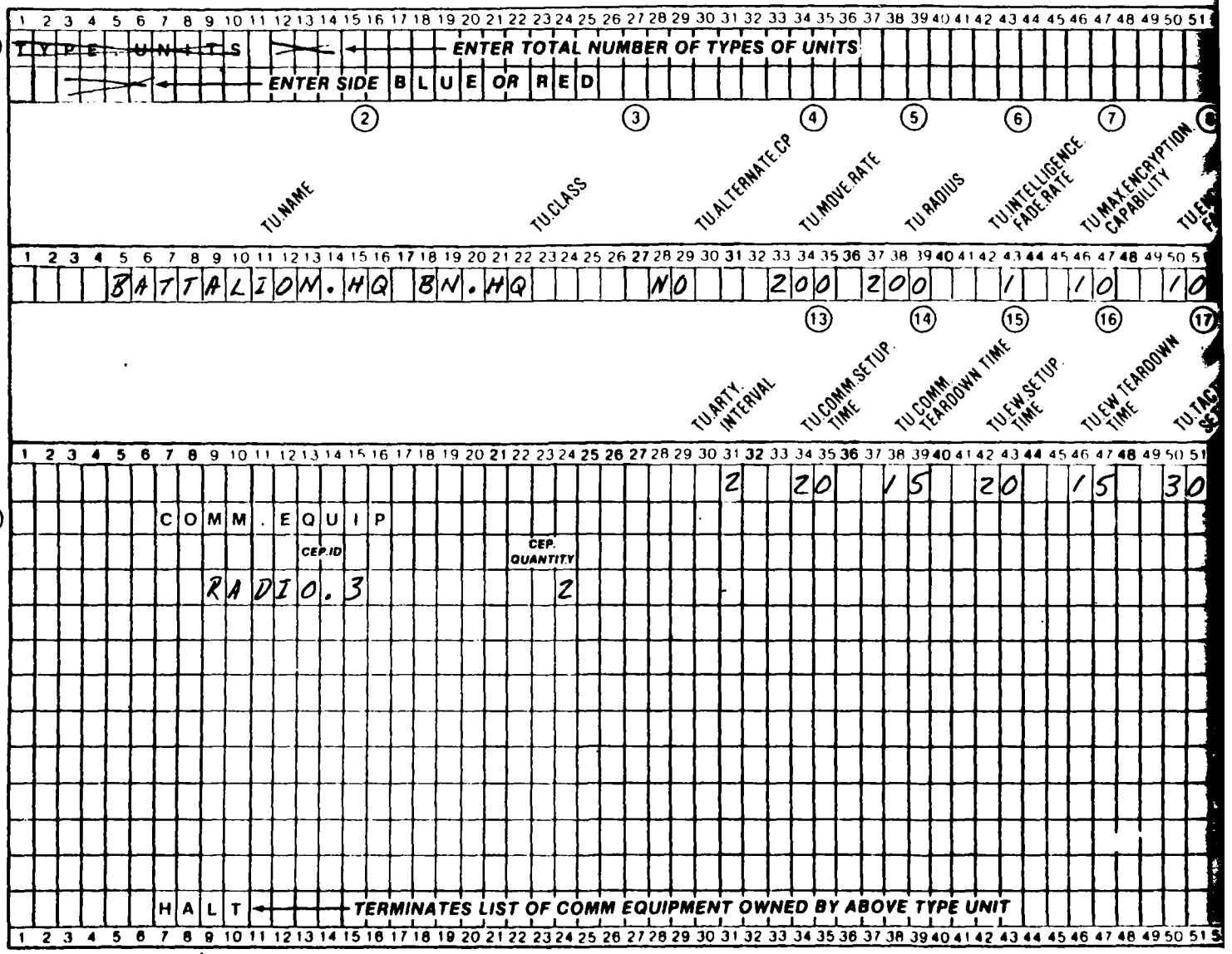


PREPARED BY _____

PHONE _____ DATE _____

DEWCOM MODEL

INPUT DATA PREPARATION FOR

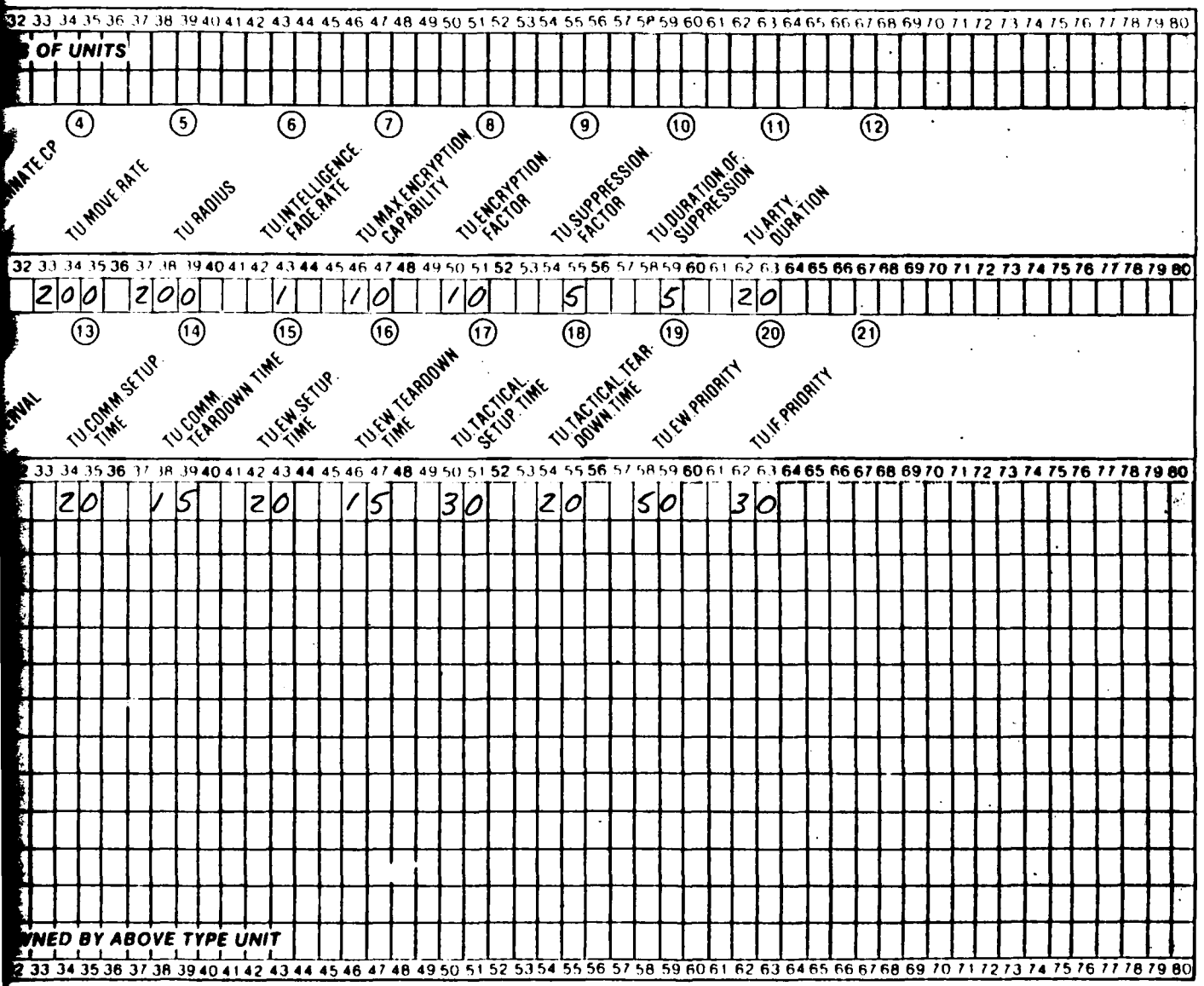


EWCOM MODEL

T DATA PREPARATION FORM

IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
COMMUNICATIONS EQUIPMENT
OWNED DATA



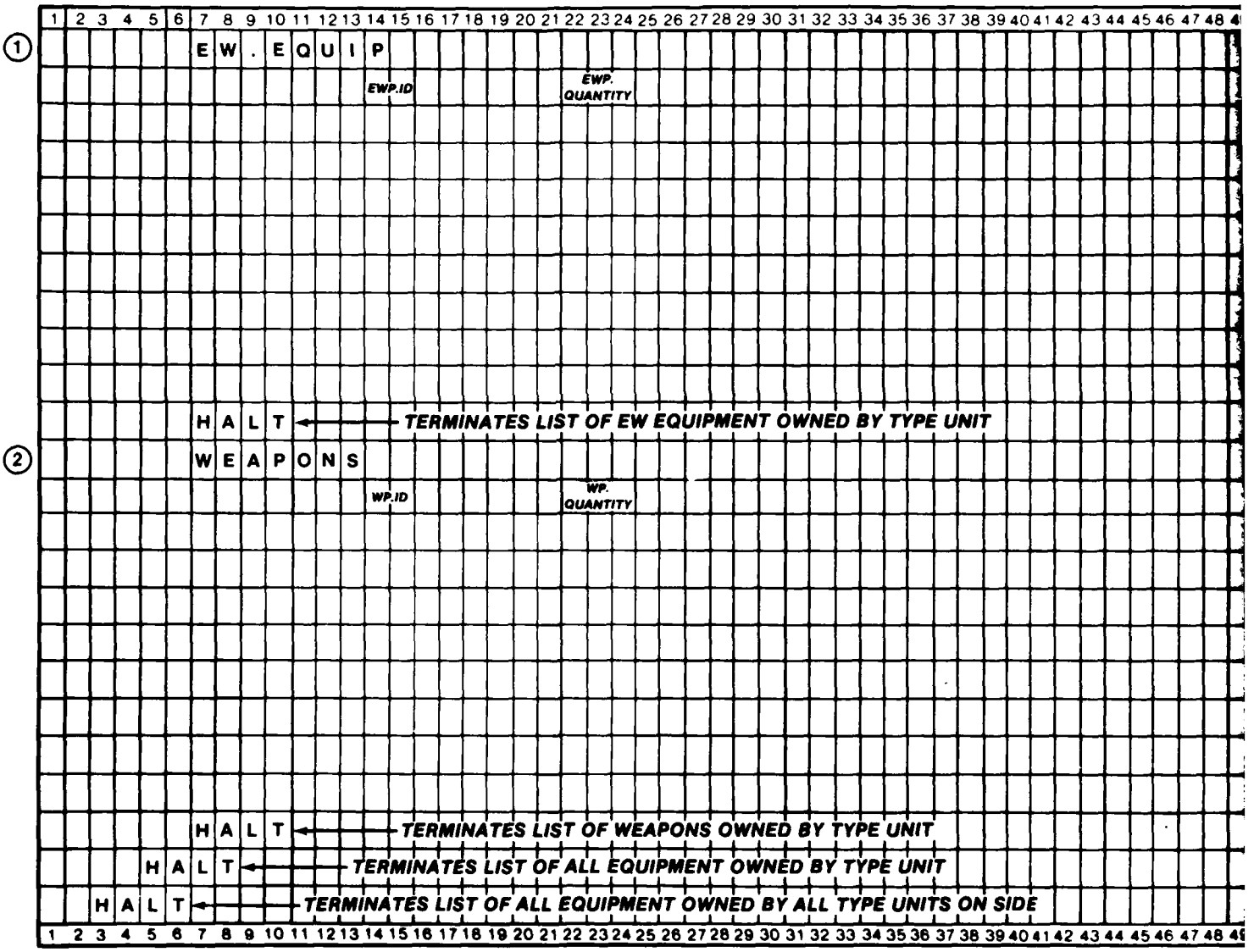
2

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PHONE: _____ DATE: _____

DEWCOM MODE

INPUT DATA PREPARATION F

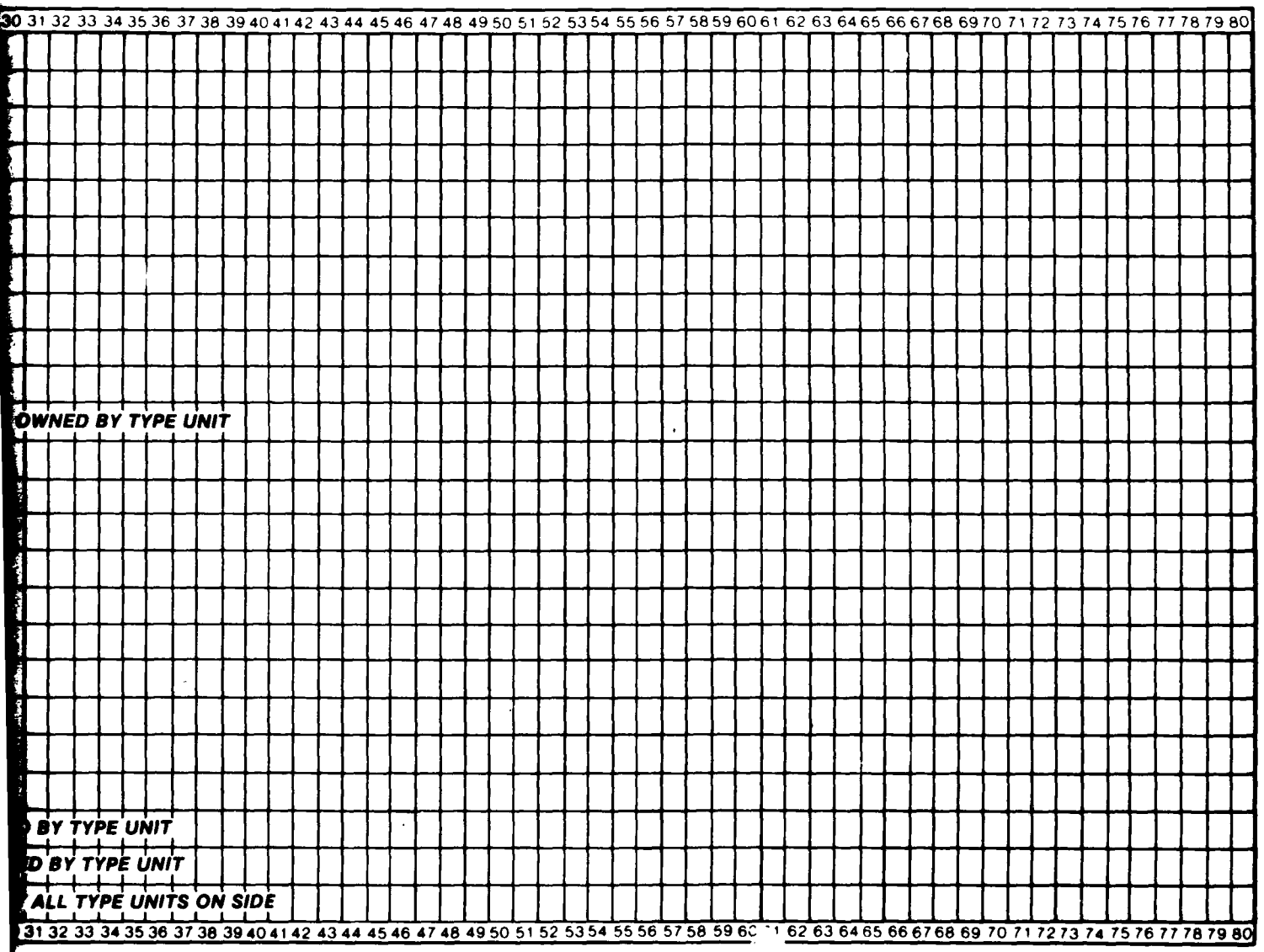


DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA
   WEAPONS OWNED DATA



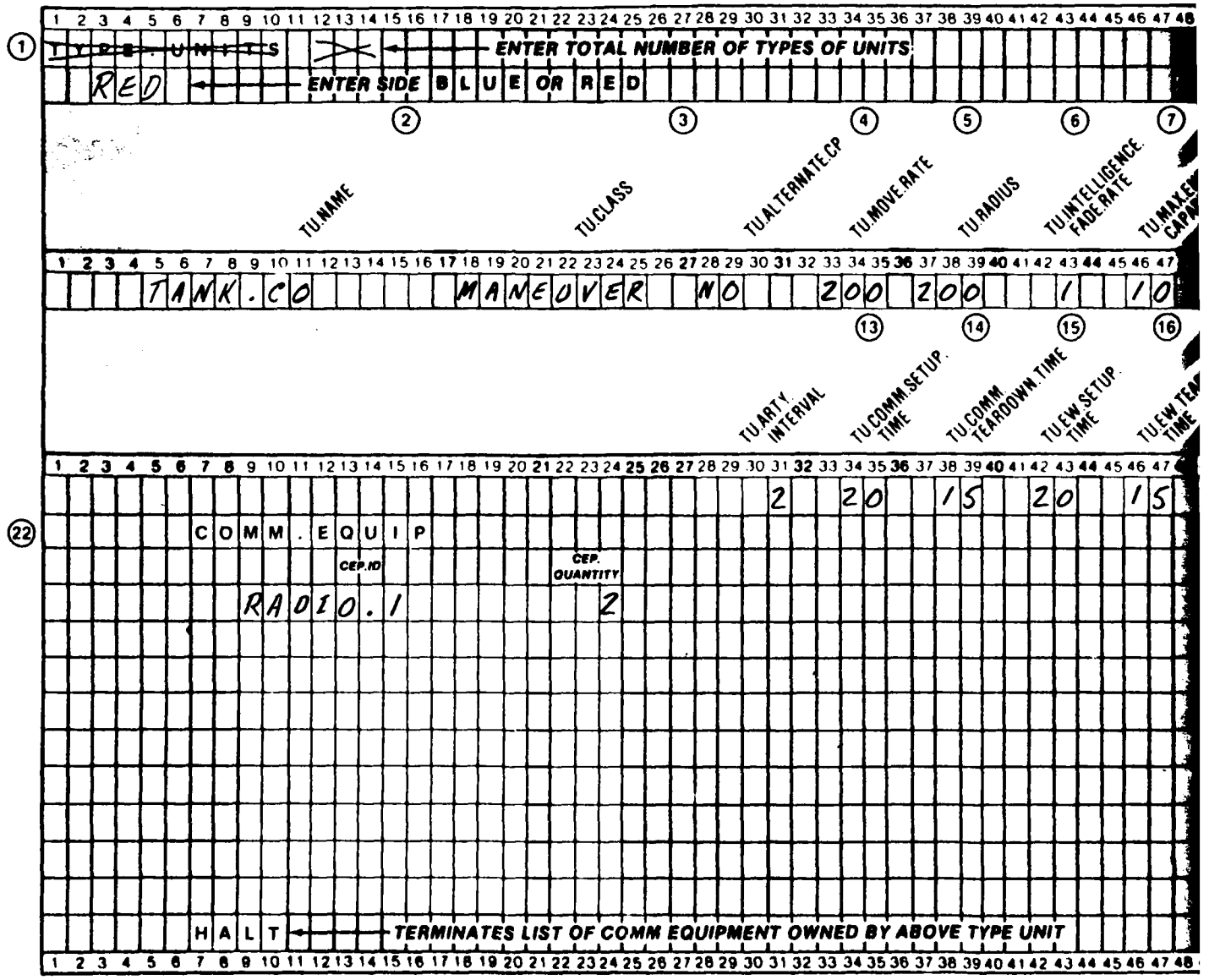
SAMPLE

PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MODI

INPUT DATA PREPARATION



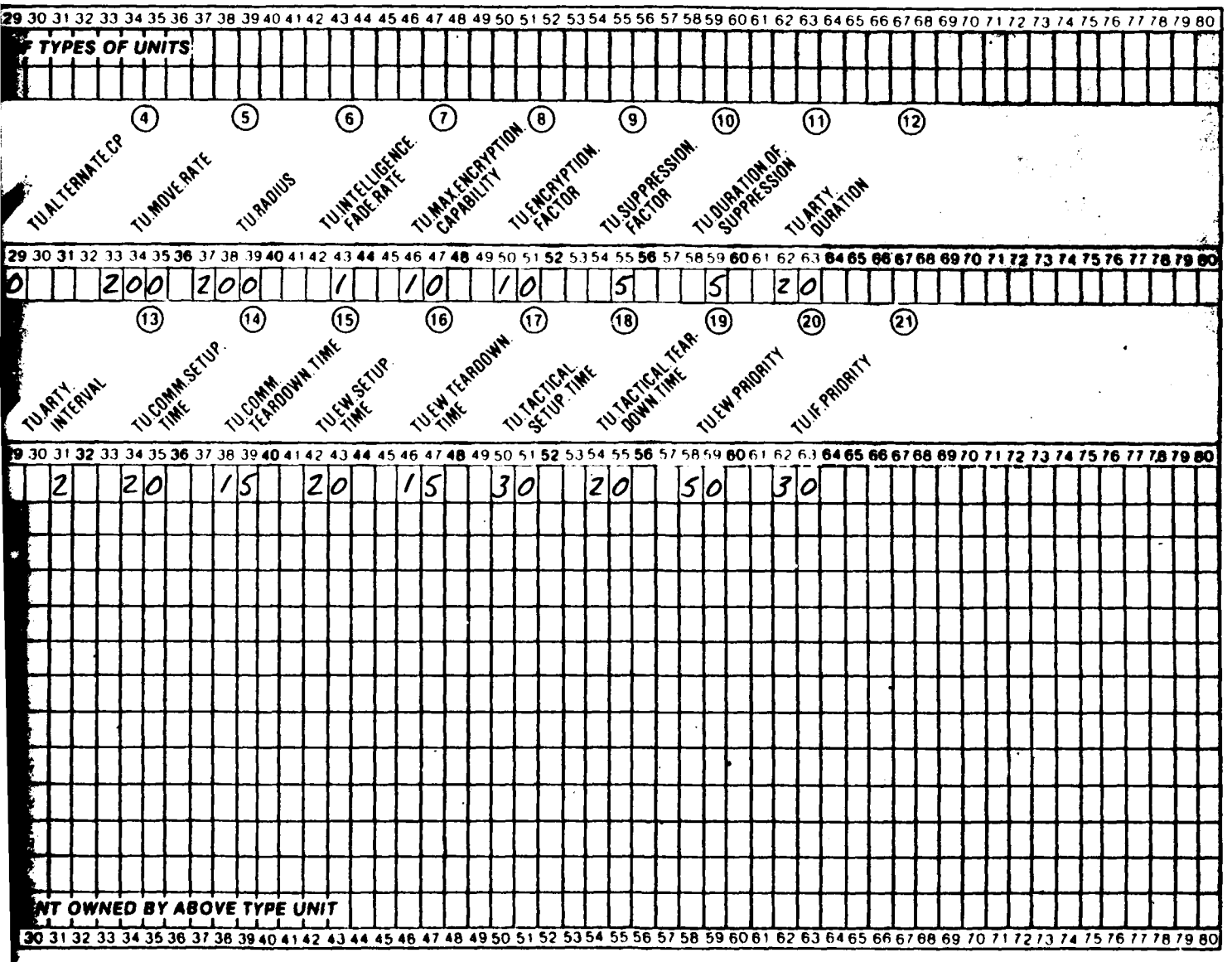
SAMPLE

DEWCOM MODEL

INPUT DATA PREPARATION FORM

IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
   COMMUNICATIONS EQUIPMENT
   OWNED DATA

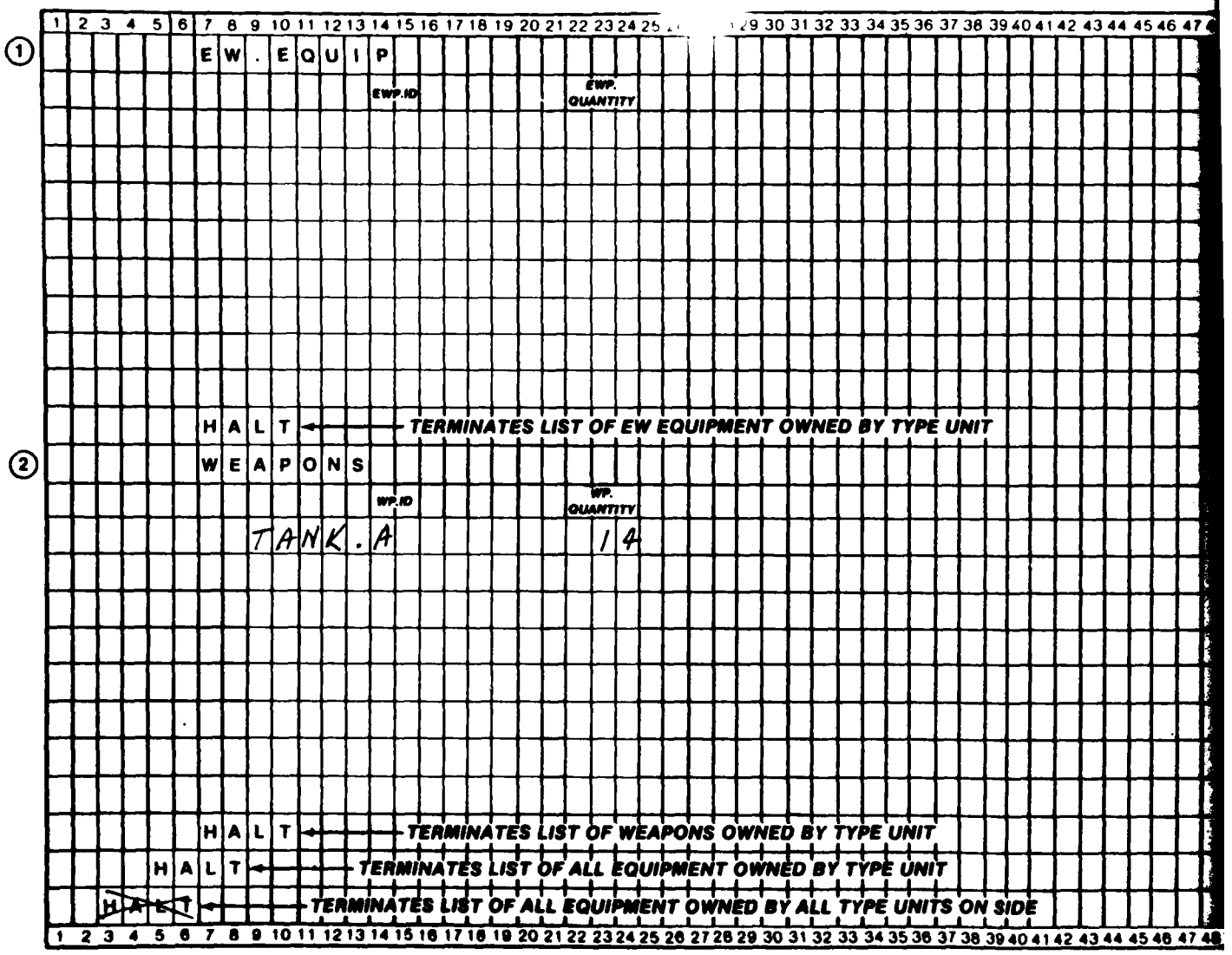


PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MOD

INPUT DATA PREPARATION

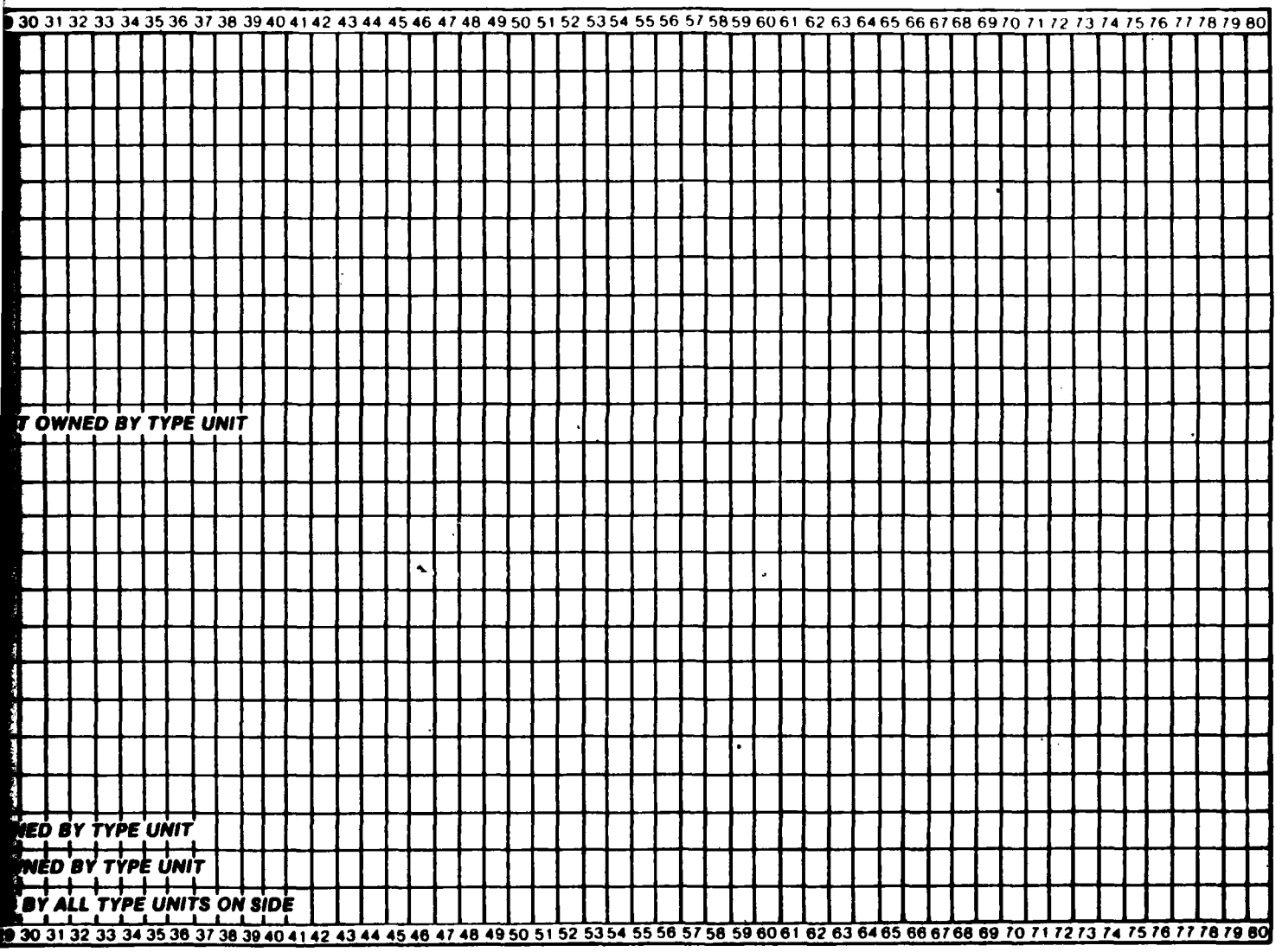


DEWCOM MODEL

NPUT DATA PREPARATION FORM

IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA
   WEAPONS OWNED DATA

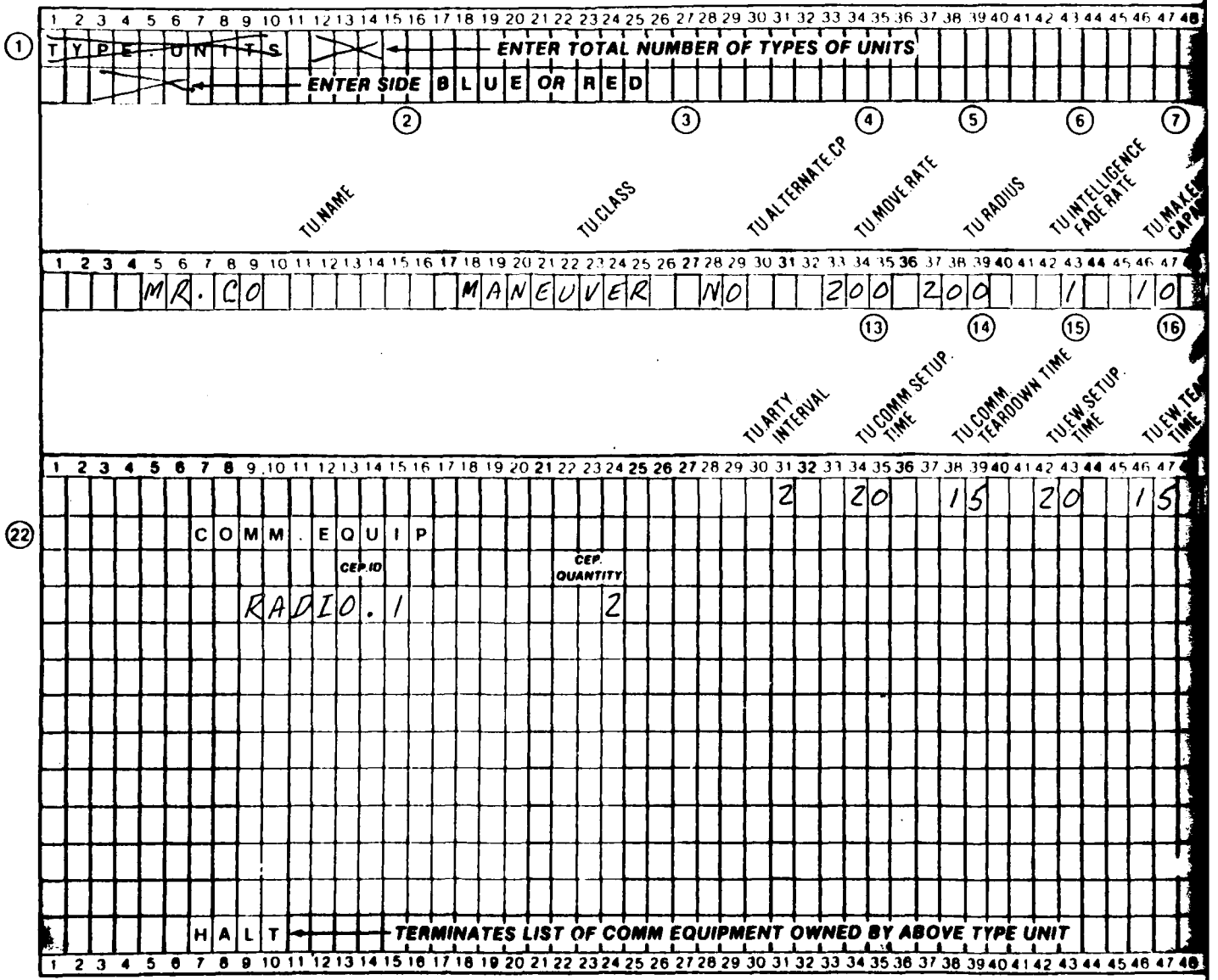


PREPARED BY _____

PHONE _____ DATE _____

DEWCOM MODE

INPUT DATA PREPARATION

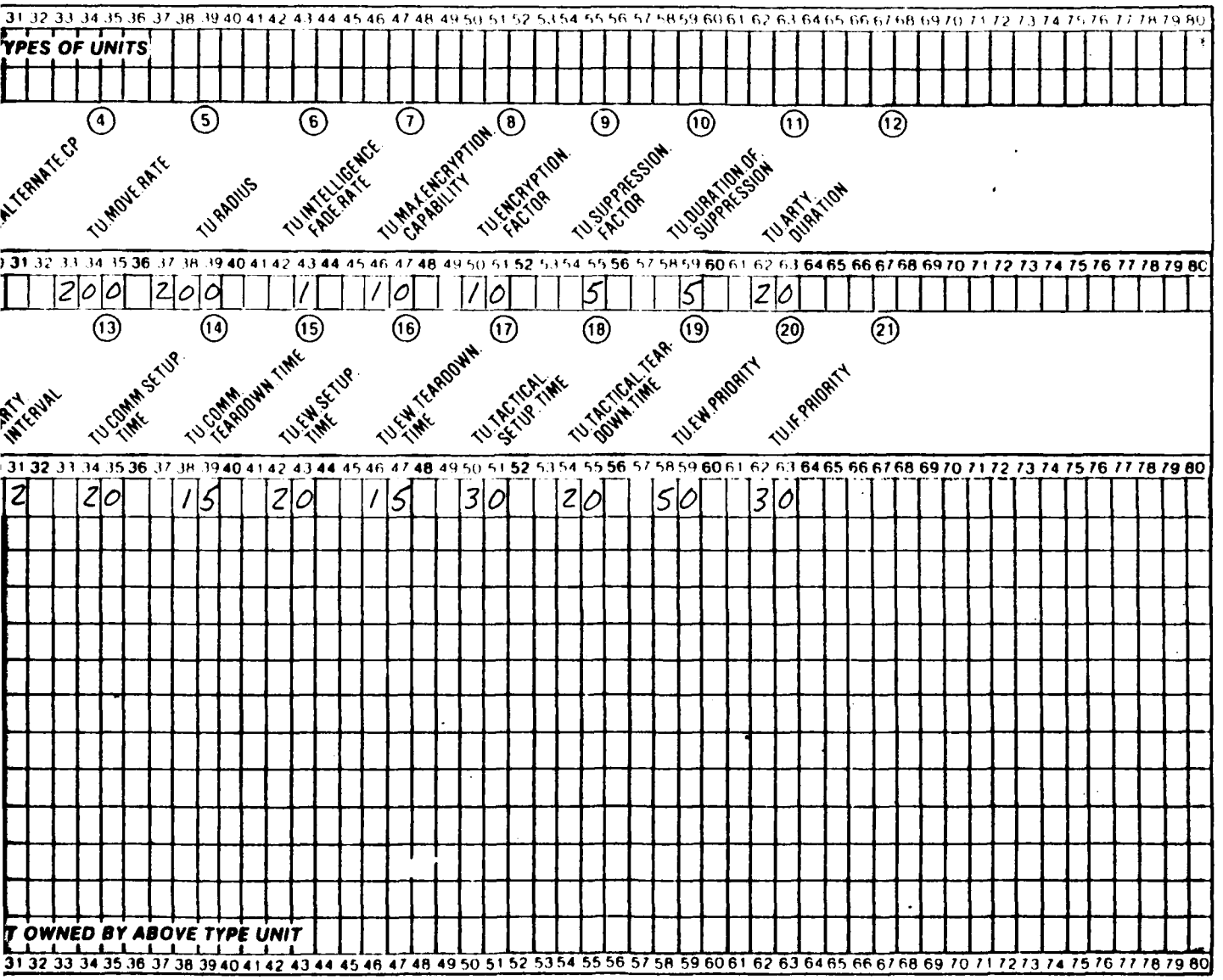


DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

1 UNIT ATTRIBUTE DATA
COMMUNICATIONS EQUIPMENT
OWNED DATA

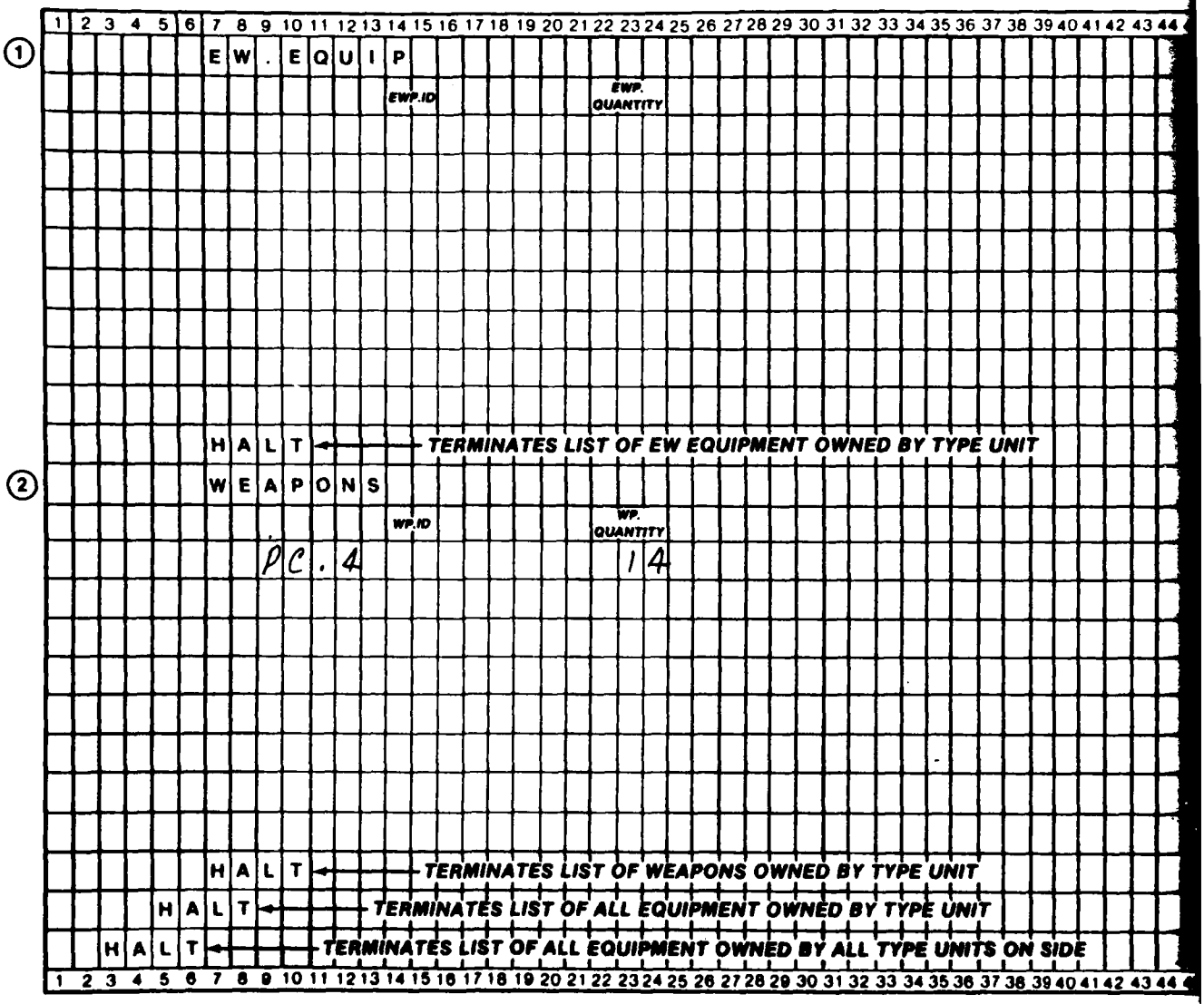


PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM M

INPUT DATA PREPARA

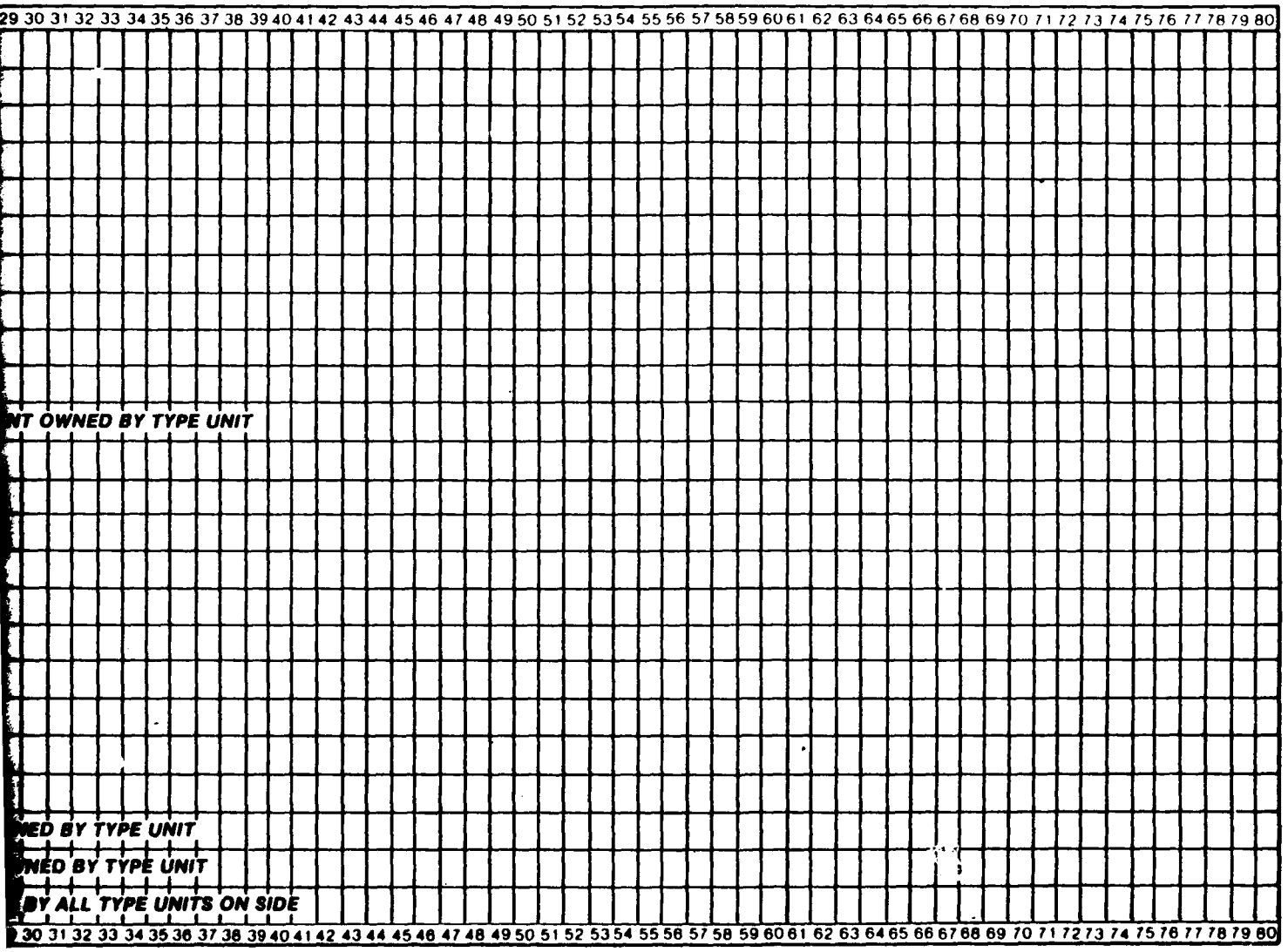


DEWCOM MODEL

INPUT DATA PREPARATION FORM

IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA
   WEAPONS OWNED DATA



2

3.6.15 Form IV.3 (TYPE UNITS; Attrition Data; Desirability of Firing Data; Sector Width Data; Performance Degradation Factor Data)

This form is used to describe data relating to attrition, desirability of firing, sector width, and performance degradation. Complete one sheet for each type unit class on each side. Line out inapplicable keywords and spaces on all sheets of this type so that all type unit classes for each side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all type unit class data for the simulation are delimited by the keyword TU.CLASS and its corresponding HALT.

The last sheet for the second side (BLUE or RED) must contain the delimiting HALT corresponding to the TYPE.UNITS keyword on Form IV.1.

Foldout samples of this form are located on pages 135 through 141.

Key:	1		
Name:	TYPE.UNIT.CLASS		
Spaces:	TYPE.UNIT.CLASS - 9		
	LIGHT.NON.COMBAT.ATTRITION - 5		
	HEAVY.NON.COMBAT.ATTRITION - 5		
Columns:	TYPE.UNIT.CLASS - 7-15		
	LIGHT.NON.COMBAT.ATTRITION - 17-21		
	HEAVY.NON.COMBAT.ATTRITION - 23-27		
Entries:	TYPE.UNIT.CLASS - One of the following:		
	HQ	CORPS.HQ	DIV.HQ
	BDE.HQ	REGT.HQ	BN.HQ
	CO.HQ	ALT.CP	FDC
	ARTILLERY	MANEUVER	SUPPORT
	EW.UNIT	COMM.UNIT	OTHER
	LIGHT.NON.COMBAT.ATTRITION and HEAVY.NON.COMBAT.ATTRITION- Integer or decimal		
Description:	For each type unit class, a value representing percentage of attrition per combat day.		

Key:	2
Name:	ATTRIT.LIGHT
Spaces:	5 for each of 10 force ratio ranges
Columns:	22-26, 28-32,...76-80
Entries:	Integer
Description:	For the type unit class identified in Key 1, values representing percent attrition per combat day for force ratio ranges shown for light attrition conditions. The type unit class identified in Key 1 is represented by the second value (1) in each ratio statement.

Key:	3
Name:	ATTRIT.HEAVY
Spaces:	5 for each of 10 force ratio range
Columns:	22-26, 28-32,...76-80
Entries:	Integer or decimal
Description:	For the type unit class identified in Key 1, values representing percent attrition per combat day for force ratio ranges shown for heavy attrition conditions.

Key:	4
Name:	DESIRABILITY
Spaces:	5 for each of 20 possible entries
Columns:	22-26, 28-32,...76-80
Entries:	Integer in the range 0 to 1000
Description:	Values representing the relative desirability of firing a weapon of the opposing side at this type unit class. The first value corresponds to the first weapon of the opposing side in the order entered on Form III.3 (EQUIPMENT; Weapon Data). The second value corresponds to the second one listed, etc. The number of entries for this item must correspond to the number of weapons for the opposing side entered on Form III.3.

Key:	5
Name:	WIDTH
Spaces:	3 for each of 5 entries
Columns:	15-17, 19-21, 23-25, 27-29, 31-33
Entries:	Integer
Description:	The sector width in meters, for this type unit class for each of the five combat postures listed (ATTACK, DEFEND, MOVE, WITHDRAW, and DELAY), in that order.

Key:	6
Name:	PERFORMANCE
Spaces:	3 for each of 13 possible entries for each of 5 combat postures.
Entries:	Integer
Description:	A performance degradation factor reflecting decreased performance of this type unit for each of 5 combat postures for the different levels of accumulated attrition shown in the column headings. The last value entered for a given combat posture is used for all higher levels of attrition.

PREPARED BY ______________________

PHONE ______________________ DATE ________

DEWCOM MODEL

INPUT DATA PREPARATION FO

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

(1) TU.CLASS

BLUE ← ENTER SIDE BLUE OR RED

TYPE.UNIT.CLASS	LIGHT.NON. COMBAT. ATTRITION	HEAVY.NON COMBAT ATTRITION
HQ	2.40	2.40

AR COM

	0:1 TO 1/5:1	1/5:1 TO 1/4:1	1/4:1 TO 1/3:1	1/3:1 TO 1/2:1	1/2:1 TO 1:1
(2) ATTRIT.LIGHT	2.40				
(3) ATTRIT.HEAVY	2.40				

RELATIVE DES

(4) DESIRABILITY 700 687

SECTOR WIDTH	ATTACK	DEFEND	MOVE	WITHDRAW	DELAY
(5) WIDTH	30	30	30	30	30

(6) PERFORMANCE

PF DEGRADATION FACTOR

COMBAT POSTURE	0-5%	5-10%	10-15%	15-20%	20-25%	25-30%	30-35%	35-40%
ATTACK	100	90	80	60	50	0	0	0
DEFEND	100	100	90	80	70	60	50	40
MOVE	100	100	90	80	70	60	50	40
WITHDRAW	100	100	90	80	70	60	50	40
DELAY	100	100	90	80	70	60	50	40

~~HALT~~ ← TERMINATES TU.CLASS DATA FOR A SIDE (RED OR BLUE)

~~HALT~~ ← TERMINATES ALL TU.CLASS DATA

~~HALT~~ ← TERMINATES TYPE.UNITS DATA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION FACTOR DATA

AR COMBAT ATTRITION

1/4:1	1/4:1 TO 1/3:1	1/3:1 TO 1/2:1	1/2:1 TO 1:1	1:1 TO 2:1	2:1 TO 3:1	3:1 TO 4:1	4:1 TO 5:1	ABOVE 5:1

RELATIVE DESIRABILITY OF FIRING

8	7									

DELAY

30

PF DEGRADATION FACTOR

	15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	50-55%	55-60%	60-65%
	60	50	0	0	0	0	0	0	0	0
	80	70	60	50	40	0	0	0	0	0
	80	70	60	50	40	0	0	0	0	0
	80	70	60	50	40	0	0	0	0	0
	80	70	60	50	40	0	0	0	0	0

ED OR BLUE)

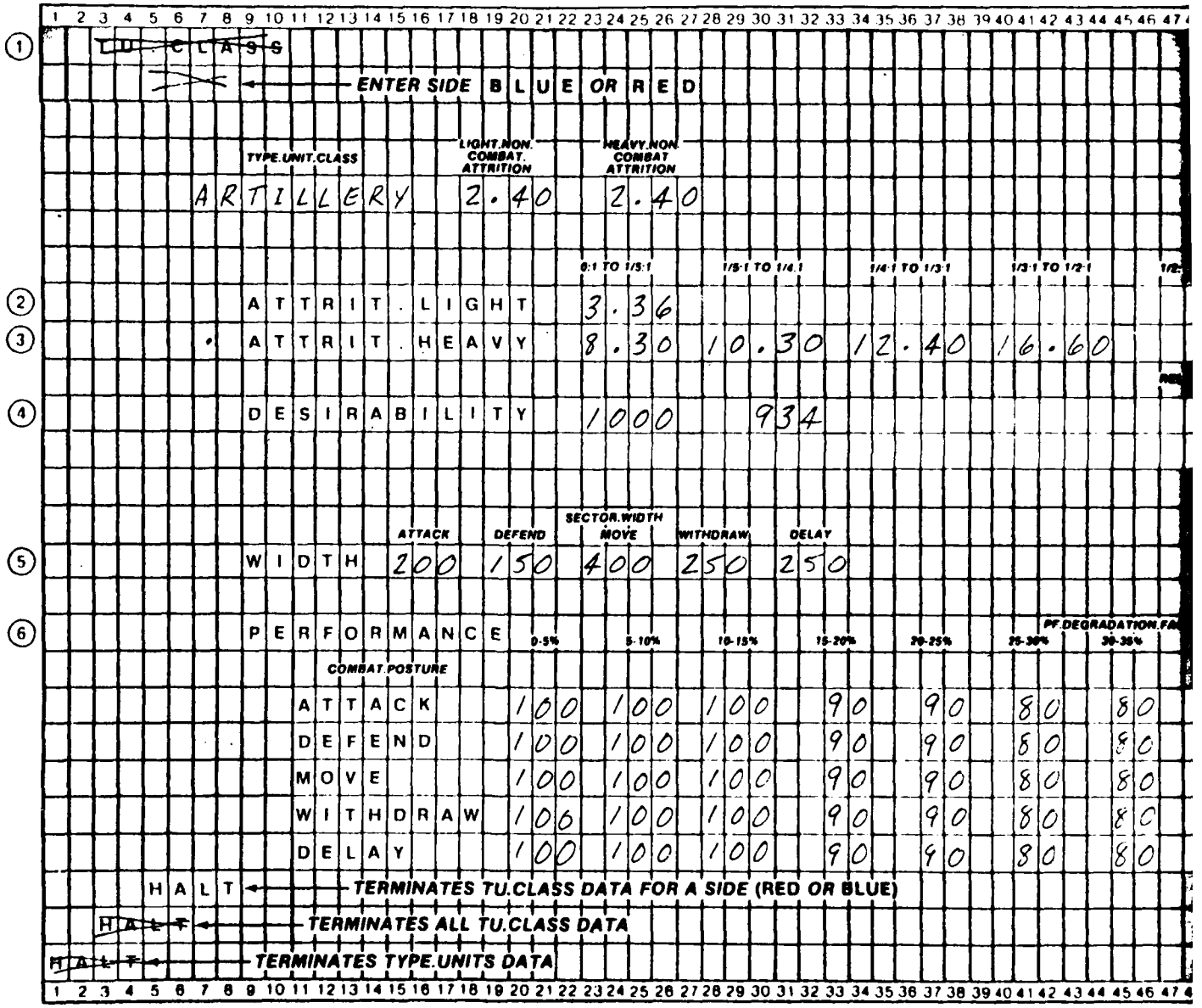
2

PREPARED BY _____

PHONE _____ DATE _____

DEWCOM MOD

INPUT DATA PREPARATION



DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION FACTOR DATA

30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

AR.COMBAT.ATTRITION

1/4:1	1/4:1 TO 1/3:1	1/3:1 TO 1/2:1	1/2:1 TO 1:1	1:1 TO 2:1	2:1 TO 3:1	3:1 TO 4:1	4:1 TO 5:1	ABOVE 5:1
.30	12.40	16.60						

RELATIVE.DESIRABILITY.OF.FIRING

934

DELAY

250

PF.DEGRADATION.FACTOR

15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	50-55%	55-60%	60-65%
90	90	80	80	80	60	60	50	50	0
90	90	80	80	80	60	60	50	50	0
90	90	80	80	80	60	60	50	50	0
90	90	80	80	80	60	60	50	50	0
90	90	80	80	80	60	60	50	50	0

RED OR BLUE)

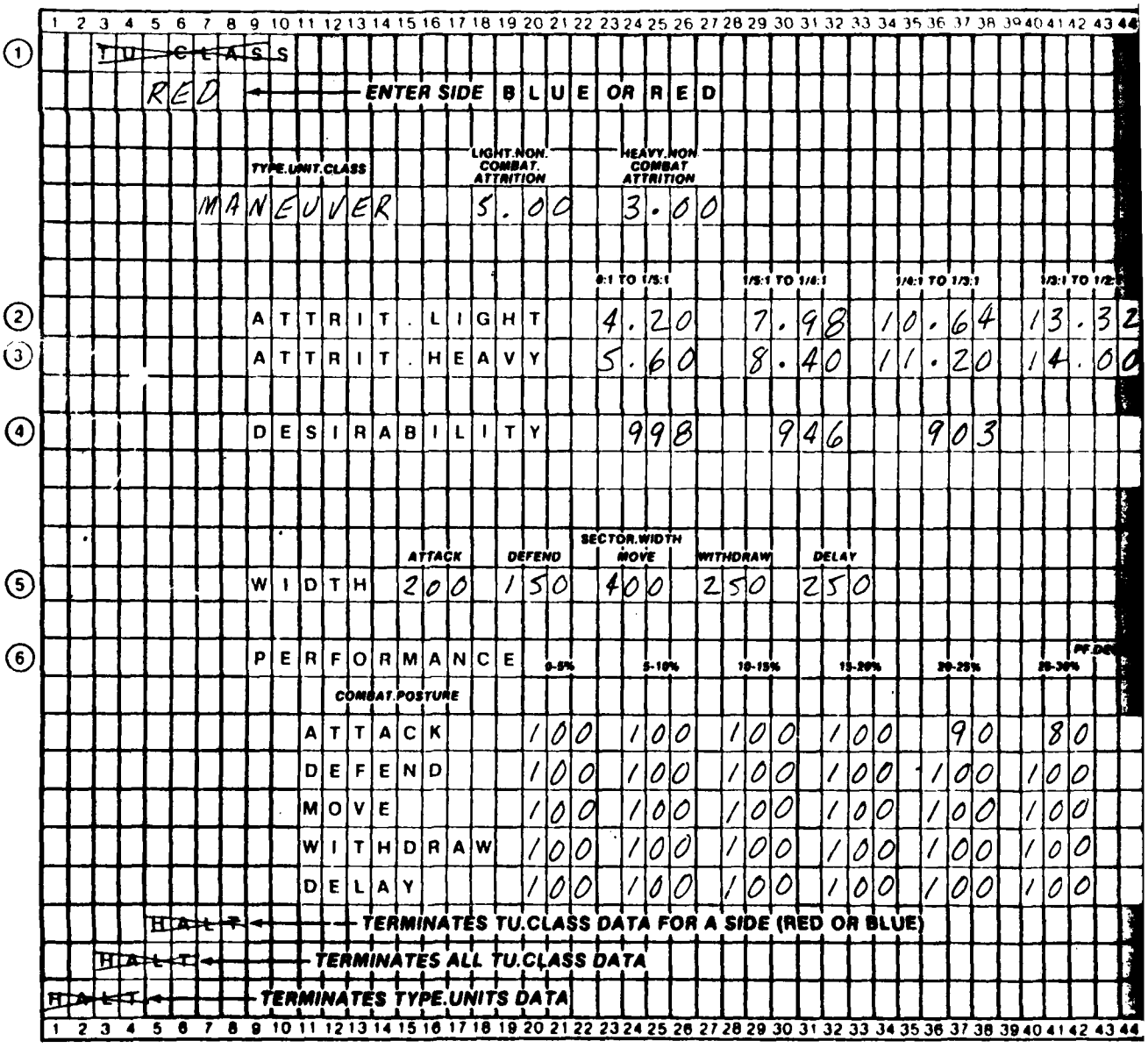
30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

PREPARED BY _____

PHONE _____ DATE _____

DEWCOM M

INPUT DATA PREPARA



DEWCOM MODEL

INPUT DATA PREPARATION FORM

IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION FACTOR DATA

AR.COMBAT.ATTRITION

1/4:1 TO 1/4:1	1/4:1 TO 1/3:1	1/3:1 TO 1/2:1	1/2:1 TO 1:1	1:1 TO 2:1	2:1 TO 3:1	3:1 TO 4:1	4:1 TO 5:1	ABOVE 5:1
7.98	10.64	13.32						
8.40	11.20	14.00						

RELATIVE.DESIRABILITY.OF.FIRING

946	903	

DELAY

250

PF.DEGRADATION.FACTOR

0	15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	50-55%	55-60%	60-65%
00	100	90	80	70	70	60	60	50	50	0
00	100	100	100	90	80	70	60	50	50	0
00	100	100	100	90	80	70	60	50	50	0
00	100	100	100	90	80	70	60	50	50	0
00	100	100	100	90	80	70	60	50	50	0

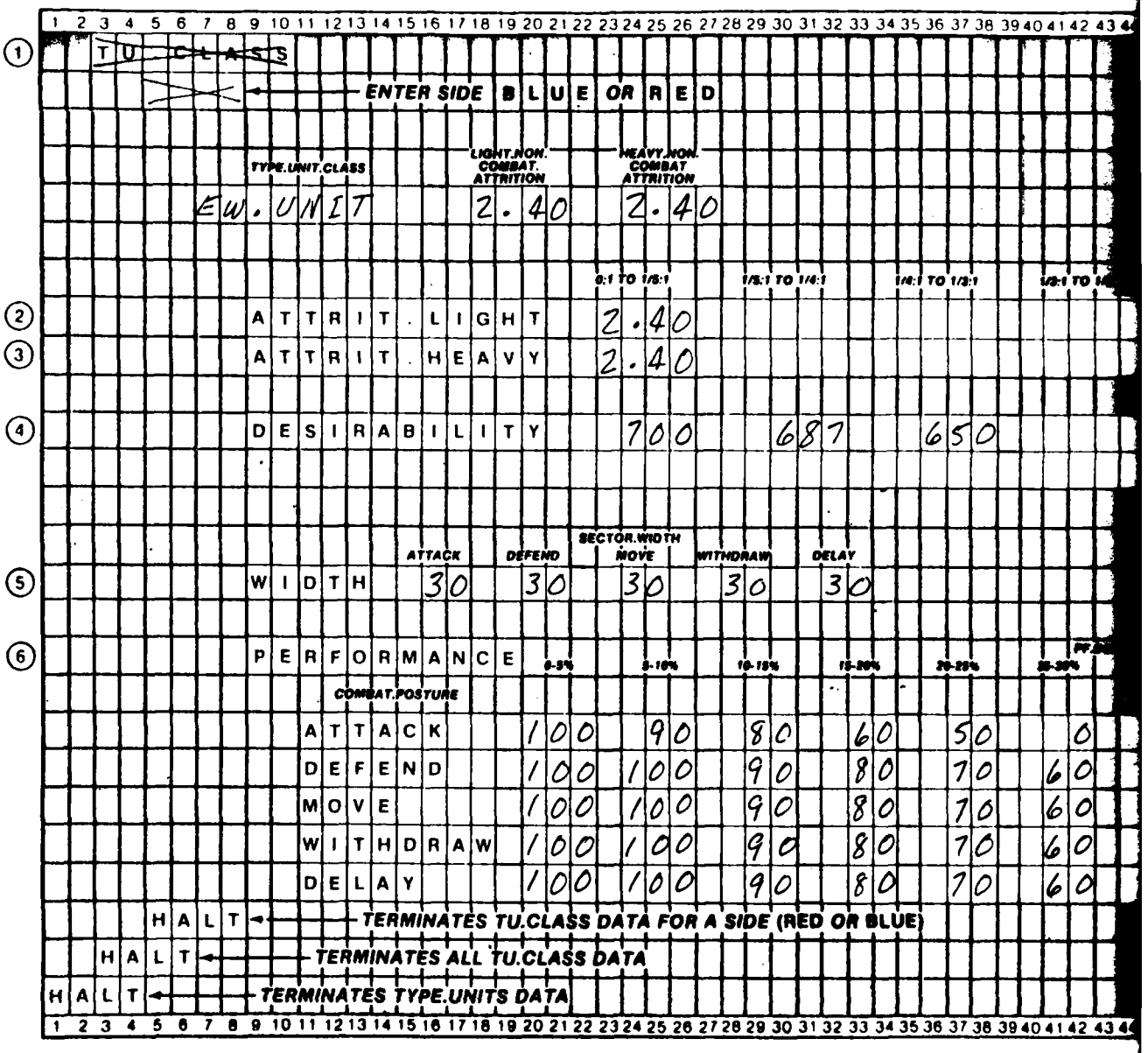
(RED OR BLUE)

PREPARED BY _____

PHONE _____ DATE _____

DEWCOM M

INPUT DATA PREPARA



DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION FACTOR DATA

30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

AIR.COMBAT.ATTRITION

1/4:1 | 1/4:1 TO 1/3:1 | 1/3:1 TO 1/2:1 | 1/2:1 TO 1:1 | 1:1 TO 2:1 | 2:1 TO 3:1 | 3:1 TO 4:1 | 4:1 TO 5:1 | ABOVE 5:1

RELATIVE.DESIRABILITY.OF.FIRING

6 8 7 6 5 0

DELAY

3 0

PF.DEGRADATION.FACTOR

	15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	50-55%	55-60%	60-65%
0	6 0	5 0	0	0	0	0	0	0	0	0
0	8 0	7 0	6 0	5 0	4 0	0	0	0	0	0
0	8 0	7 0	6 0	5 0	4 0	0	0	0	0	0
0	8 0	7 0	6 0	5 0	4 0	0	0	0	0	0
0	8 0	7 0	6 0	5 0	4 0	0	0	0	0	0

ED OR BLUE)

0 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

3.3.10 Form V.1 (COMBAT ORGANIZATION; Units Data)

This form is used to uniquely identify each unit assigned to each side, along with its location and superior unit. The information should be entered in the order of the chain of command, i.e., Division Headquarters followed by all Brigade Headquarters, etc. using separate sheets for each side (BLUE and RED). Line out inapplicable keywords and spaces to that all units on each side are delimited by the side name (BLUE or RED) and its corresponding HALT; and all units data for the simulation are delimited by the keyword UNITS and its corresponding HALT. Foldout samples of this form are located on pages 145-149.

Key:	1
Name:	UN.ID
Spaces:	4
Columns:	7-10
Entries:	Integer
Description:	An identification number which is unique for each unit on a side.

Key:	2
Name:	UN.NAME
Spaces:	12
Columns:	12-23
Entries:	Alphanumeric
Description:	The name of the unit represented.

Key:	3
Name:	TU.NAME
Spaces:	12
Columns:	25-36
Entries:	The value entered must be one of the names of the typed of unit input on Form IV.1
Description:	The type unit represented.

Key:	4
Name:	UN.X.COORDINATE
Spaces:	6
Columns:	38-42
Entries:	Numeric
Description:	The six digit X UTM grid coordinate specifying the location of the unit.

Key:	5
Name:	UN.Y.COORDINATE
Spaces:	6
Columns:	45-50
Entries:	Numeric
Description:	The six digit Y UTM grid coordinate specifying the location of the unit.

Key:	6
Name:	UN.SUPERIOR.UNIT
Spaces:	4
Columns:	52-55
Entries:	Integer
Description:	The identification number (Key 1) of this unit's superior unit in the chain of command. If the unit has no superior unit, enter zero (Ø).

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PHONE _____ DATE _____

DEWCOM MODE

INPUT DATA PREPARATION F

COMBAT.ORG

UNITS

BLUE ← ENTER SIDE, BLUE OR RED

① UN.ID	② UN.NAME	③ TU.NAME	④ UN.X COORDINATE	UN.Y
1	DIV.HQ	DIVISION.HQ	464000	622000
2	BDE.HQ	BRIGADE.HQ	474000	622000
3	MECH.BN.HQ	BATTALION.HQ	492000	637000
4	ARM.BN.HQ	BATTALION.HQ	492000	617000
5	MECH.CO.1	MECH.CO	493000	639000
6	MECH.CO.2	MECH.CO	493000	637000
7	MECH.CO.3	MECH.CO	493000	635000
8	ARM.CO.1	ARMOR.CO	493000	619000
9	ARM.CO.2	ARMOR.CO	493000	617000
10	ARM.CO.3	ARMOR.CO	493000	615000
11	FDC.1	FIRE.CONTROL	474000	617000
12	RADAR.3J	RADAR	474000	617000
13	ARTY.FC1	HOWITZERS	474000	637000

HALT ← TERMINATES UNITS DATA FOR A SIDE (BLUE OR RED)

~~HALT~~ ← TERMINATES ALL UNITS DATA

1

DEWCOM MODEL

INPUT DATA PREPARATION FORM

V. COMBAT ORGANIZATION

. UNITS DATA

TU.NAME	UN.X.COORDINATE ③	UN.Y.COORDINATE ④	UN.SUPERIOR.UNIT ⑤	⑥
ISION.HQ	464000	622000	NONE	
GADE.HQ	474000	622000		1
TALION.HQ	492000	637000		2
TALION.HQ	492000	617000		2
H.CO	493000	639000		3
H.CO	493000	637000		3
H.CO	493000	635000		3
OR.CO	493000	619000		4
OR.CO	493000	617000		4
OR.CO	493000	615000		4
E.CONTROL	474000	617000		1
TR	474000	617000		1
ITZERS	474000	637000		11

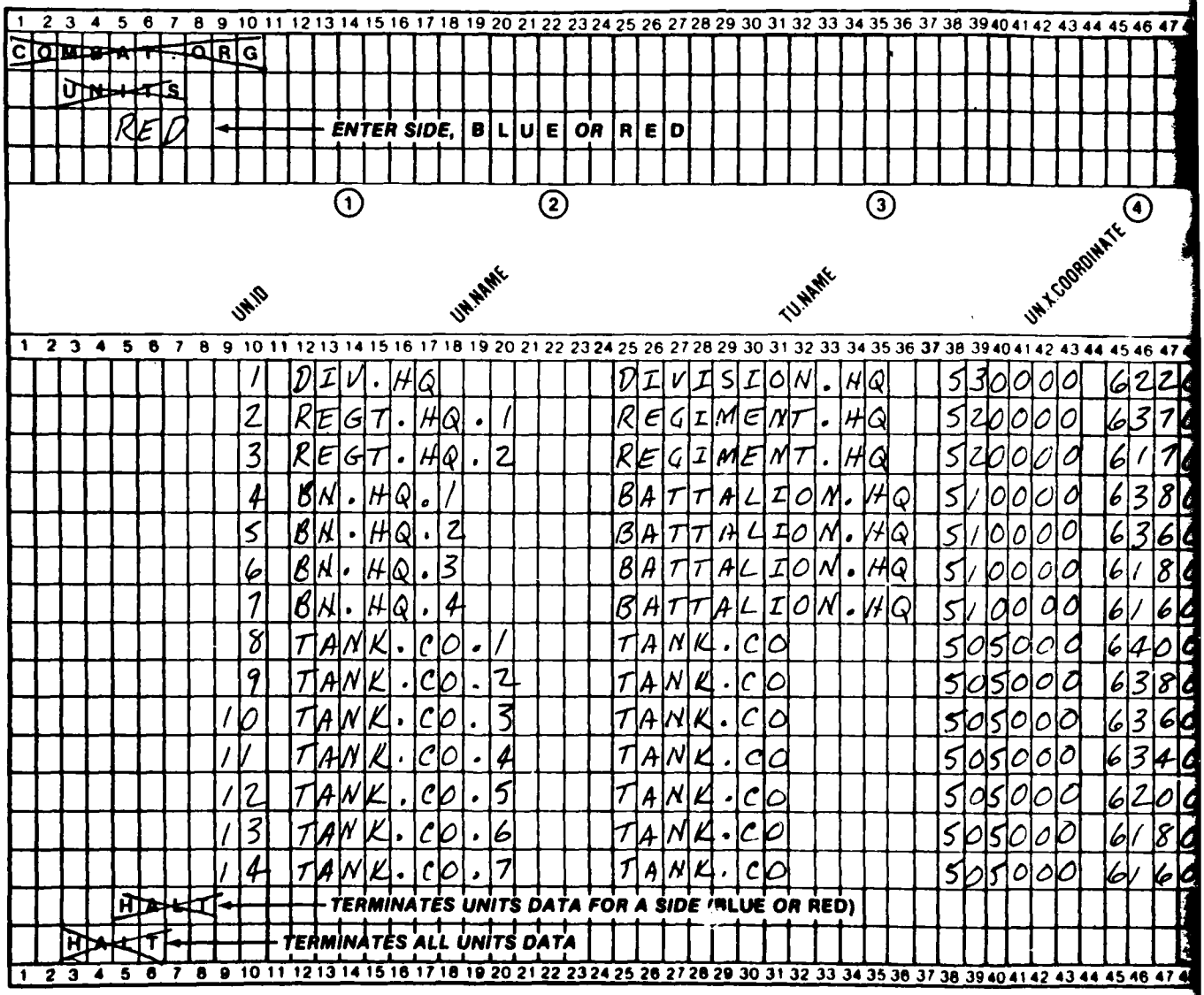
BLUE OR RED)

PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MOD

INPUT DATA PREPARATION



DEWCOM MODEL

PUT DATA PREPARATION FORM

V. COMBAT ORGANIZATION

1. UNITS DATA

TU.NAME	③	UN.X.COORDINATE ④	UN.Y.COORDINATE ⑤	UN.SUPERIOR.UNIT ⑥
ION. HQ		5300000	6220000	NONE
ENT. HQ		5200000	6370000	1
ENT. HQ		5200000	6170000	1
LION. HQ		5100000	6380000	2
LION. HQ		5100000	6360000	2
LION. HQ		5100000	6180000	3
LION. HQ		5100000	6160000	3
CO		5050000	6400000	4
CO		5050000	6380000	4
CO		5050000	6360000	5
CO		5050000	6340000	5
CO		5050000	6200000	6
CO		5050000	6180000	6
CO		5050000	6160000	7

DE OR RED)

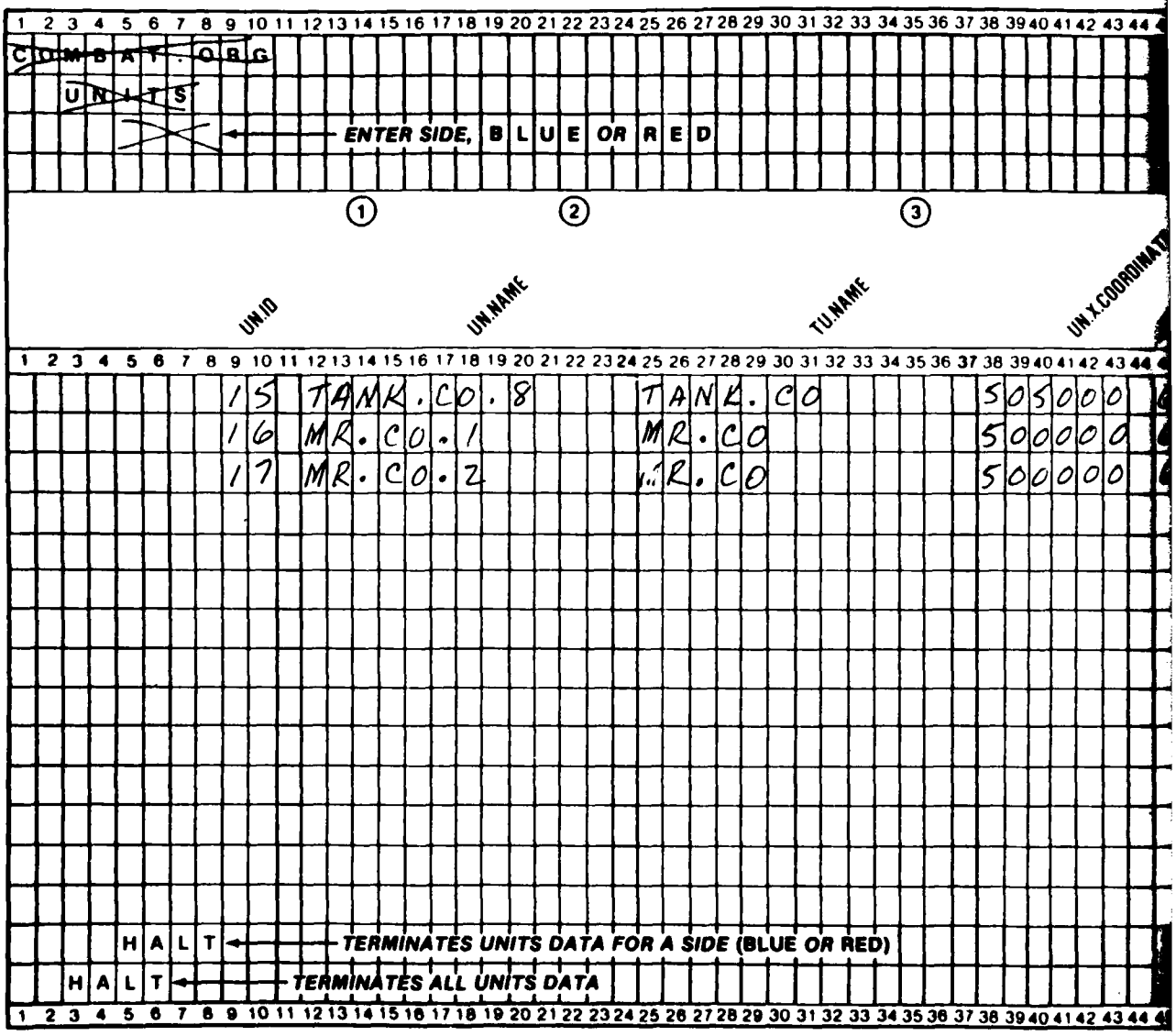
2

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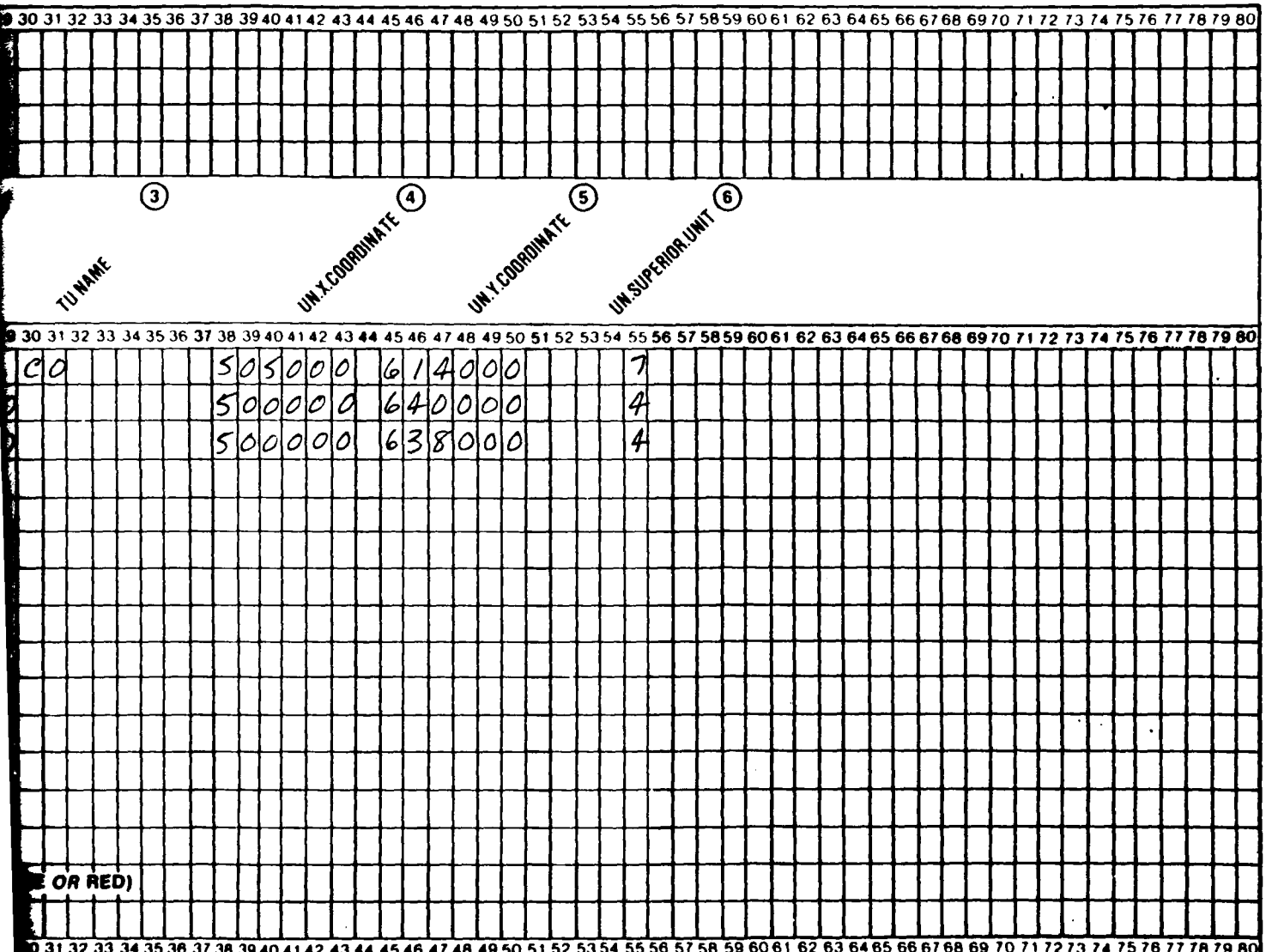


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V. COMBAT ORGANIZATION

1. UNITS DATA



3.6.17 Form V.2 (COMBAT ORGANIZATION; Air Sortie Data)

This form is used to continue to describe unit capabilities, and is used to identify the types and quantities of air sorties which can be deployed by each unit. Complete a separate sheet for <u>each unit on each side</u>.

Line out inapplicable keywords and spaces on all sheets so that
(1) All air sortie data for a unit is delimited by the keyword UNIT (and unit ID) and its corresponding HALT;
(2) All air sortie data on each side is delimited by the side name (BLUE or RED) and its corresponding HALT,
(3) All air sortie data for the simulation is delimited by the keyword AIR.SORTIE and its corresponding HALT.

The last sheet for the second side (BLUE or RED) must contain the delimiting HALT corresponding to the keyword COMBAT.ORG on Form V.1.

Foldout samples of this form are located on pages 153 and 155.

Key:	1
Name:	UNIT
Spaces:	4
Columns:	12-15
Entries:	Integer
Description:	The identification number of the unit deploying the air sorties listed in Key 2.

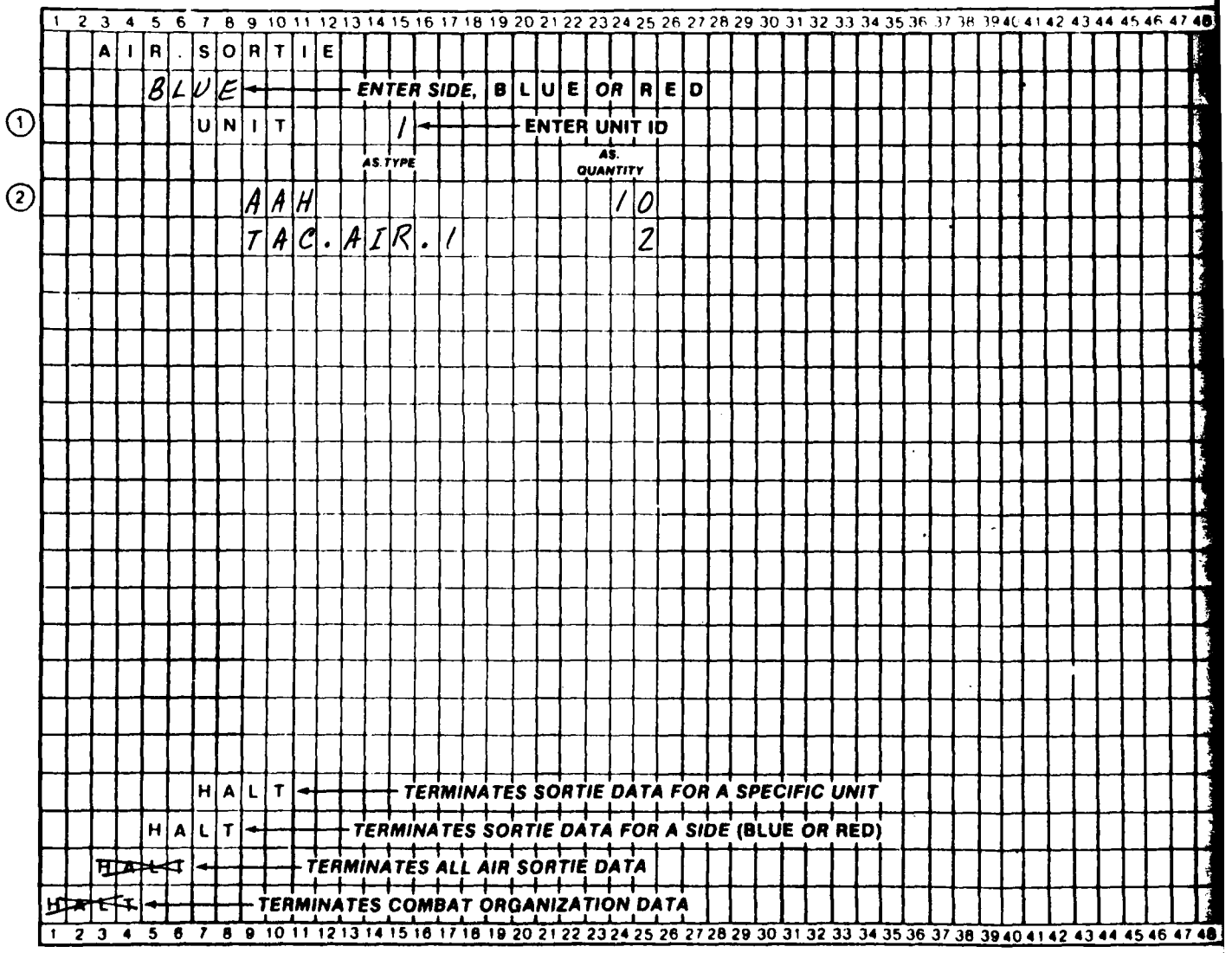
Key:	2
Name:	AS.TYPE AS.QUANTITY
Spaces:	AS.TYPE - 12 AS.QUANTITY - 4
Columns:	AS.TYPE - 9-20 AS.QUANTITY - 22-25
Entries:	AS.TYPE - Alphanumeric AS.QUANTITY - Integer
Description:	Under AS.TYPE, enter the name for this type of air sortie, corresponding to one of the types identified on Form III.4 for the side to which this unit belongs. Under AS.QUANTITY, specify the quantity of this type of air sortie which the unit can deploy.

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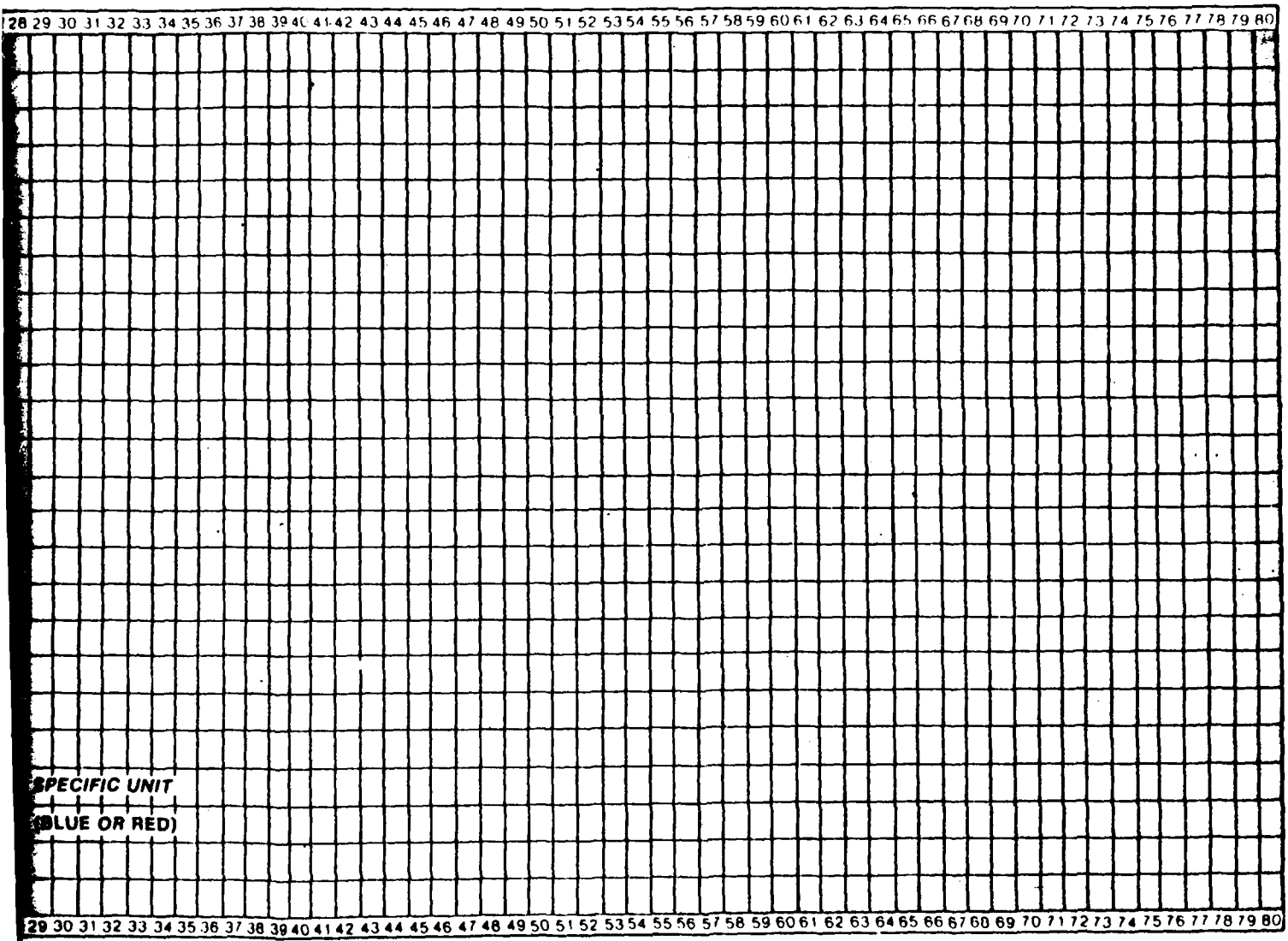


V. COMBAT ORGANIZATION

2. AIR SORTIE DATA

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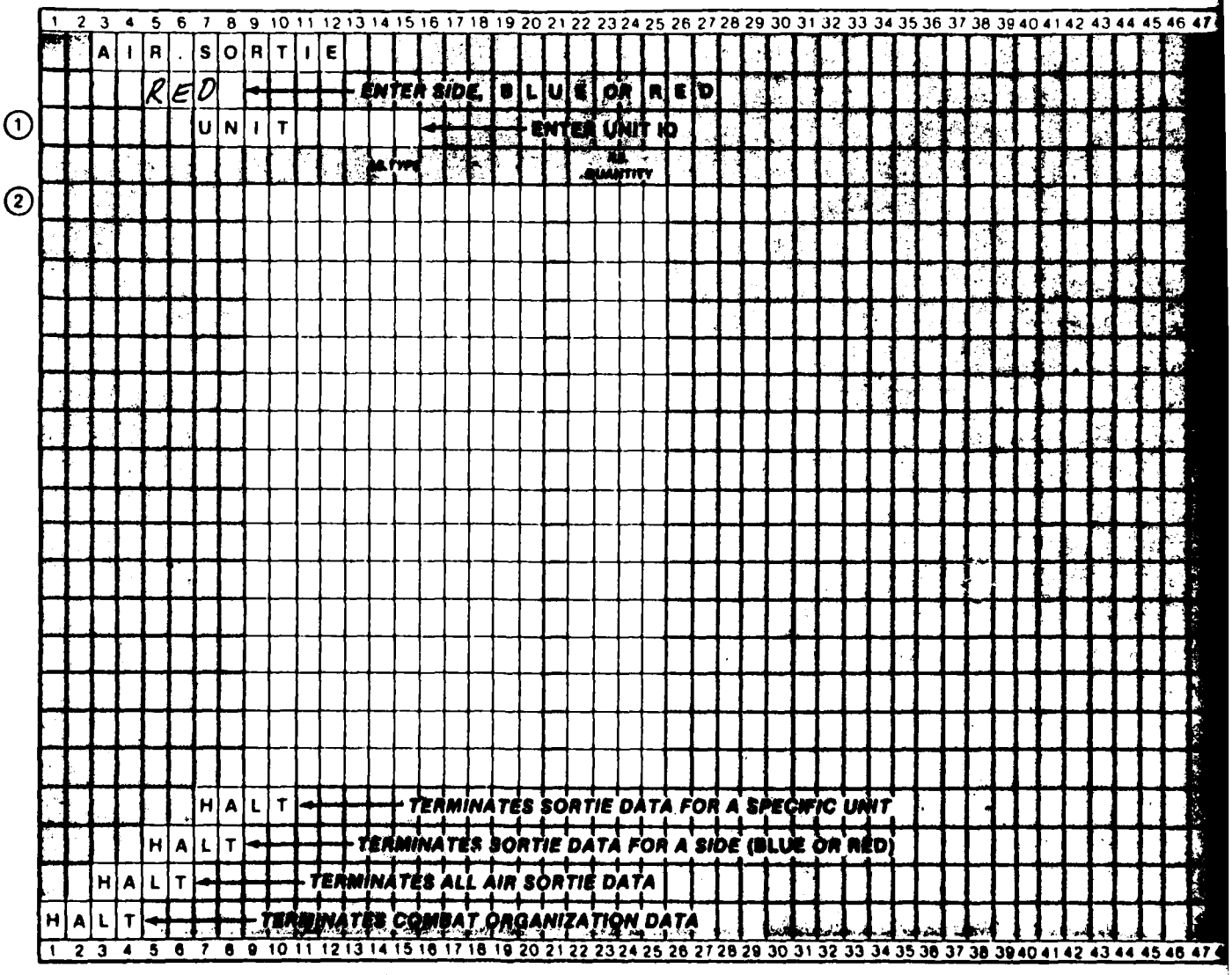


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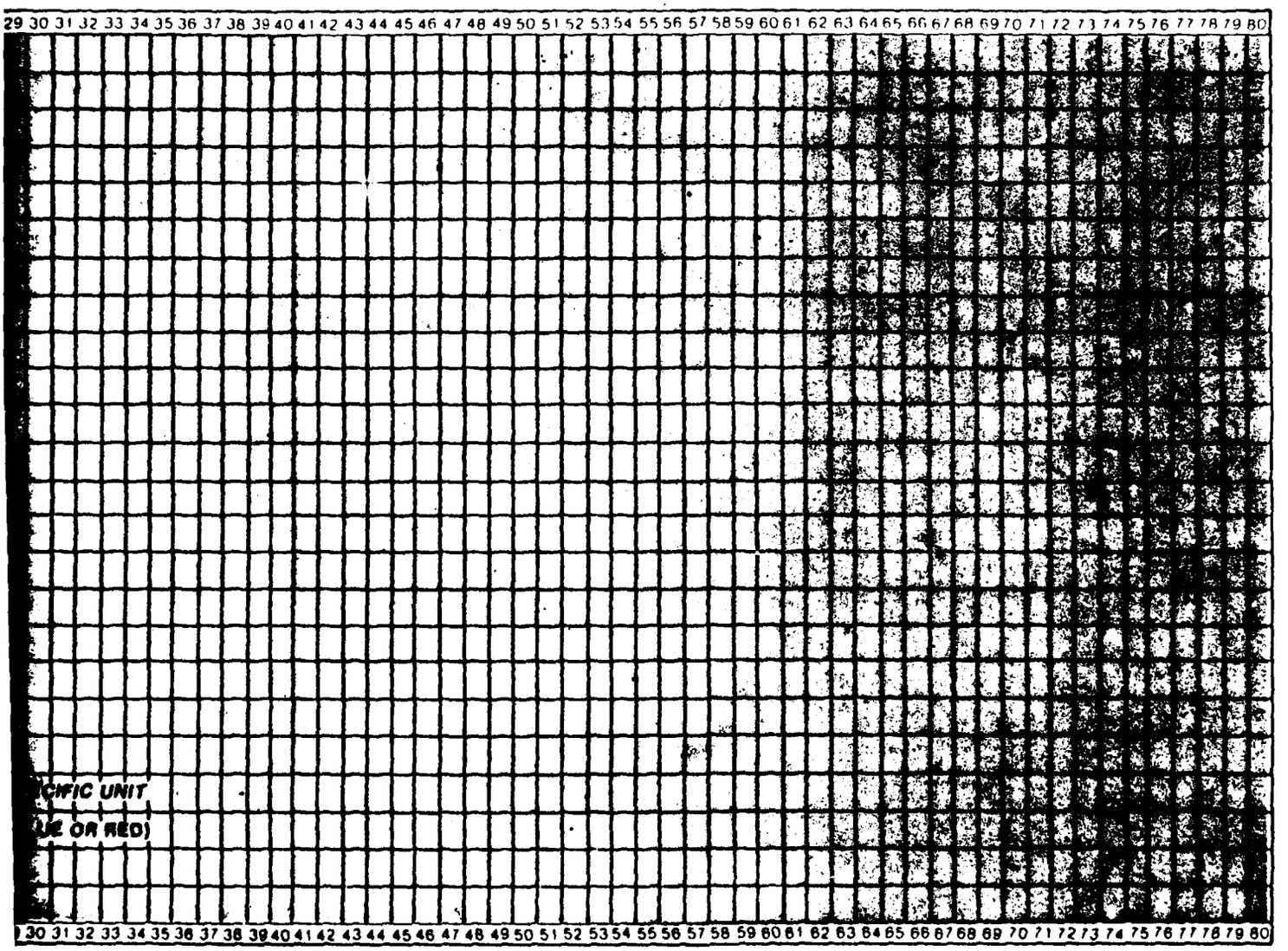
1

V. COMBAT ORGANIZATION

2. AIR SORTIE DATA

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2

3.6.18 Form VI.1 (COMMUNICATIONS ORGANIZATION; Nets and Links)

This form is used to describe the communications nets and links owned by each side. Each net for each side is described on a separate sheet, along with its links.

Line out inapplicable keywords and spaces on all sheets so that:

(1) All link data relating to a specific net are delimited by the keyword LINKS and its corresponding HALT;

(2) All net and link data for a side are delimited by the side name (BLUE or RED) and its corresponding HALT;

(3) All communications organization data in the input stream are delimited by the keyword COMM.ORG and its corresponding HALT.

A foldout sample of this form is located on page 163.

Key:	1
Name:	NET.ID
Spaces:	6
Columns:	5-10
Entries:	Integer
Description:	An identifier for a communications net which is unique for a side.

Key:	2
Name:	NET.TYPE
Spaces:	9
Columns:	12-20
Entries:	One of the following: RADIO WIRE MESSENGER
Description:	The type of communications net being described.

Key:	3
Name:	NET.MODE
Spaces:	7
Columns:	22-28
Entries:	One the following:
	VOICE TT CW DATA MESSAGE
Description:	A description of the mode or medium for this net.

Key:	4
Name:	NET.SECURITY
Spaces:	8
Columns:	30-37
Entries:	*One of the following:*
	CLEAR
	ON.LINE (on line encryption)
	OFF.LINE (off line encryption)
Description:	The type of security available on the net.

Key:	5
Name:	NET.USAGE
Spaces:	12
Columns:	39-50
Entries:	One of the following:
	COMMAND SURVEILLANCE
	INTELLIGENCE AIR.REQUEST
	OPERATIONS CAS.COORD
	ADMIN.LOGIS CMMN
	FIRE.DIRECT
Description:	An indication of the principal usage of the net.

Key:	6
Name:	NET.CONTINUOUS.CARRIER
Spaces:	3
Columns:	52-54
Entries:	YES or NO
Description:	An indication of whether the net utilizes a continuous (as opposed to intermittent) signal carrier.

Key:	7
Name:	NET.PRIMARY.FREQ
Spaces:	3
Columns:	56-58
Entries:	Integer
Description:	A value in megahertz identifying the net's primary frequency.

Key:	8
Name:	NET.SECONDARY.FREQ
Spaces:	3
Columns:	60-62
Entries:	Integer
Description:	A value in megahertz identifying the net's secondary frequency. If the net does not have a secondary frequency, repeat the primary frequency in this field.

Key:	9
Name:	LK.ID
Spaces:	6
Columns:	7-12
Entries:	Integer
Description:	An identifier, unique for each side, which specifies each link in the net being described.

Key:	10
Name:	LK.A.END
Spaces:	4
Columns:	14-17
Entries:	Integer
Description:	The UNIT.ID for one of the ends of a link. The UNIT.ID must correspond to one of those entered on Form V.1 for this side.

Key:	11
Name:	LK.B.END
Spaces:	4
Columns:	19-22
Entries:	Integer
Description:	The UNIT.ID for the second end of a link. The UNIT.ID must correspond to one of those entered on Form V.1 for this side.

Key:	12
Name:	LK.A.EQUIP.POINTER
Spaces:	12
Columns:	24-35
Entries:	Alphanumeric
Description:	The communications equipment type name used by the LK.A.END of the link. The name must correspond to one of those entered under CET.NAME on Form III.1 for this side.

Key:	13
Name:	LK.B.EQUIP.POINTER
Spaces:	12
Columns:	37-48
Entries:	Alphanumeric
Description:	The communication equipment type name used by the LK.B.END of the link. The name must correspond to one of those entered under CET.NAME on Form III.1 for this side.

Key:	14
Name:	LK.DIRECTION
Spaces:	3
Columns:	50-52
Entries:	ONE or TWO
Description:	An indication of whether the link is a one way or two way channel.

Key:	15
Name:	LK.DESIRABILITY.OF.USING
Spaces:	3
Columns:	54-56
Entries:	Integer in the range 0-100
Description:	A value reflecting the desirability of using this link over an alternate link.

Key:	16
Name:	LK.TIME.TO.CONVERT
Spaces:	3
Columns:	58-60
Entries:	Integer
Description:	A value in minutes indicating the time required to convert this link from radio to wire.

Key:	17
Name:	LK. CHANNELS
Spaces:	3
Columns:	62-64
Entries:	Integer
Description:	The maximum number of usable channels in this link.

Key:	18
Name:	LK.CONVERTABILITY
Spaces:	3
Columns:	66-68
Entries:	YES or NO
Description:	An indication of whether or not the link converts from radio to wire after the unit has been in one location for a period equivalent to LK.TIME.TO.CONVERT in Key 16.

Key:	19
Name:	LK.SWITCHABILITY.CODE
Spaces:	3
Columns:	70-72
Entries:	YES or NO
Description:	An indication of whether this link can be concatenated with another link to transmit a message.

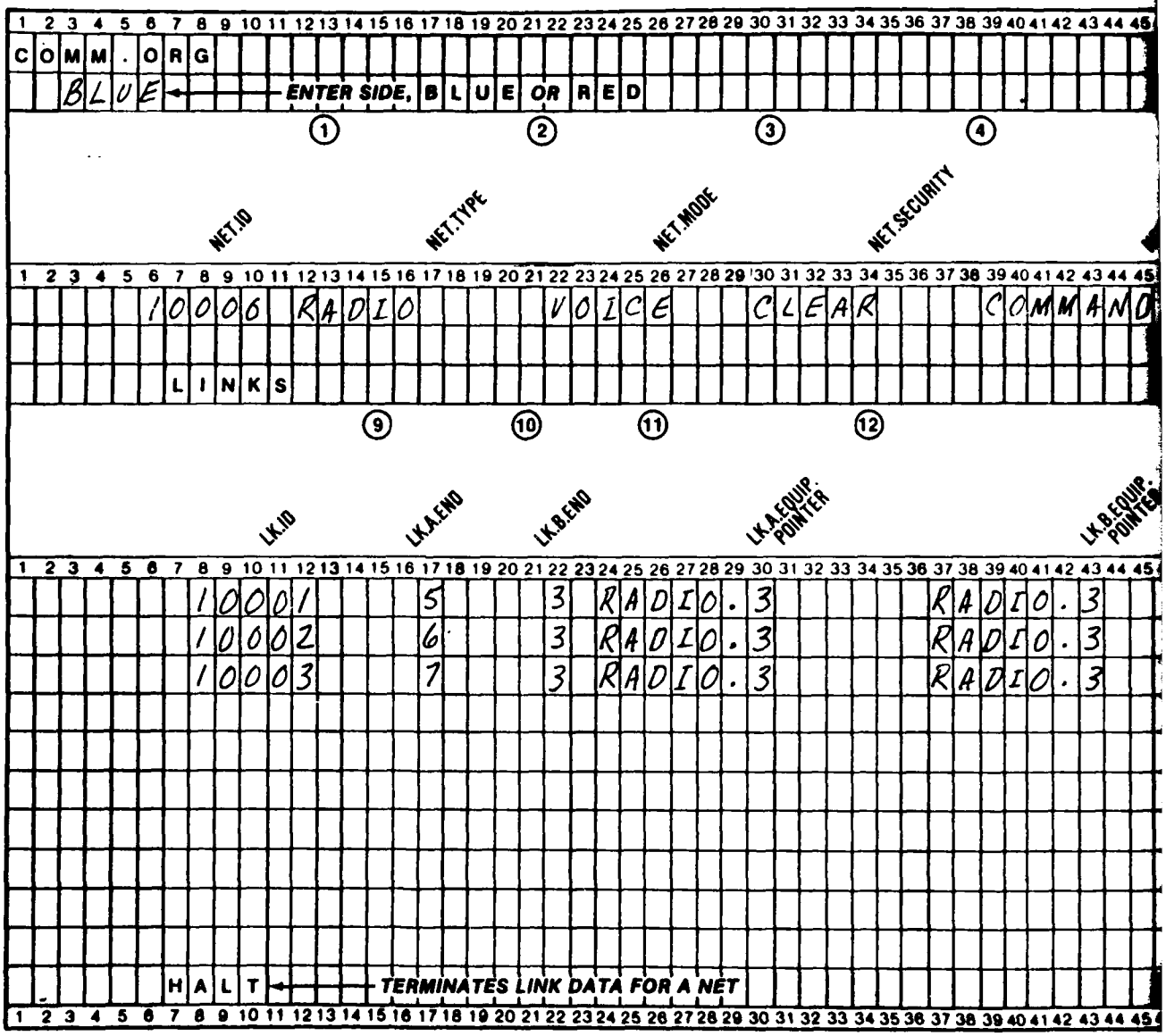
Key:	20
Name:	LK.JAMMABILITY.CODE
Spaces:	3
Columns:	74-76
Entries:	YES or NO
Description:	An indication of whether this link is affected by jamming.

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VI. COMMUNICATIONS ORGANIZATION

1. NETS AND LINKS

	(3) NET.SECURITY	(4) NET.USAGE	(5) NET.CONTINUOUS CARRIER	(6) NET.PRIMARY. FREQ	(7) NET.SECONDARY. FREQ	(8)
CLEAR	COMMAND		NO	30	31	

	(12) LK.A.EQUIP. POINTER	(13) LK.B.EQUIP. POINTER	(14) LK.DIRECTION	(15) LK.DESIRABILITY. OF.USING	(16) LK.TIME.TO. CONVERT	(17) LK. CHANNELS	(18) LK. CONVERTABILITY	(19) LK.SWITCHABILITY. CODE	(20) LK.JAMMABILITY. CODE
.3	RADIO.3	TWO	100	0	1	NO	YES	YES	
.3	RADIO.3	TWO	100	0	1	NO	YES	YES	
.3	RADIO.3	TWO	100	0	1	NO	YES	YES	

2

3.6.19 Form VI.2 (COMMUNICATIONS ORGANIZATION; Compound Links)

This form is used to describe any compound links which may exist in a communications net. It is used to further define the data entered on Form VI.1. It also contains the keyword HALT terminating COMM.ORG data for each side (corresponding to side name on Form VI.1) and the keyword HALT corresponding to the keyword COMM.ORG on page VI.1, termining all COMM.ORG data for the simulation.

If multiple copies of the form are needed, line out all inapplicable keywords and spaces so that all compound link data for all links in a net are delimited by the keyword COMPOUND and its corresponding HALT.

A sample of this form is located on the facing page.

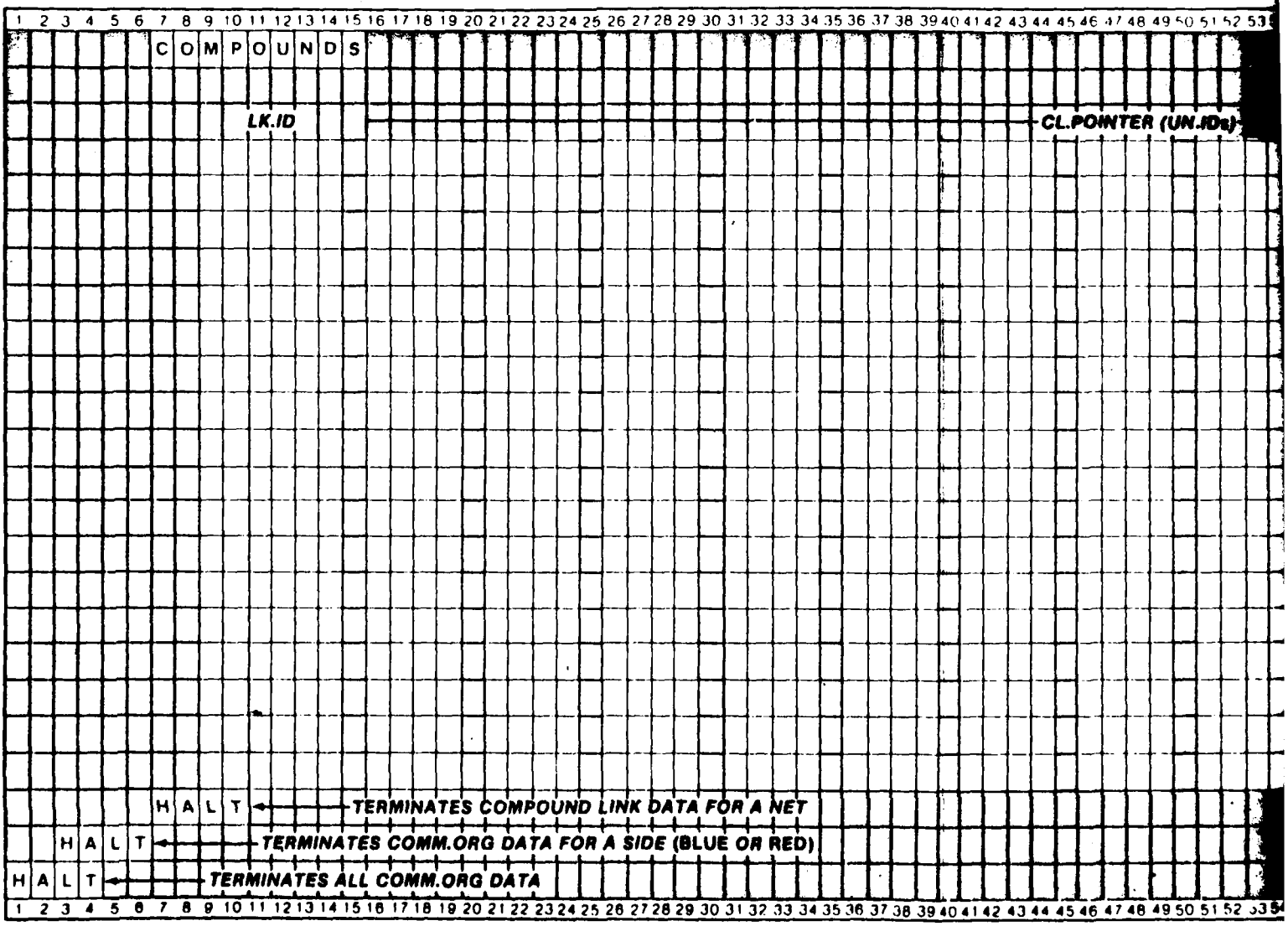
Key:	n/a
Name:	LK.ID
	CL.POINTER
Spaces:	LK.ID - 6
	CL.POINTER - 4
Columns:	LK.ID - 9-14
	CL.POINTER - 16-19, 21-24,...76-79
Entries:	LK.ID - Integer
	CL.POINTER - Integer
Description:	Identifies every unit in a compound link. The LK.ID uniquely identifies the link which is compound. Entries under CL.POINTER include the UN.ID of every unit in the compund link. Terminate the UN.ID list for <u>each</u> compound link with a dollar sign ($). If all units in a compound link cannot be entered on one line, continue on the next line. Do not reenter the LK.ID on second and succeeding lines.

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PHONE _____ DATE _____

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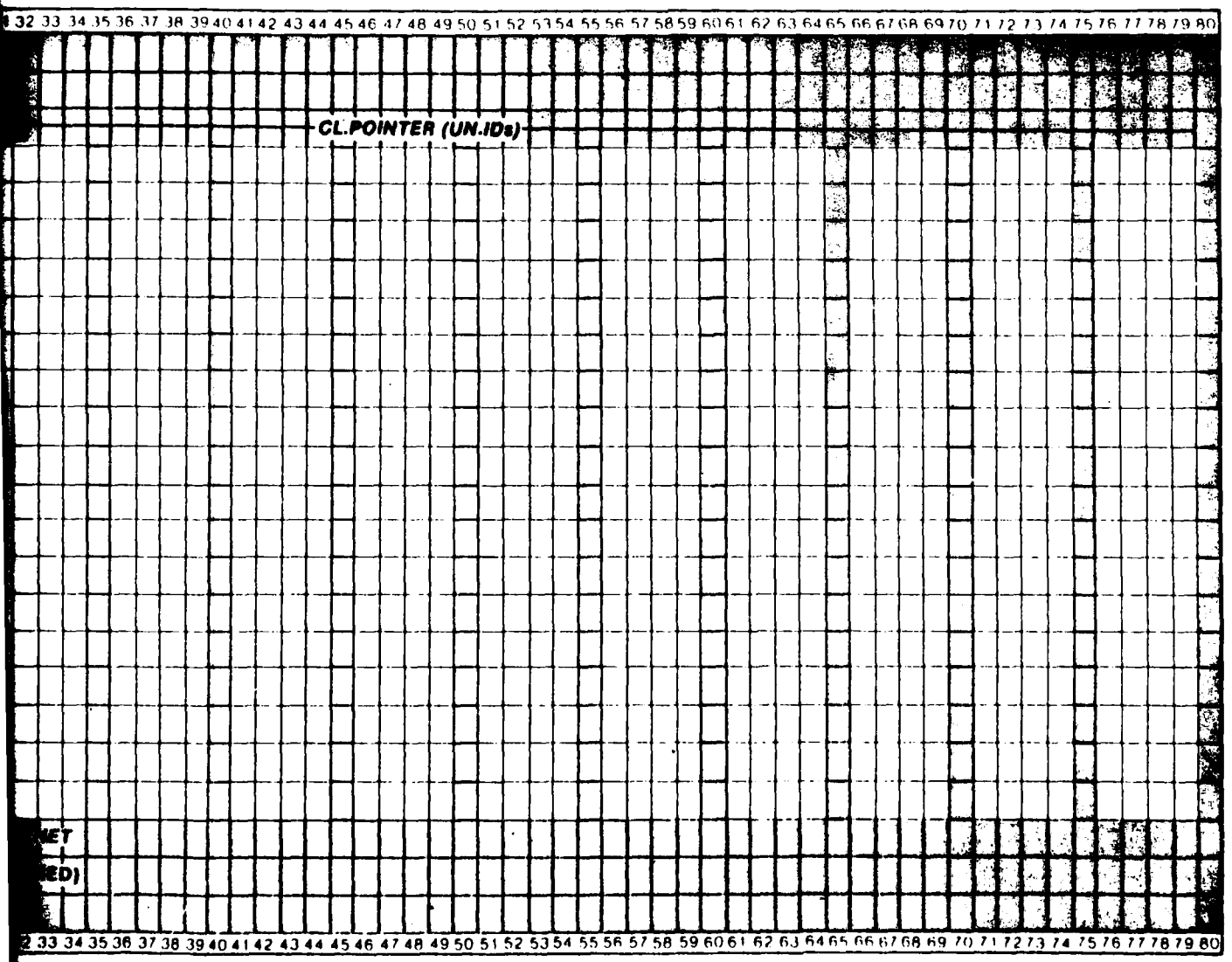


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VI. COMMUNICATIONS ORGANIZATION

2 COMPOUND LINKS



3.6.20 Form VII.1 (ORDERS; Communications Orders)

This form is used to describe the attributes of communications orders for each side by type unit. Each sheet has space to enter data for two types of units. Use additional sheets as required, lining out inapplicable keywords and spaces on each sheet so that all communications orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all communications orders for the simulation are delimited by the keyword COMM.ORDERS and the corresponding HALT.

Foldout samples of this form are located on pages 173 through 177.

Key:	1
Name:	TU.CLASS
Spaces:	9
Columns:	7-15
Entries:	Alphanumeric
Description:	A type unit class corresponding to one of those listed under TU.CLASS on Form VI.1, Key 3, whose communications orders are described in Keys 2-16 on this sheet.

Key:	2
Name:	CO.ID
Spaces:	3
Columns:	9-11
Entries:	Integer
Description:	A unique identifier for a communications order.

Key:	3		
Name:	CO.DESTINATION		
Spaces:	9		
Columns:	13-21		
Entries:	One of the following:		
	HQ	CORPS.HQ	DIV.HQ
	BDE.HQ	REGT.HQ	BN.HQ
	CO.HQ	ALT.CP	FDC
	ARTILLERY	MANEUVER	SUPPORT
	EW.UNIT	COMM.UNIT	OTHER
	BROADCAST		
Description:	The type unit class to which the communications order is being sent.		

Key:	4		
Name:	CO.STIMULUS		
Spaces:	12		
Columns:	23-34		
Entries:	One of the following:		
	MSG.RECEIPT	TIME	CHANGE.MISSION
	INFORMATION	STRENGTH	COORDINATION
	ATTACK.FR	FAILURE.FR	
Description:	The reason for sending a message.		

Key:	5				
Name:	CO.MODE				
Spaces:	7				
Columns:	36-42				
Entries:	One of the following:				
	VOICE	TT	CW	DATA	MESSAGE
Description:	The method of transmitting a message.				

Key:	6
Name:	CO.PRECEDENCE
Spaces:	9
Columns:	44-52
Entries:	One of the following: DEFERRED ROUTINE PRIORITY IMMEDIATE FLASH
Description:	The relative order in which the message is to be handled within the system among other messages.

Key:	7
Name:	CO.THRESHOLD
Spaces:	3
Columns:	54-56
Entries:	Integer in the range 0 to 100
Description:	A value representing a quantity of information or a strength level, above which the message is transmitted.

Key:	8
Name:	CO.LENGTH
Spaces:	3
Columns:	58-60
Entries:	Integer
Description:	A value in seconds reflecting the transmission time of the message.

Key:	9
Name:	CO.INTELLIGENCE.VALUE
Spaces:	3
Columns:	62-64
Entries:	Integer in the range 0 to 100
Description:	The relative intelligence value to the opposing side of the contents of the message (for purposes of interception only).

Key:	10
Name:	CO.ACTION
Spaces:	9
Columns:	13-21
Entries:	One of the following: ATTACK DEFEND MOVE WITHDRAW DELAY JAM NONE
Description:	The action to be taken as a result of the message. An additional possible entry is a CO.ID (See Key 2) of another message to be transmitted.

Key:	11
Name:	CO.USAGE
Spaces:	12
Columns:	23-34
Entries:	One of the following: COMMAND INTELLIGENCE OPERATIONS ADMIN.LOGIS FIRE.DIRECT SURVEILLANCE AIR.REQUEST CAS.COORD CMMN
Description:	The principal usage of the message.

Key:	12
Name:	CO.SECURITY
Spaces:	8
Columns:	36-43
Entries:	One of the following: CLEAR ON.LINE (on line encryption) OFF.LINE (off line encryption)
Description:	The type of security afforded the message.

Key:	13
Name:	CO.DEADLINE.ACTION
Spaces:	9
Columns:	45-53
Entries:	DELETE or MESSENGER
Description:	Specifies the action to be taken when the deadline time entered for Key 16 is reached before the message is transmitted (delete or send by messenger).

Key:	14
Name:	CO.MEAN.TIME
Spaces:	3
Columns:	55-57
Entries:	Integer
Description:	For messages with a time duration stimulus, a value in minutes representing frequency of transmission of messages. For messages with CO.ACTION (Key 10) of JAM, the period of time in minutes that the jammer is "on".

Key:	15
Name:	CO.PROCESSING.TIME
Spaces:	3
Columns:	59-61
Entries:	Integer
Description:	A value in minutes representing the interval between the time a decision is made to send the message and when it is transmitted. It is also the interval between receipt of the message and time it is acted upon.

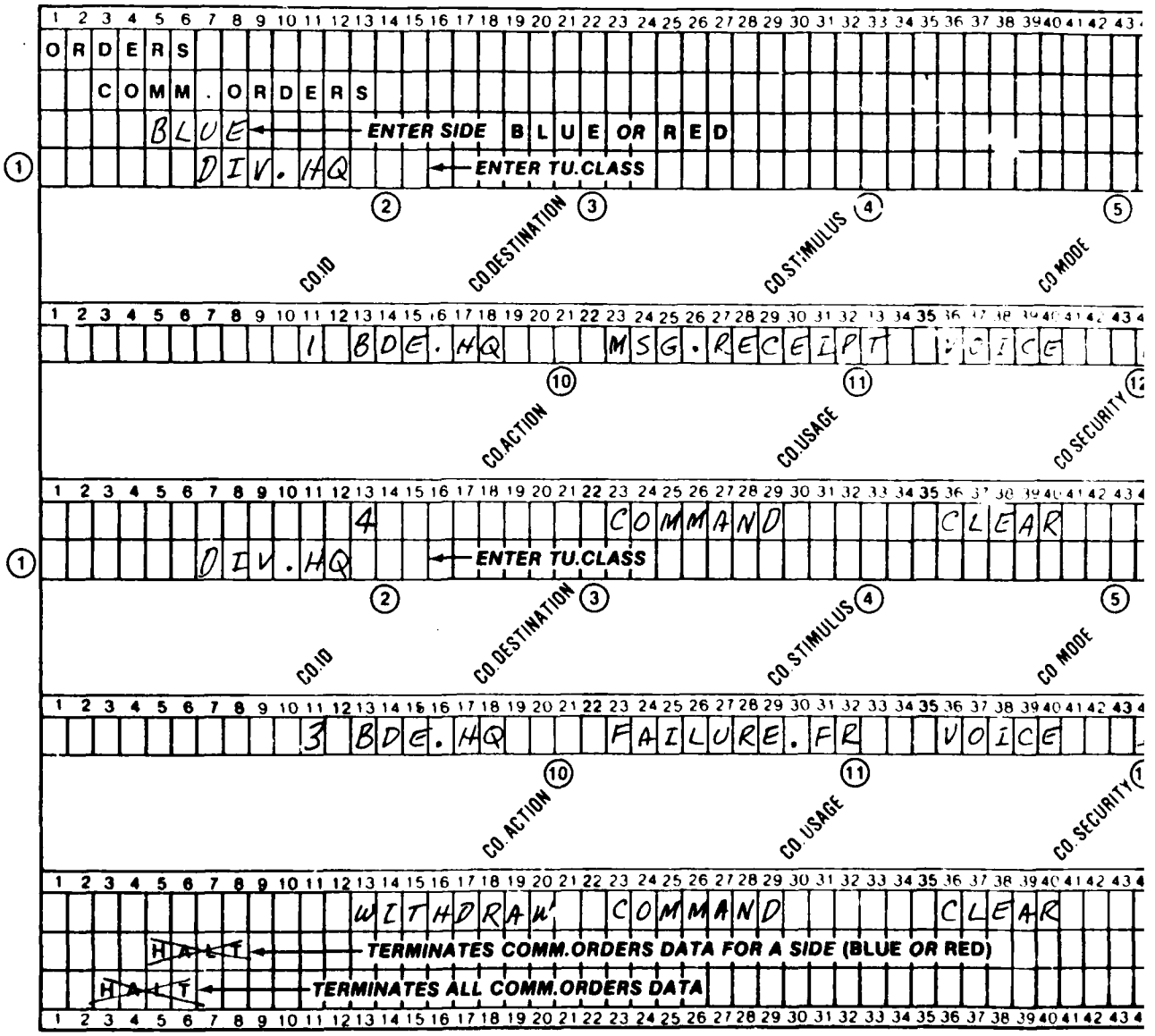
y:	16
Name:	CO.DEADLINE.TIME
Spaces:	3
Columns:	63-65
Entries:	Integer
Description:	The period of time in minutes after which the alternative action specified in Key 13 is taken.

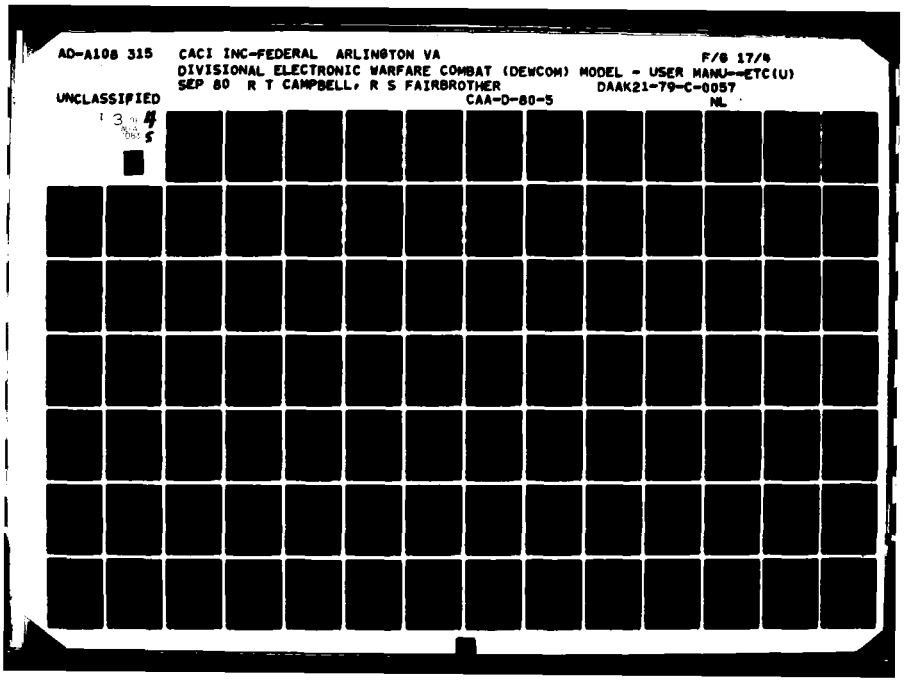
PREPARED BY _____

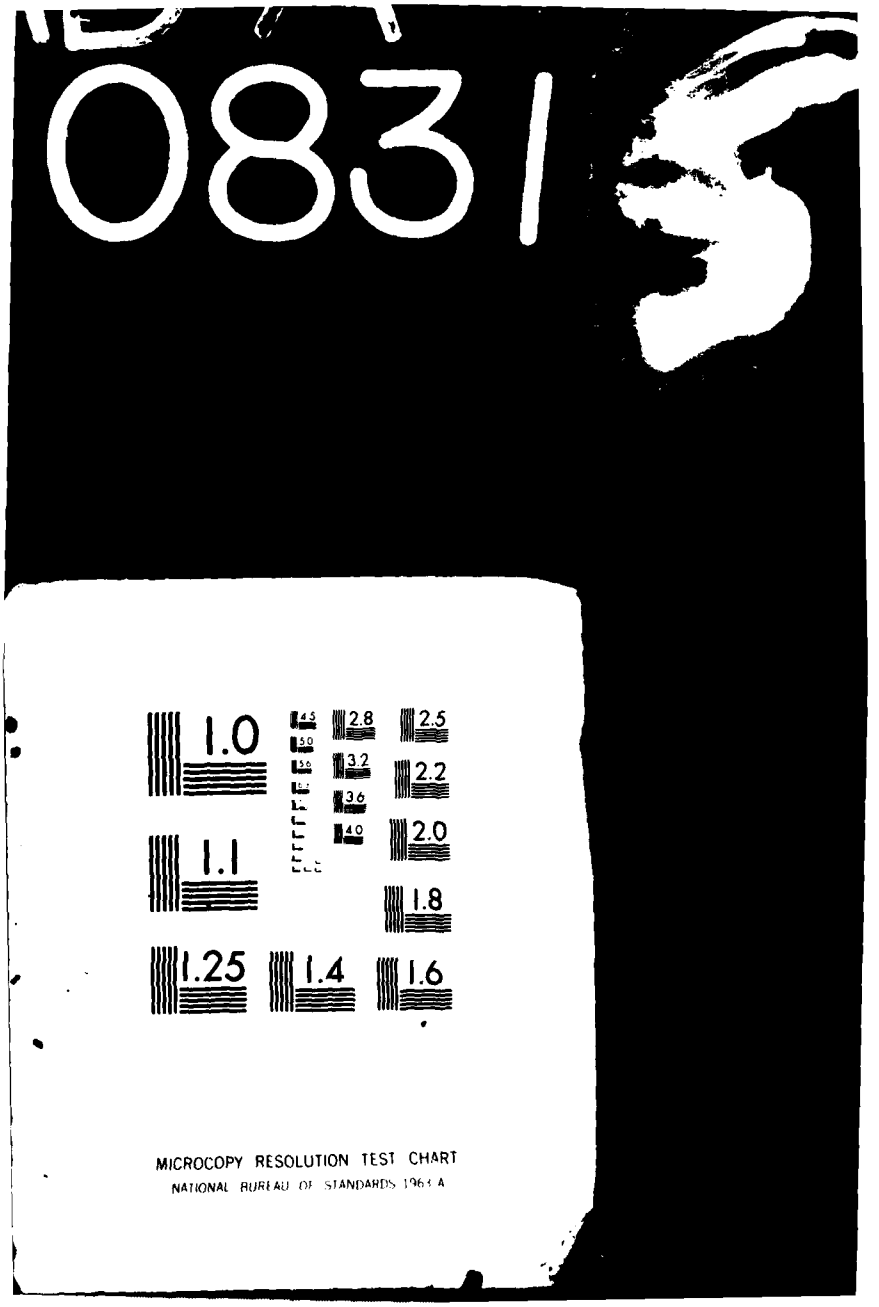
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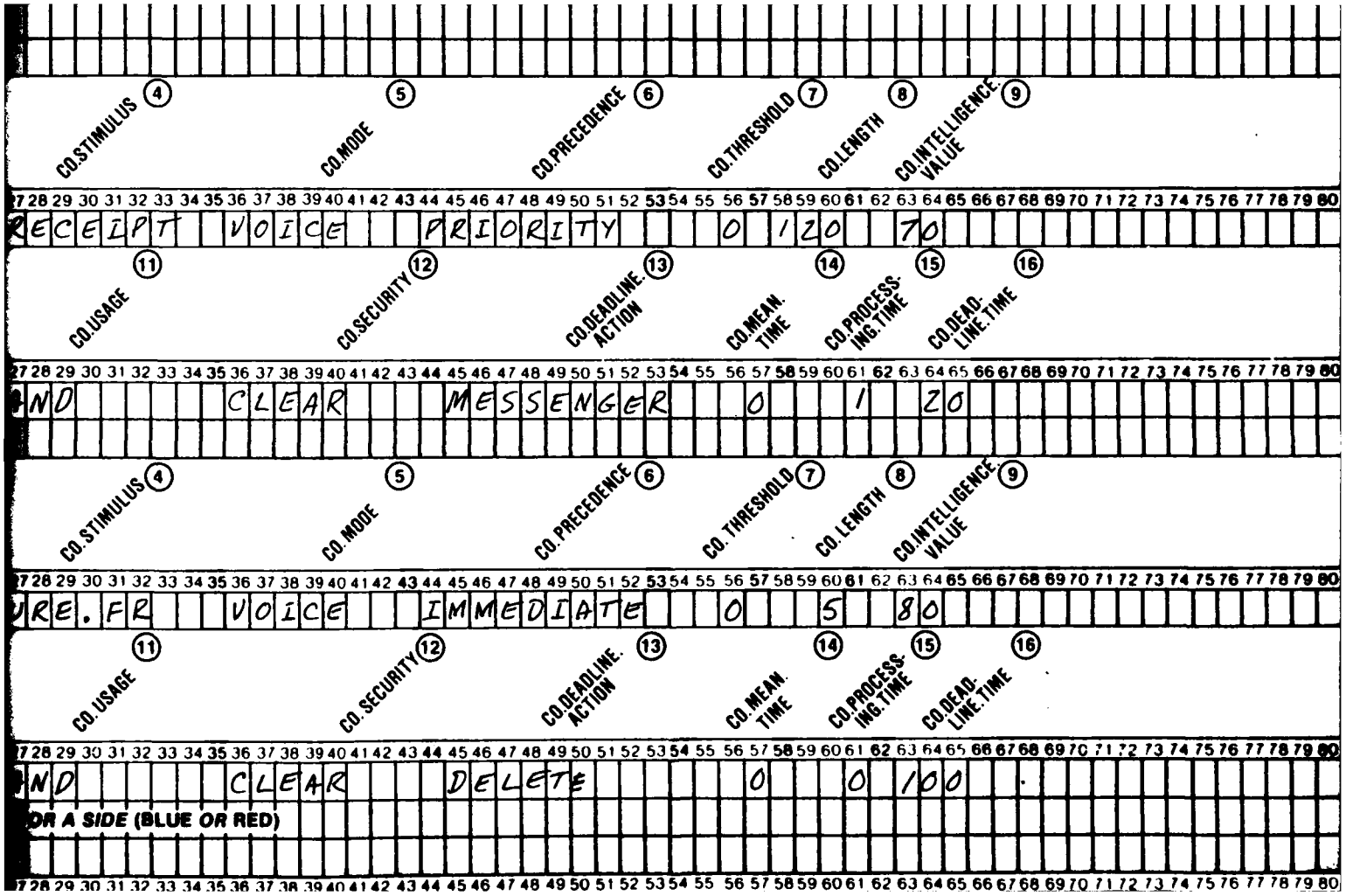
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CACI INC-FEDERAL ARLINGTON VA
F/G 17/4
DIVISIONAL ELECTRONIC WARFARE COMBAT (DEWCOM) MODEL - USER MANU--ETC(U)
SEP 80 R T CAMPBELL, R S FAIRBROTHER
DAAK21-79-C-0057
UNCLASSIFIED
CAA-D-80-5
NL


0831
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
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5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

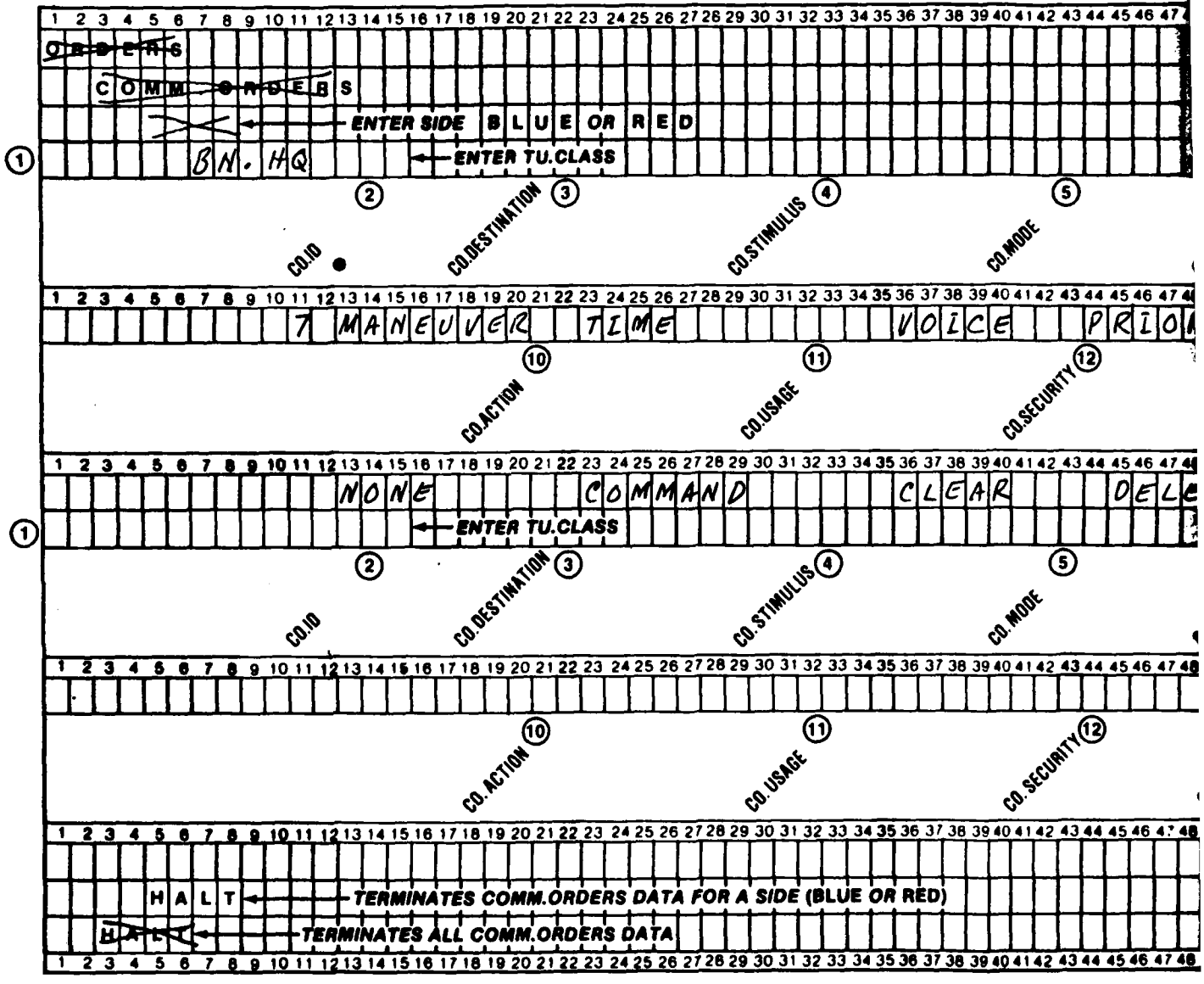

CO.STIMULUS (4)
CO.MODE (5)
CO.PRECEDENCE (6)
CO.THRESHOLD (7)
CO.LENGTH (8)
CO.INTELLIGENCE VALUE (9)
RECEIPT VOICE PRIORITY 0 1 20 70
CO.USAGE (11)
CO.SECURITY (12)
CO.DEADLINE. ACTION (13)
CO.MEAN. TIME (14)
CO.PROCESS-ING.TIME (15)
CO.DEAD-LINE.TIME (16)
ND CLEAR MESSENGER 0 1 20
CO.STIMULUS (4)
CO.MODE (5)
CO.PRECEDENCE (6)
CO.THRESHOLD (7)
CO.LENGTH (8)
CO.INTELLIGENCE VALUE (9)
RE.FR VOICE IMMEDIATE 0 5 80
CO.USAGE (11)
CO.SECURITY (12)
CO.DEADLINE. ACTION (13)
CO.MEAN. TIME (14)
CO.PROCESS-ING.TIME (15)
CO.DEAD-LINE.TIME (16)
ND CLEAR DELETE 0 0 100
OR A SIDE (BLUE OR RED)

PREPARED BY: _____

PHONE: _____ DATE: _____

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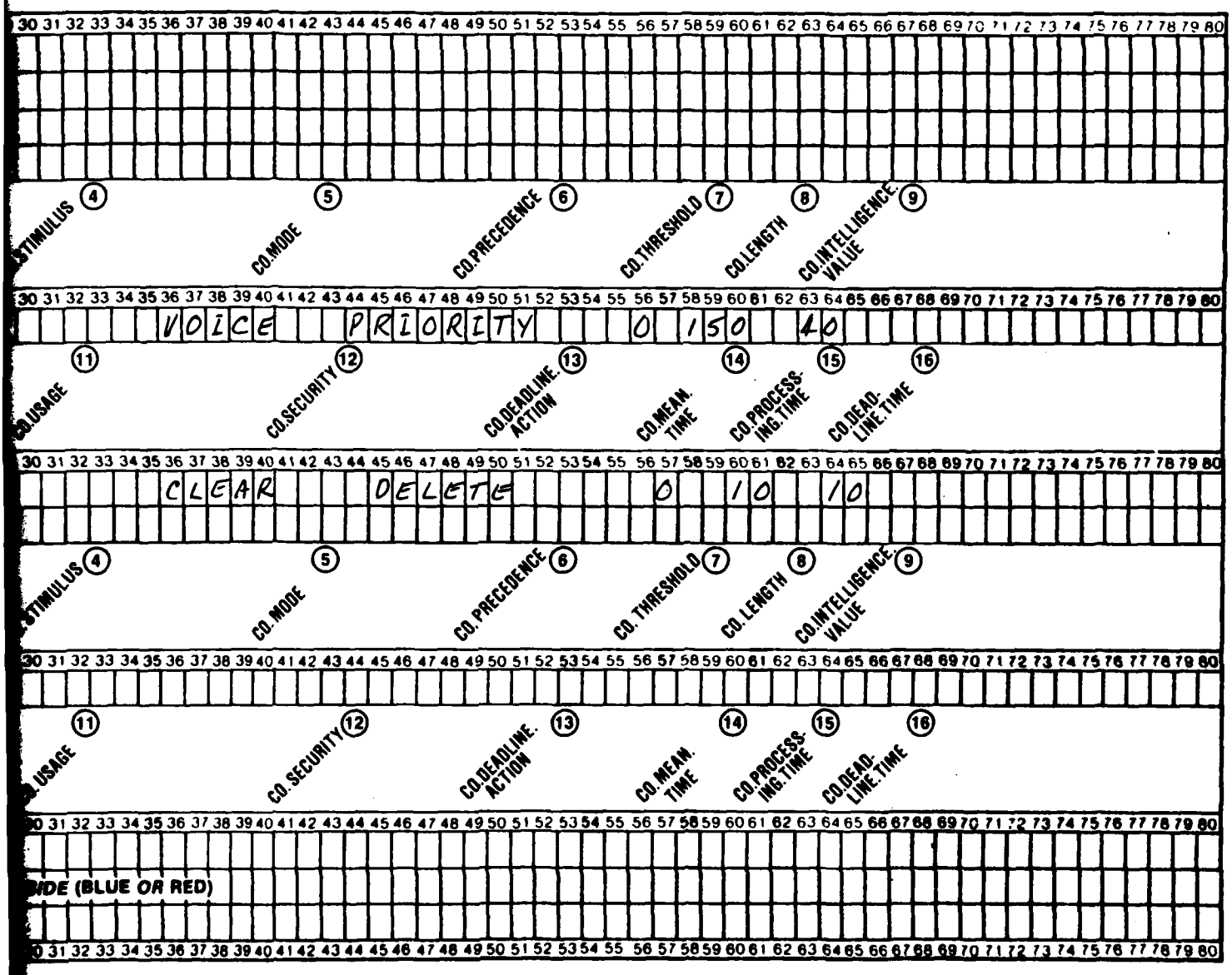


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INPUT DATA PREPARATION FORM

VII. ORDERS

1. COMMUNICATIONS ORDERS



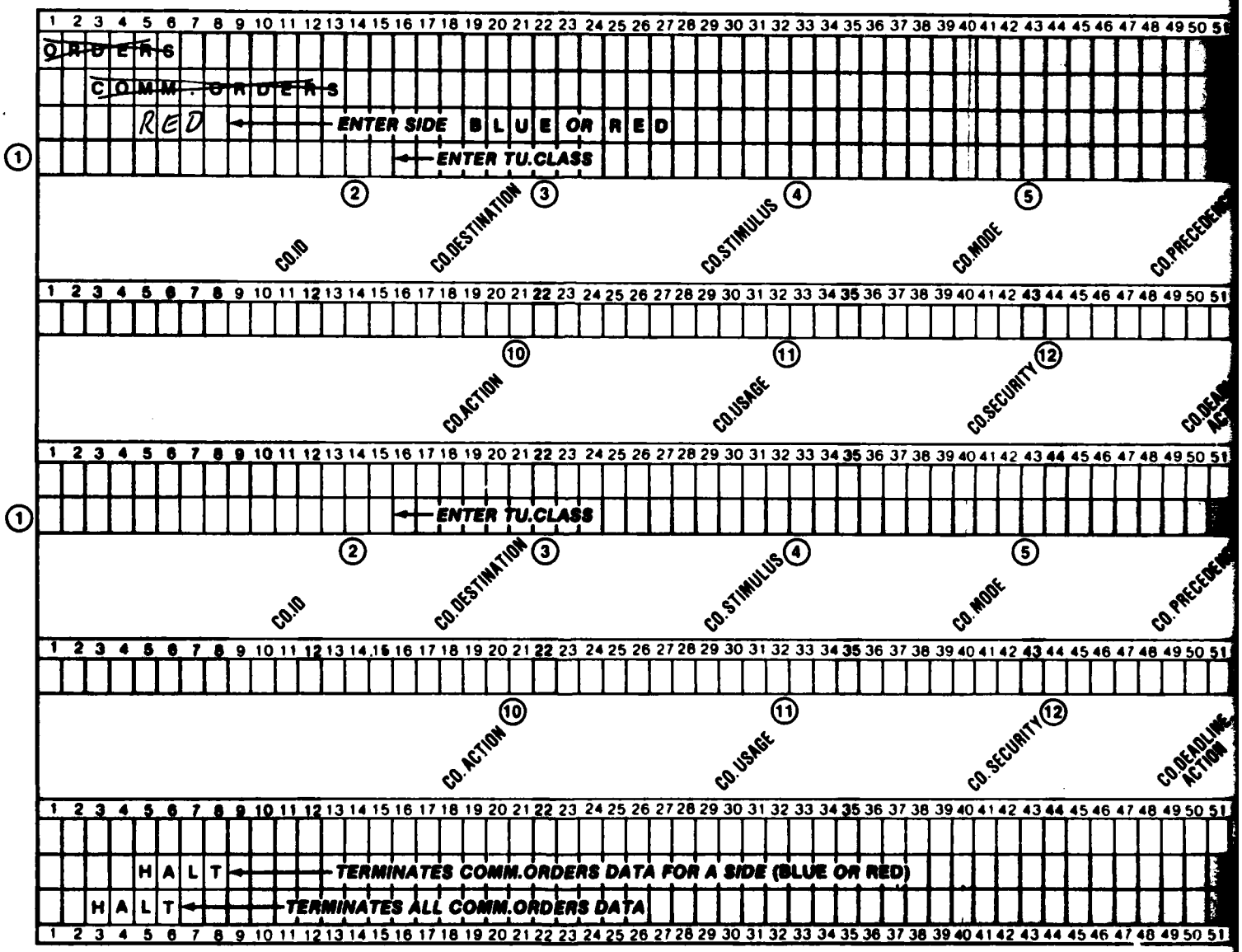
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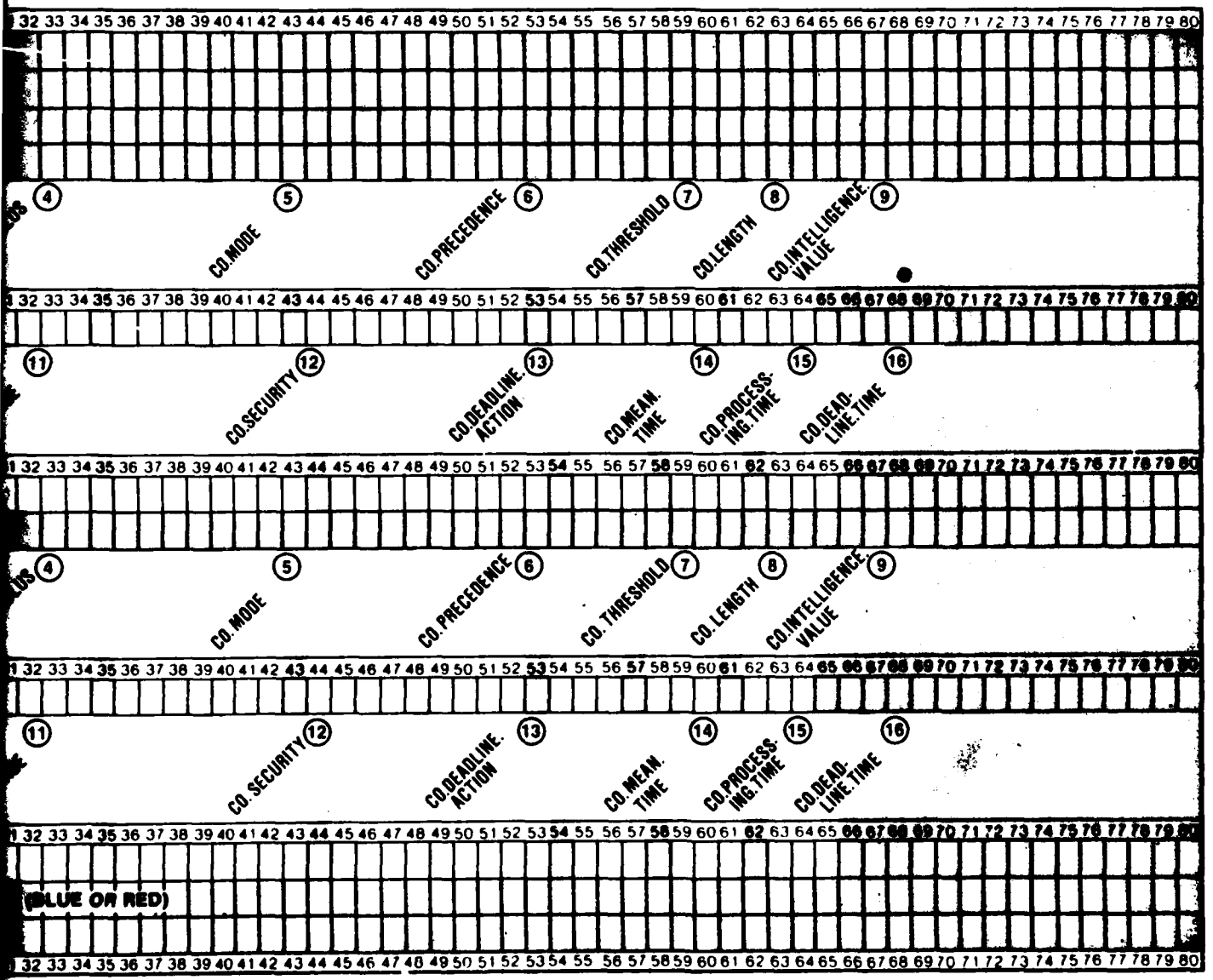


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VII. ORDERS

1. COMMUNICATIONS ORDERS



2

3.6.21 Form VII.2 (ORDERS; EW Orders)

This form is used to describe electronic warfare orders employed by each side. Use separate sheets for each side (BLUE and RED) and additional sheets as required. Line out inapplicable keywords and spaces on each sheet so that all EW orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all EW orders for the simulation are delimited by the keyword EW.ORDERS and the corresponding HALT.

Foldout samples of this form are located on page 181 and 183.

Key:	1
Name:	EWO.TARGET.NET
Spaces:	12
Columns:	7-18
Entries:	One of the following:

COMMAND	INTELLIGENCE	OPERATIONS
ADMIN.LOGIS	FIRE.DIRECT	SURVEILLANCE
AIR.REQUEST	CAS.COORD	CMMN
UNKNOWN		

Description: The type of opposing net against which specified EW orders are to be carried out.

Key:	2
Name:	EWO.MIN.RANGE
Spaces:	3
Columns:	20-22
Entries:	Integer
Description:	The minimum distance in kilometers between the FEBA and the opposing transmitter in order for the specified EW order to be carried out.

Key.	3
Name:	EWO.MAX.RANGE
Spaces:	3
Columns:	24-26
Entries:	Integer
Description:	The maximum distance in kilometers between the FEBA and the opposing transmitter at which a specified EW order can be carried out.

Key:	4
Name:	EWO.DURATION.TIME
Spaces:	3
Columns:	28-30
Entries:	Integer
Description:	The period of time in minutes for which the specified action is to be taken.

Key:	5
Name:	EWO.FIRST.OPTION
Spaces:	11
Columns:	32-42
Entries:	One of the following: INTERCEPT LOCATE BARRAGE.JAM SPOT.JAM
Description:	The preferable EW function to be performed, if possible within available time constraints.

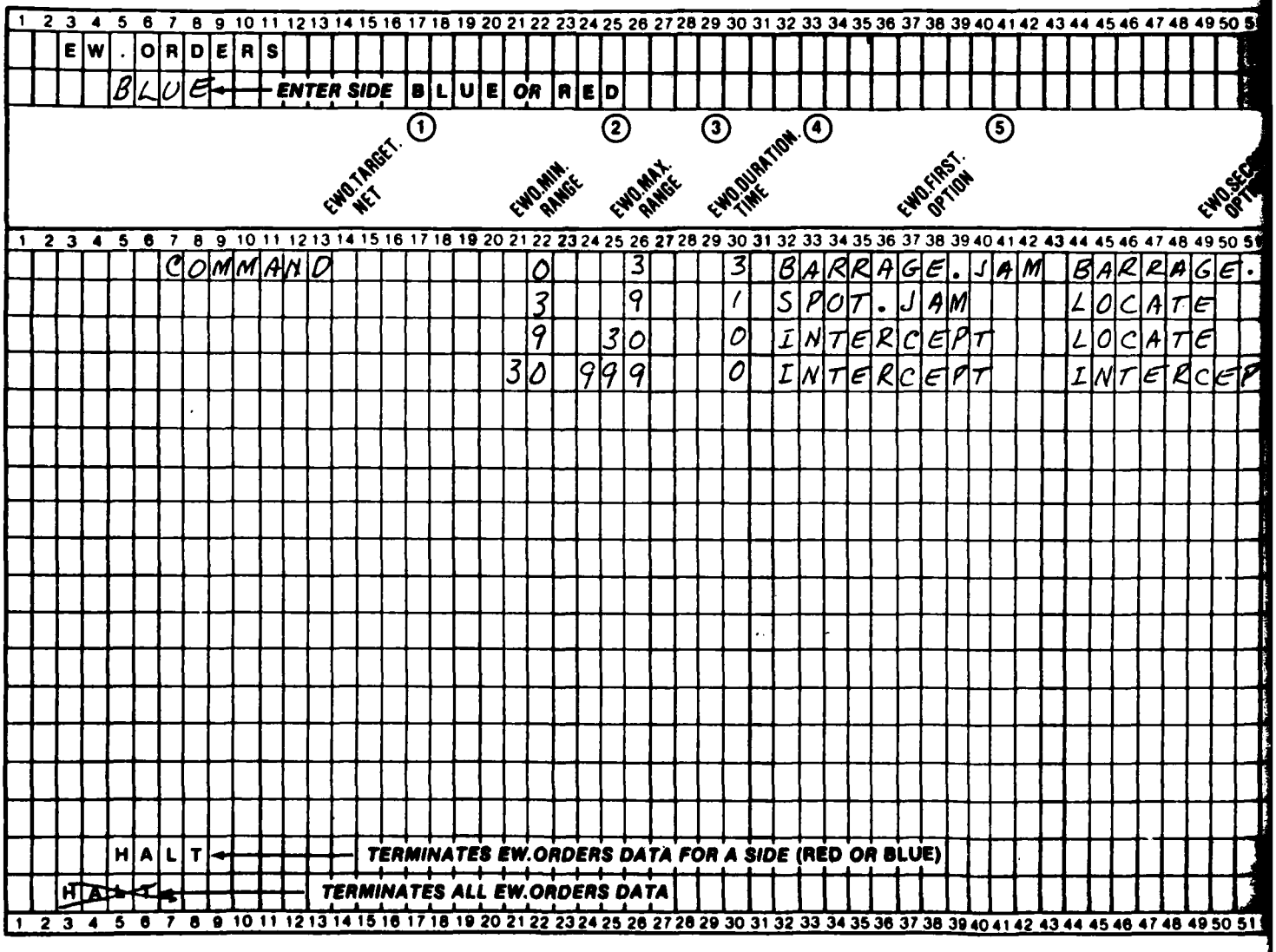
Key:	6
Name:	EWO.SECOND.OPTION
Spaces:	11
Columns:	44-54
Entries:	One of the following: INTERCEPT LOCATE BARRAGE.JAM SPOT.JAM
Description:	The EW function to be performed if the first option cannot be carried out. If no second option is desired, repeat the first option in this space.

PREPARED
BY: _____

PHONE: _____ DATE: _____

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VII. ORDERS

2. EW ORDERS

	③ EWO DURATION TIME	④ EWO FIRST OPTION	⑤ EWO SECOND OPTION	⑥
3	BARRAGE.JAM	BARRAGE.JAM		
1	SPOT.JAM	LOCATE		
0	INTERCEPT	LOCATE		
0	INTERCEPT	INTERCEPT		

A SIDE (RED OR BLUE)

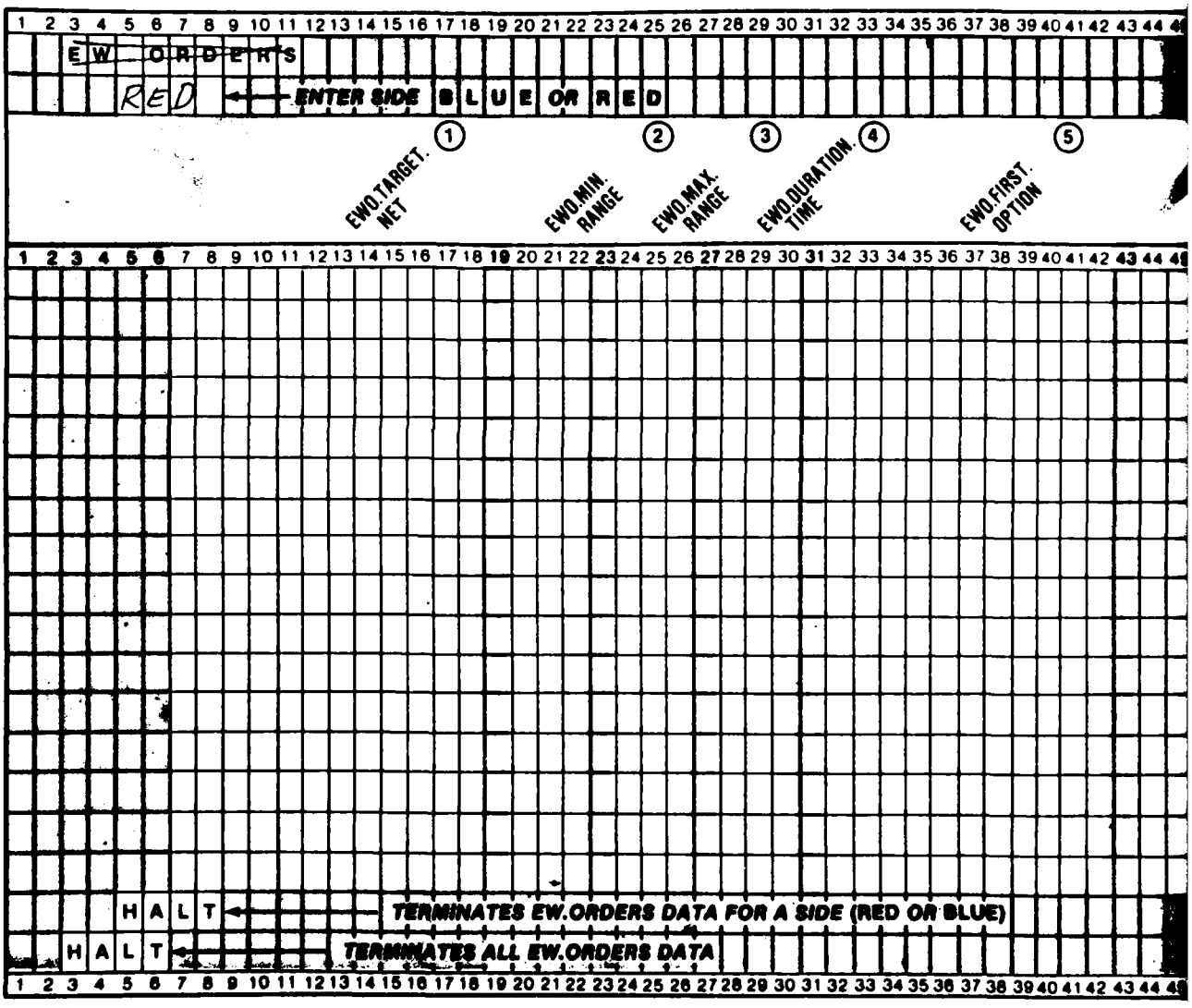
2

PREPARED
BY: _____

PHONE: _____ DATE: _____

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INPUT DATA PREPARA

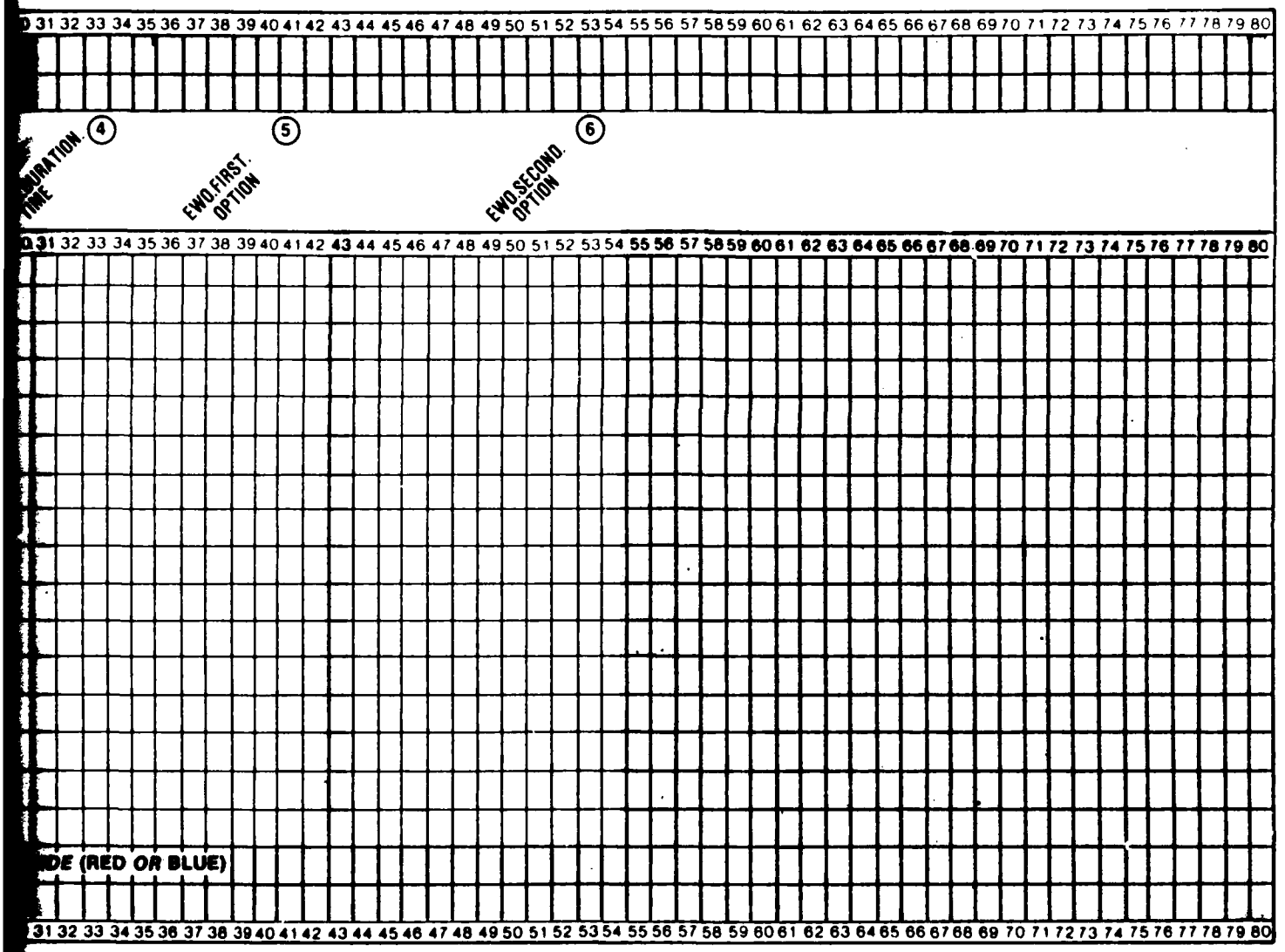


DEWCOM MODEL

PUT DATA PREPARATION FORM

VII. ORDERS

2. EW ORDERS



3.6.22 Form VII.3 (ORDERS; Tactical Orders)

This form describes the tactical orders for each unit by side. Orders for the BLUE side are entered first, followed by the RED side. Each sheet has sufficient space for entering tactical orders for two units. Use additional sheets as necessary, lining out inapplicable keywords and spaces on each sheet so that all tactical orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all tactical orders for the simulation are delimited by the keyword TACTIC. ORDER and its corresponding HALT.

Foldout samples of this form are located on pages 189 through 193.

Key:	1
Name:	UN.ID
	UN.ACTIVE.TACTICAL.ORDER
Spaces:	UN.ID. - 4
	UN.ACTIVE.TACTICAL.ORDER - 8
Columns:	UN.ID - 7-10
	UN.ACTIVE.TACTICAL.ORDER - 12-19
Entries:	UN.ID. - Integer
	UN.ACTIVE.TACTICAL.ORDER - One of the following: ATTACK DEFEND MOVE WITHDRAW DELAY FOLLOW
Description:	The name of the tactical order the unit is to use when the simulation starts. If FOLLOW is entered, the unit will use the order of its superior unit. If FOLLOW is not entered, each UN.ID must be followed by a record for each of the 5 order types (ATTACK, DEFEND, MOVE, WITHDRAW, DELAY) according to the instructions in Keys 3-9).

Key:	2
Name:	TO.RANGE
Spaces:	5
Columns:	18-22
Entries:	Integer
Description:	The distance in meters for which a tactical order is to be carried out by a unit in a moving posture.

Key:	3
Name:	TO.AZIMUTH
Spaces:	3
Columns:	24-26
Entries:	Integer in the range 0 to 359
Description:	The direction in degrees (clockwise) from grid north in which the tactical order is to be executed.

Key:	4
Name:	TO.TIME.DURATION
Spaces:	3
Columns:	28-30
Entries:	Integer
Description:	The time interval in minutes before the unit selects the next order.

Key:	5
Name:	TO.STRENGTH.THRESHOLD
Spaces:	3
Columns:	32-34
Entries:	Integer in the range 0 to 100
Description:	A strength threshold percentage below which the FAILURE order specified under Key #8 is immediately executed.

Key:	6
Name:	TO.ATTACK.FORCE.RATIO
Spaces:	3
Columns:	36-38
Entries:	Integer
Description:	The strength threshold ratio between friendly and opposing forces above which any order being executed is immediately changed to ATTACK.

Key:	7
Name:	TO.FAILURE.FORCE.RATIO
Spaces:	3
Columns:	40-42
Entries:	Integer
Description:	The strength threshold ratio between friendly and opposing forces below which the FAILURE order specified under Key #9 is immediately executed.

Key:	8
Name:	TO.FAILURE.NEXT.ORDER
Spaces:	8
Columns:	44-51
Entries:	One of the following: ATTACK DEFEND MOVE WITHDRAW DELAY
Description:	The order to be executed when the previous order results in failure.

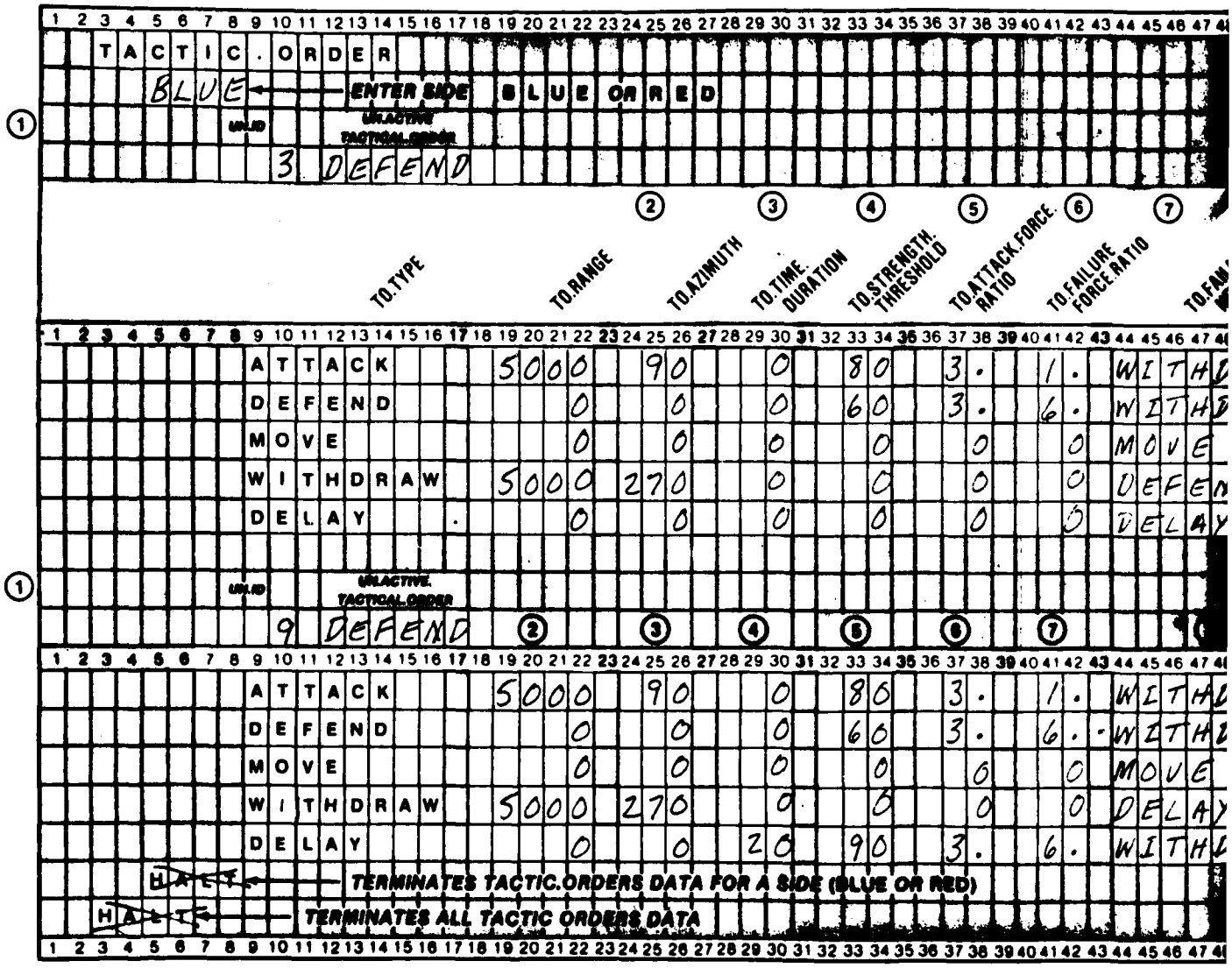
Key:	9
Name:	TO.SUCCESS.NEXT.ORDER
Spaces:	8
Columns:	53-60
Entries:	One of the following:
	ATTACK DEFEND MOVE WITHDRAW DELAY
Description:	The order to be executed when the previous order succeeds.

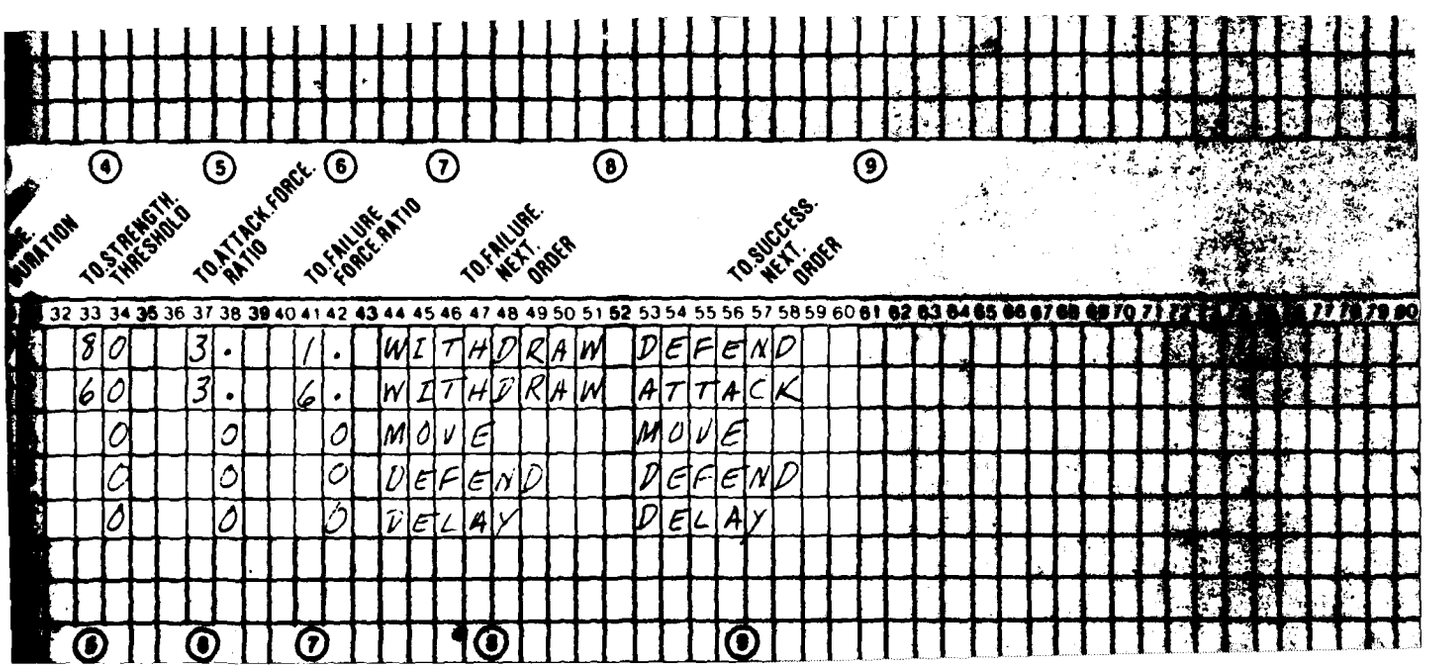
PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MOD

INPUT DATA PREPARATION



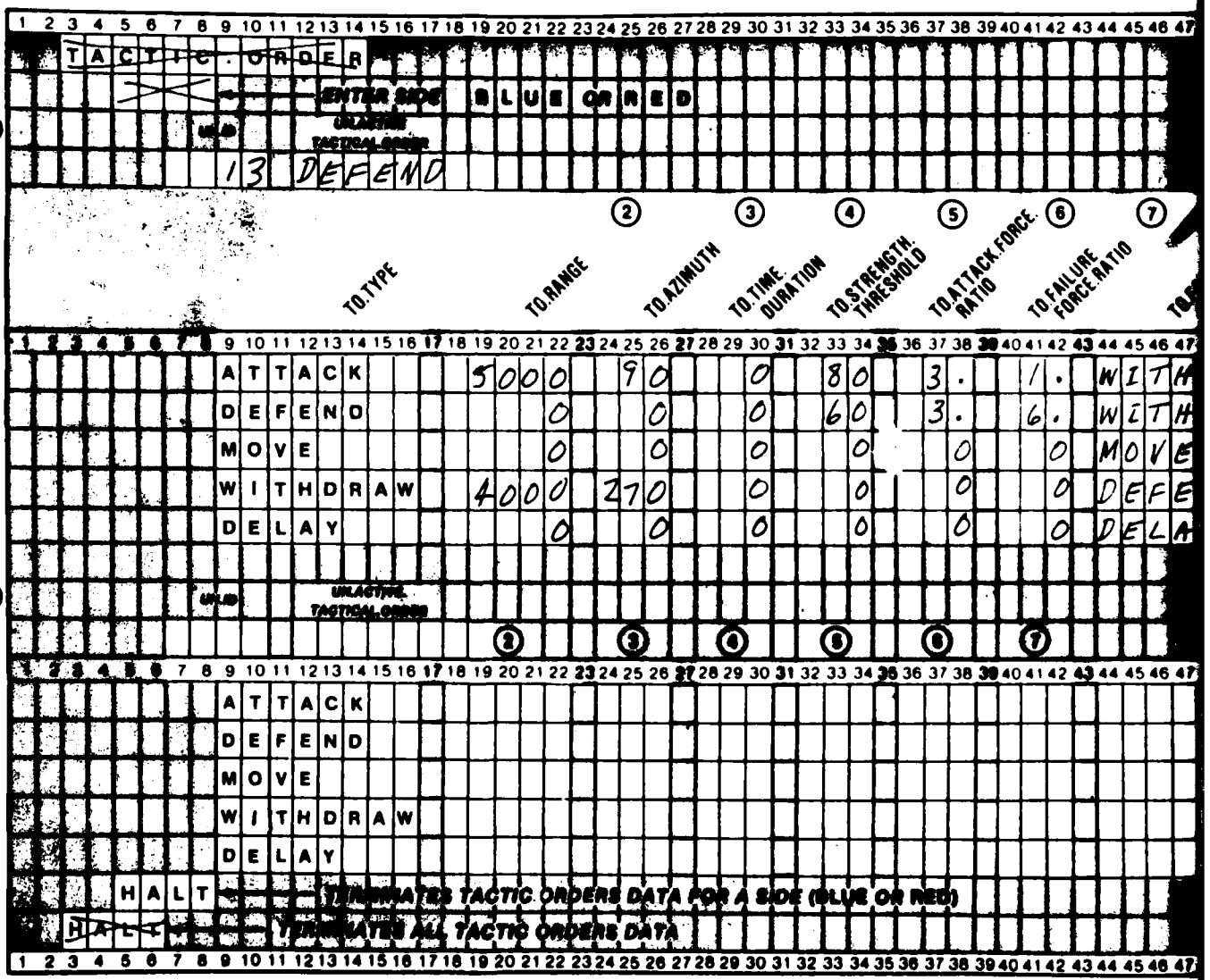

4
5
6
7
8
9
TO.STRENGTH. THRESHOLD
TO.ATTACK.FORCE. RATIO
TO.FAILURE FORCE.RATIO
TO.FAILURE. NEXT. ORDER
TO.SUCCESS. NEXT. ORDER
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
80 3. 1. WITHDRAW DEFEND
60 3. 6. WITHDRAW ATTACK
0 0 0 MOVE MOVE
0 0 0 DEFEND DEFEND
0 0 0 DELAY DELAY
6
8
7
8
9

PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MOD

INPUT DATA PREPARATIO

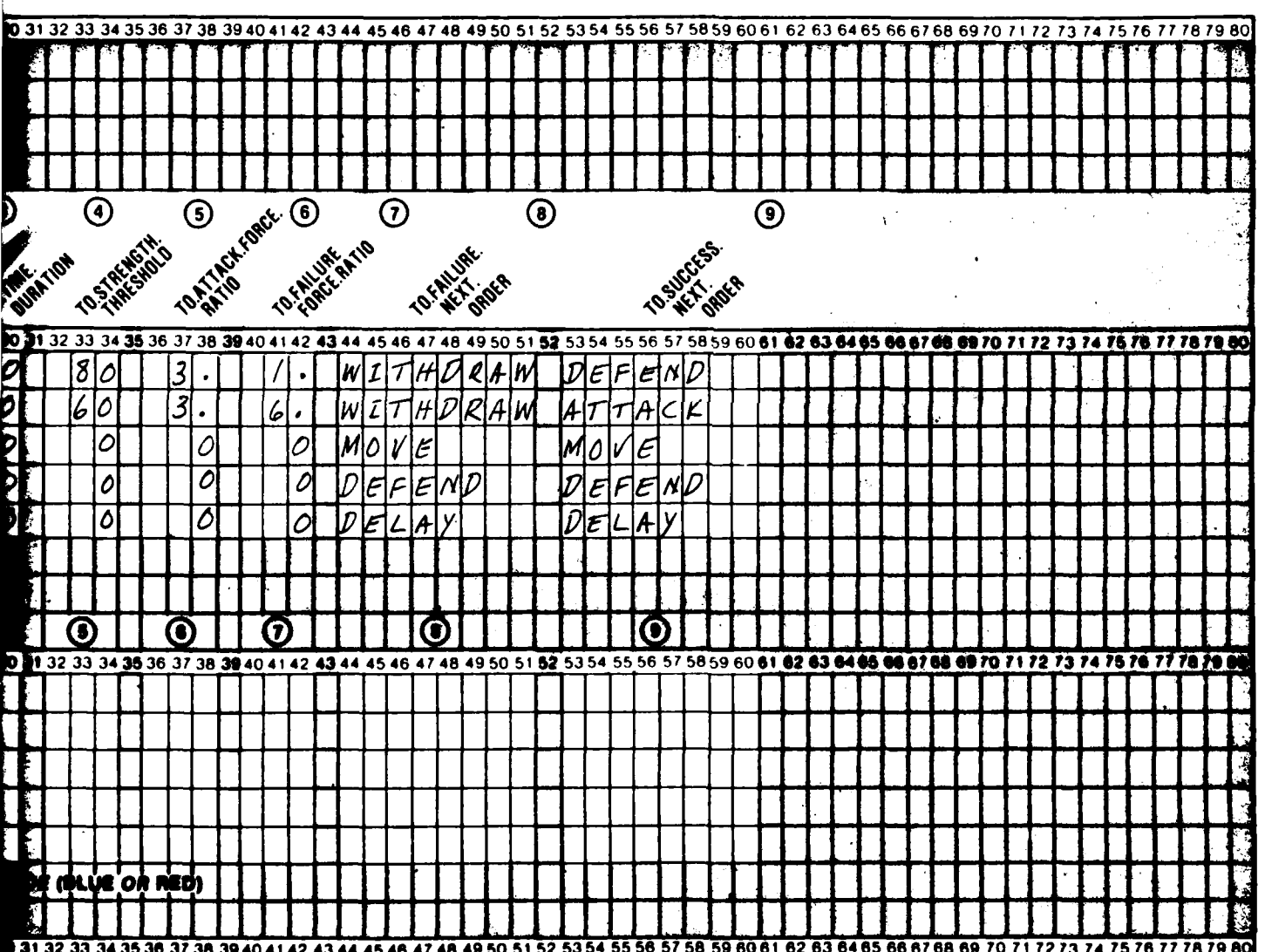


DEWCOM MODEL

PUT DATA PREPARATION FORM

VII. ORDERS

3. TACTICAL ORDERS

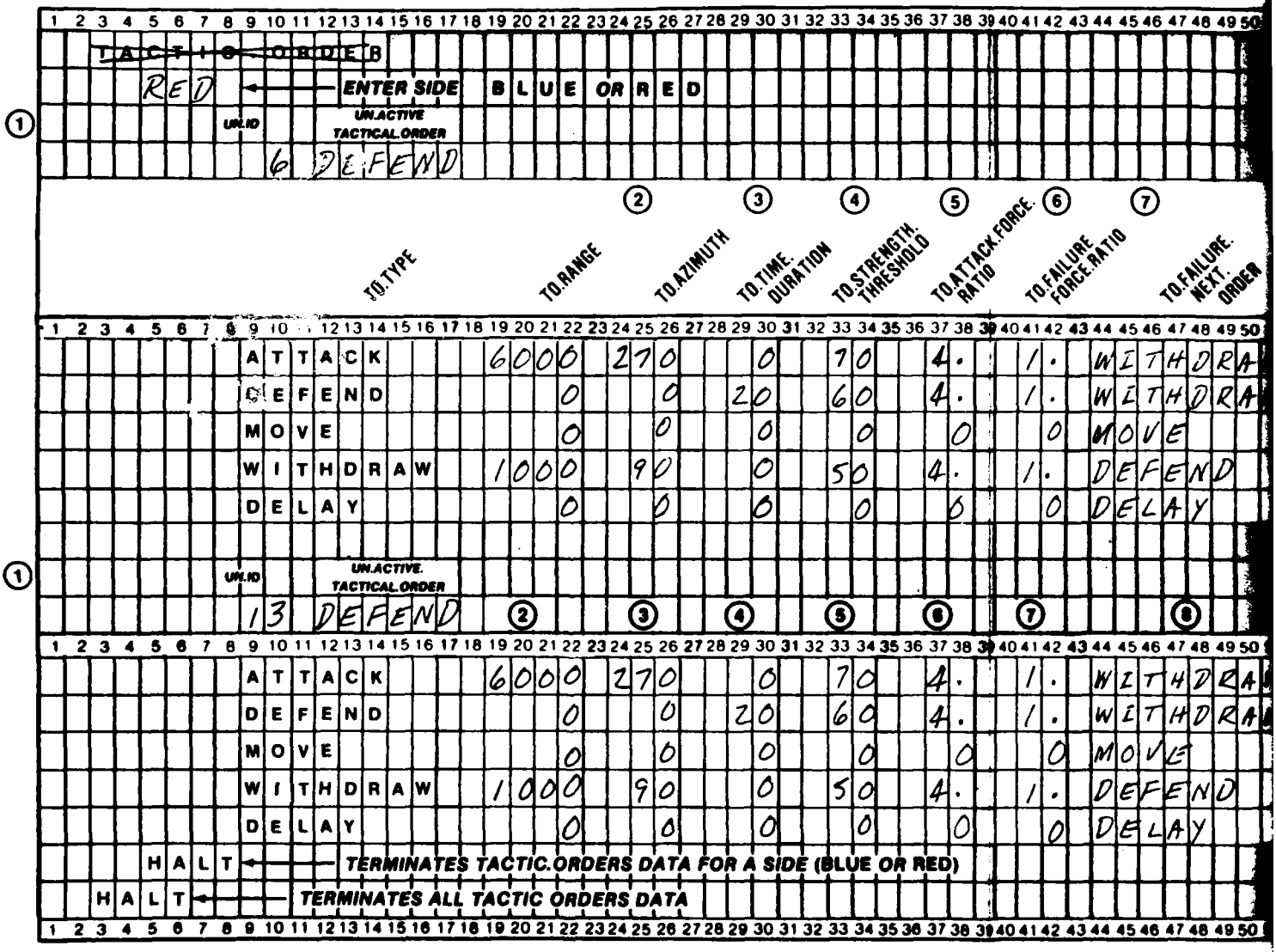


PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MODEL

INPUT DATA PREPARATION FO

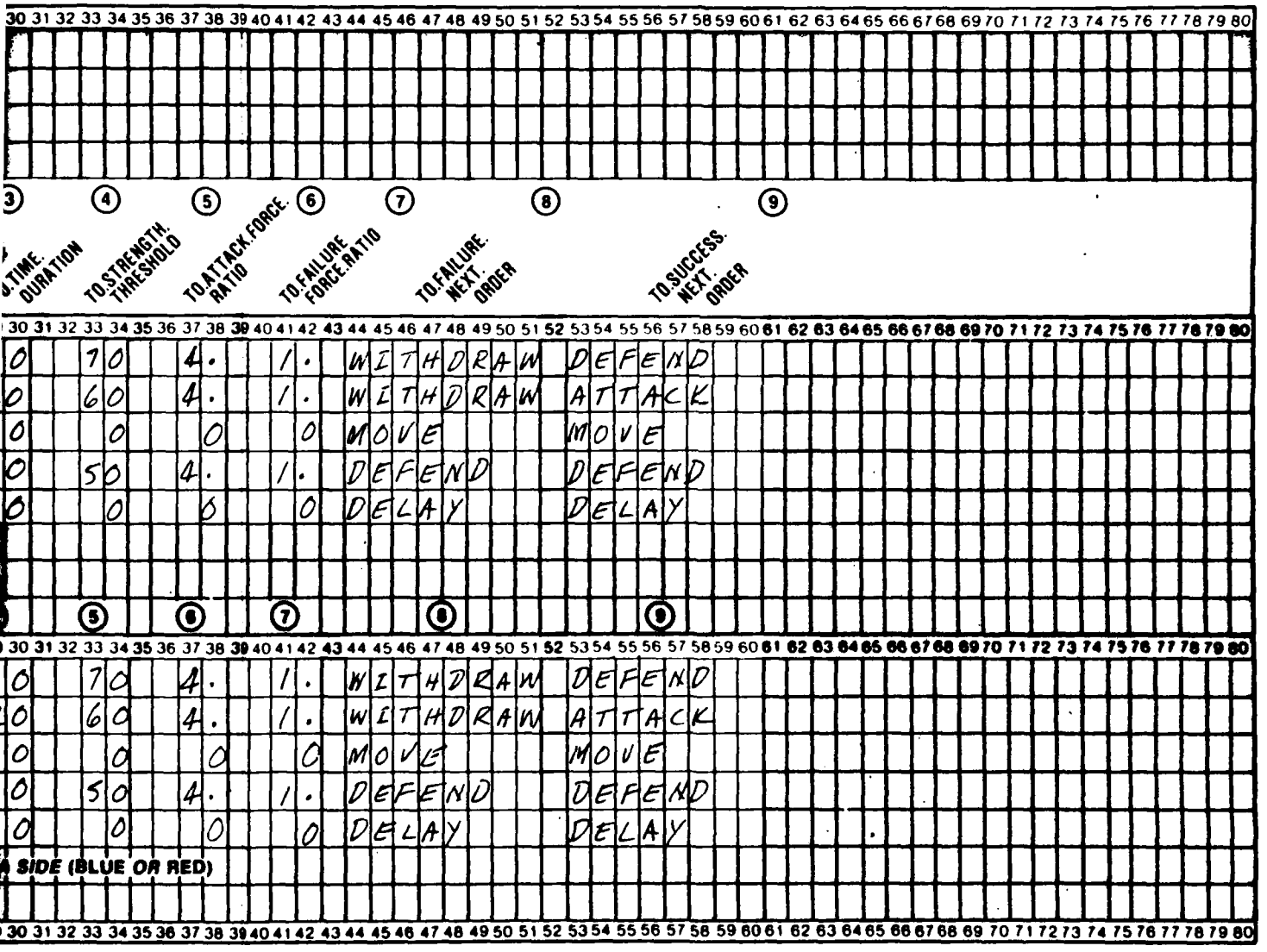


DEWCOM MODEL

IPUT DATA PREPARATION FORM

VII. ORDERS

3. TACTICAL ORDERS



		(3) J.TIME. DURATION	(4) TO.STRENGTH. THRESHOLD	(5) TO.ATTACK.FORCE. RATIO	(6) TO.FAILURE FORCE.RATIO	(7) TO.FAILURE. NEXT. ORDER	(8)	(9) TO.SUCCESS. NEXT. ORDER	
0		70	4.	1.		WITHDRAW		DEFEND	
0		60	4.	1.		WITHDRAW		ATTACK	
0		0	0	0		MOVE		MOVE	
0		50	4.	1.		DEFEND		DEFEND	
0		0	0	0		DELAY		DELAY	
		(5)	(6)	(7)		(8)		(9)	
0		70	4.	1.		WITHDRAW		DEFEND	
0		60	4.	1.		WITHDRAW		ATTACK	
0		0	0	0		MOVE		MOVE	
0		50	4.	1.		DEFEND		DEFEND	
0		0	0	0		DELAY		DELAY	

A SIDE (BLUE OR RED)

2

3.6.23 Form VII.4 (ORDERS; Posture)

This form describes combat posture data for each side (BLUE and RED) for each of five possible combat postures (ATTACK, DEFEND, MOVE, WITHDRAW, DELAY). A foldout sample of this form is located on the facing page.

Key:	1
Name:	CP.EFFECTIVENESS
Spaces:	3
Columns:	16-18
Entries:	Integer in the range 0 to 100
Description:	A value representing percentage effectiveness, which is used to modify attrition coefficients.

Key:	2
Name:	CP.STRENGTH.THRESHOLD
Spaces:	3
Columns:	20-22
Entries:	none
Description:	The current version of the model does not use this variable. It should be left blank.

Key:	3
Name:	CP.MEAN.TIME.MULTIPLIER
Spaces:	3
Columns:	24-26
Entries:	Integer in the range 0 to 100
Description:	A multiplier used to modify time duration specified under Key 14 on the form VII.1.

PREPARED BY: _____

PHONE: _____ DATE: _____

DEWCOM MODEL

INPUT DATA PREPARATION FORM

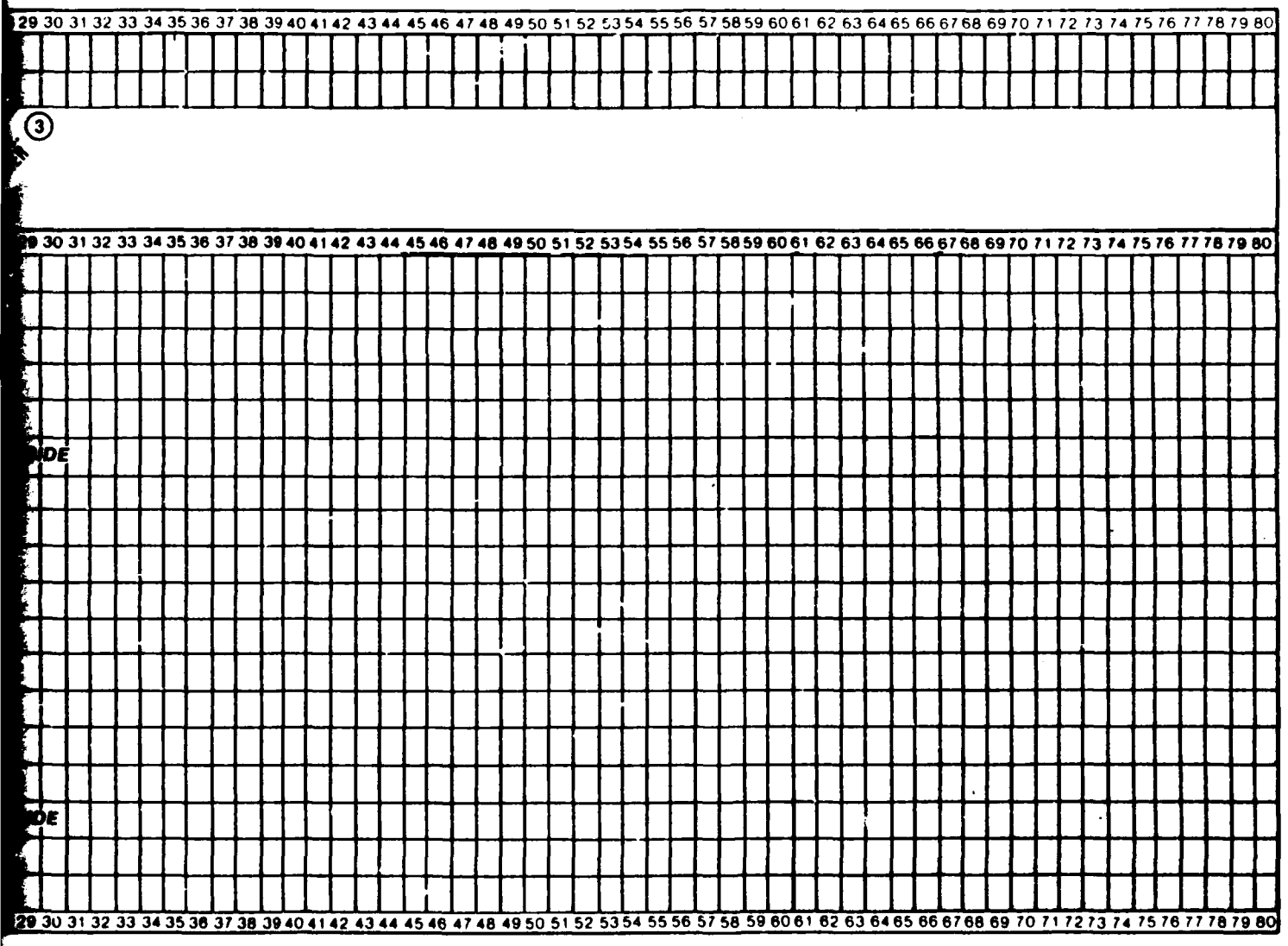
	COMBAT POSTURE	CP EFFECTIVENESS ①	CP STRENGTH THRESHOLD ②	CP MEAN TIME MULTIPLIER ③
POSTURE				
BLUE				
	ATTACK	80	80	50
	DEFEND	100	65	25
	MOVE	80	90	0
	WITHDRAW	80	50	10
	DELAY	100	70	0
HALT	← TERMINATES POSTURE DATA FOR BLUE SIDE			
RED				
	ATTACK	80	80	50
	DEFEND	100	65	25
	MOVE	80	90	0
	WITHDRAW	80	50	10
	DELAY	100	70	0
HALT	← TERMINATES POSTURE DATA FOR RED SIDE			
HALT	← TERMINATES ALL POSTURE DATA			
HALT	← TERMINATES ALL ORDERS DATA			

DEWCOM MODEL

INPUT DATA PREPARATION FORM

VII. ORDERS

4. POSTURE



4.0 OUTPUT REPORTS

The output products available from the DEWCOM Model are divided into three major categories:

- o Input Data Reports
- o Model Reports
- o Ad Hoc Reports

The generation of any or all the available reports is at the option and under control of the user.

4.1 Input Data Reports

This group of reports provides the user with formatted listings reflecting actual data which was input to the model for the current run. The full simulation need not be run in order to produce these reports. In fact, one of their major uses is to permit a review of the input data for errors or omissions before a lengthy and costly simulation run is actually made.

The production of any or all Input Data Reports is controlled by the user at input time through entries in the REPORTS DATA section of DEWCOM Input Data Preparation Form I.1 (CONTROLS; Global Variables Data, Reports Data). Each Input Data Report number (1 through 7) entered in the appropriate blank spaces on Form I.1 results in the printing of a formatted report of the input data in the corresponding major category. The Input Data Reports are as follow:

Report #	Major Data Category
D1	CONTROLS
D2	TERRAIN
D3	EQUIPMENT
D4	TYPE UNITS
D5	COMBAT ORGANIZATION

D6 COMMUNICATIONS ORGANIZATION

D7 ORDERS

Because of the amount of data in various major input categories, some reports are shown in several parts, with related portions of the input data on each part. When a major category report is requested, all parts of that particular report are produced. The individual reports and their content are explained in the following subsections and a sample of each report format is included at the end of this section. The entire report is not shown in all cases due to the volume of data.

4.1.1 Report D1 (sample on page 211) reflects CONTROLS data input on Forms I.1 and I.2, including the following:

- o Whether or not the simulation is to be started
- o Identification numbers of the Data and Model reports which are to be printed
- o Attributes of Blue and Red sides
- o Global Variables.

4.1.2 Report D2 reflects TERRAIN data and is divided into 7 parts as follows:

4.1.2.1 Report D2A (sample on pages 213-217) reflects mobility data input on Form II.1, including the following:

- o X and Y coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation
- o Mobility indices of all grid squares in the simulation identified in terms of their X and Y offsets from the origin.

4.1.2.2 Report D2B (sample on pages 219-223) reflects obstacle data input on Form II.2, includ

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation
- o Obstacle indices of all grid squares in the simulation identified in terms of their X and Y offsets from the origin.

4.1.2.3 Report D2C (sample on pages 225-231) reflects base altitude data input on Form II.3, including:

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid sqares in the simulation
- o Base altitude of each grid square

4.1.2.4 Report D2D (sample on page 233) reflects hill data input on Form II.4, including:

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation
- o For each hill,
  - Hill ID
  - X and Y grid coordinates of the center
  - Peak height in meters
  - Orientation angle in degrees from east
  - Eccentricity of the hill mass
  - Spread of the hill mass
  - Height of normal curve describing this hill
  - Cut

4.1.2.5 Report D2E (sample on page 235-237) contains hill summary data input on Form II.5, including:

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation

- o ID numbers of all hills appearing in each grid square

4.1.2.6 Report D2F (sample on page 239) contains covers data input on Form II.6, including:

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation
- o For each cover,
  - Cover ID
  - X and Y grid coordinates of the center
  - Height in meters
  - Orientation angle in degrees from east of an ellipse representing the cover
  - Length of the major axis of the ellipse in meters
  - Length of the minor axis of the ellipse

4.1.2.7 Report D2G (sample on page 241) contains covers summary data from Form II.6, including:

- o X and Y grid coordinates of origin
- o Size of each grid square
- o Number of grid squares in the simulation
- o ID number of all covers appearing in each grid square

4.1.3 Report D3 reflects EQUIPMENT data and is divided into 5 parts as follows:

4.1.3.1 Report D3A (sample on page 243) reflects Equipment Damage Class data input on Form III.1. It includes the damage class value input for each class.

4.1.3.2 Report D3B (sample on page 245) has a separate portion for each side (Blue and Red) and reflects Communications Equipment data input on Form III.1. For each item of communications equipment, the following information is included:

- o Name
- o Class
- o Damage class
- o Mean time between failures
- o Mean time to repair
- o Range
- o Jamming awareness.

4.1.3.3 Report D3C (sample on page 247) has a separate portion for each side and reflects Electronic Warfare (EW) equipment input on Form III.2. For each named item of EW equipment, the following information is included:

- o Name
- o Class
- o Damage class
- o Mean time between failures (hours)
- o Mean time to repair (hours)
- o Range in meters
- o DF time in seconds
- o Intelligence rate

- o High limit of frequency range at which effective
- o Low limit of frequency range at which effective
- o Radar transmission/return duration
- o Radar interval between transmissions
- o Probability of safe arrival of expendable jammers
- o Probability of arrival on target of expendable jammers

4.1.3.4 Report D3D (sample on page 249) has a separate portion for each side and reflects Weapons data input on Form III.3. For each weapon listed, the following information is included:

- o Name
- o Combat value
- o Damage class
- o Range
- o Attrition class
- o Terrain effect

4.1.3.5 Report D3E (sample on page 251) has a separate portion for each side and reflects air sortie data input on Form III.4. For each type air sortie, the following information is included:

- o Name
- o Class
- o Ground coordination requirement
- o Transit time
- o Loiter time
- o Effectiveness
- o Transit attrition rate
- o Loiter attrition rate
- o Renewal time

4.1.4 Report D4 reflects TYPE UNITS data and is divided into 5 parts and follows:

4.1.4.1 Report D4A (sample on page 253) reflects type units separately by side, along with their attributes, as input on Form IV.1. For each type unit, the following information is included:

- o Name
- o Class
- o Alternate CP existence
- o Move Rate
- o Radius
- o Intelligence fade rate
- o Maximum encryption capability
- o Encryption factor
- o Suppression factor
- o Duration of suppression
- o Artillery duration
- o Artillery interval
- o Communications setup time
- o Communications teardown time
- o EW equipment setup time
- o EW equipment teardown time
- o Tactical setup time
- o Tactical teardown time
- o EW priority
- o IF priority

4.1.4.2 Report D4B (sample on page 255) is an equipment listing for each type unit, and contains a separate portion for each side. It reflects data input on Forms IV.1 and IV.2, and includes, for each type unit:

- o Type unit name
- o Name and quantity of each item of communications equipment

- o Name and quantity of each item of EW equipment
- o Name and quantity of each type weapon

4.1.4.3 Report D4C (sample on page 257) lists attrition rates for each type of unit separately by side as input on Form IV.3. It includes type unit, attrition class, and percent attrition rates per combat day under a variety of force ratio ranges as well as for a non-combat situation.

4.1.4.4 Report D4D (sample on page 259) reflects the desirability of firing each type weapon of the opposing side at each type unit class. A separate portion is produced for each side, and the information corresponds to that input on Form IV.3.

4.1.4.5 Report D4E (sample on page 261) reflects performance degradation and sector width information separately for each side, as input of Form IV.3. A performance degradation factor is shown for each type unit class for each combat posture for various levels of cumulative attrition.

4.1.5 Report D5 (sample on page 263) reflects unit COMBAT ORGANIZATION data for each side, and contains information input on Forms V.1, V.2, and VI.1. Within each side, it provides the following for each unit:

- o Unit ID
- o Unit name
- o Type unit
- o X and Y grid coordinates of location
- o Superior unit ID
- o Unit IDs of subordinate units
- o Communications link IDs
- o Air sorties by type and number.

4.1.6 Report D6 reflects COMMUNICATIONS ORGANIZATION data and is divided into 2 parts as follows:

4.1.6.1 Report D6A (sample on page 265) reflects communications nets and links separately for each side, as input on Form VI.1. For each communications net, the following information is included:

- o Type
- o Model
- o Security
- o Usage
- o Continuous carrier indication
- o Primary and secondary frequencies
- o Each link in the net, including
  - Link ID
  - Unit IDs of each end
  - Type equipment at each end
  - Whether one or two way
  - Desirability of use
  - Conversion time
  - Number of channels
  - Convertability
  - Switchability
  - Jammability
  - Compound link indicator

4.1.6.2 Report D6B (sample on page 267) reflects data for compound links, separately by side, as input on Form VI.2. It includes the Net ID, the identity of each compound link in the net, and the ID of every unit in the compound link.

4.1.7 Report D7 reflects ORDERS data and is divided into 4 parts as follows:

4.1.7.1 Report D7A (sample on page 269) reflects communications orders for each originating unit separately by side, as input on Form VII.1. It identifies the type unit of the origin, and for each, the following information for each order:

- o Destination
- o Stimulus for transmission of the order
- o Mode
- o Precedence
- o Threshold for transmission
- o Length
- o Intelligence value
- o Action to be taken based on message
- o Usage
- o Security
- o Deadline action
- o Frequency of transmission
- o Processing time
- o Deadline time

4.1.7.2 Report D7-B (sample on page 271) lists EW order information separately by side, as input on Form VII.2. For each type of opposing net against which the EW order is to be executed, the following are included:

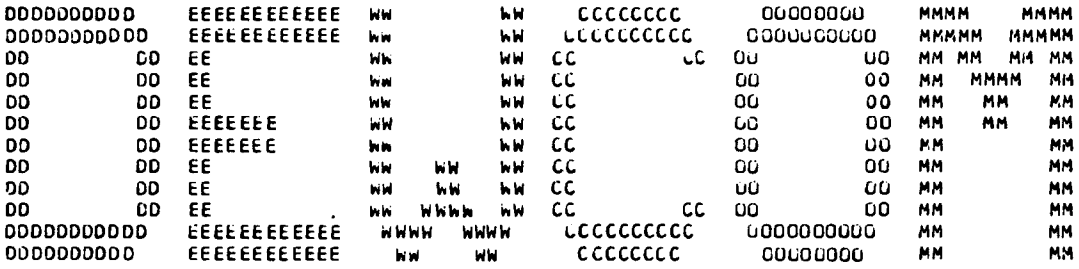
- o Minimum range for execution
- o Maximum range for execution
- o Duration
- o The preferable EW function to be performed
- o The function to be carried out in the event the preferable one cannot be carried out

4.1.7.3 Report D7-C (sample on page 273) lists tactical orders separately by side, as input on Form VII.3. for each unit on the side, the following are reflected:

- o Unit ID and name
- o Active order
- o For each combat posture order,
  - Range
  - Azimuth (direction)
  - Duration
  - Strength threshold for failure order
  - Attack force ratio
  - Failure force ratio
  - Failure order
  - Success order

4.1.7.4 Report D7-D (sample on page 275) lists the combat postures for both sides and, for each posture, the following:

- o Effectiveness
- o Strength threshold for order change
- o A multiplier to modify time duration



DIVISIONAL ELECTRONIC WARFARE COMBAT MODEL

CONCEPTS ANALYSIS AGENCY

US ARMY

INPUT DATA REPORTS

DEVELOPED BY

CACI, INC. - FEDERAL
1815 NORTH FORT MYER DRIVE
ARLINGTON, VIRGINIA 22209

BEGIN SIMULATION = NC

GLOBAL VARIABLES

CHARACTERS PER WORD	4		BACKGROUND TRAFFIC UPDATE TIME	15.0	MIN
MAX PERMITTED ERRORS	5		DT.V	5.0	
MAX LINKS IN CIRCUIT	5		MAX STEP	500.0	
MOVE STEP SIZE	200	METERS	MIN STEP	100.0	
RATE OF CONTACT	30		MIN DELAY	20.0	MIN
RANDOM NUMBER STREAM	2		MAX DELAY	60.0	MIN
STOP TIME	6.0	HOURS	REPORT FREQUENCY	30.0	MIN
TIME EOS	1.0	HOURS	MESSENGER RATE	1500	METERS/MIN
DEBUG	1.0	HOURS			

REPORTS TO BE PRINTED

DATA PROCESSOR : 1 2 3 4 5 6 7
MODEL : NONE

SIDE ATTRIBUTES

NAME	BLUE	RED	
ENCRYPTION INTELLIGENCE	5	5	
EW INTEL THRESHOLD	40	40	
SUPPORT THRESHOLD	30	30	
FIRE SUPPORT THRESHOLD	30	30	
COORDINATION INTERVAL	45	45	MINUTES
MIN UNIT STRENGTH	20	20	
ARTY RESET TIME	55	55	MINUTES
ARTY CONTACT RANGE	20000	20000	METERS
MIN ARTY DISTANCE	1000	1000	METERS
MAX ARTY DISTANCE	2000	2000	METERS
MIN EW DISTANCE	10000	10000	METERS
MAX EW DISTANCE	15000	15000	METERS
WIRE FAILURE RATE	4	4	
WIRE MTTR	3	3	HOURS
DF RATE - 1 UNIT OUT	50	50	
DF RATE - 2 UNITS OUT	70	70	
PCT OVER TRUE STRENGTH	15	15	
PCT UNDER TRUE STRENGTH	10	10	

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
MOBILITY INDEX

REPORT D2-A
PAGE 1

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET \ X OFFSET	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
39	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
MOBILITY INDEX

REPORT D2-A
PAGE 2

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET 39					44					49					54					59					64					69
0	2	3	2	3	2	2	2	2	2	4	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	3	3	4
1	2	2	2	3	4	2	2	2	2	4	3	2	2	2	2	2	3	2	2	2	2	2	2	2	3	3	3	3	2	3	2	2	2	2	3	3
2	3	2	2	2	2	2	2	2	2	3	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	3	3	3
3	2	3	4	2	2	2	2	2	2	2	3	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	2	2	3	4	3
4	3	4	3	2	2	2	2	2	2	2	3	2	2	3	2	2	2	2	2	2	3	3	2	2	2	2	3	3	2	2	3	3	3	2	3
5	3	4	4	3	3	2	2	2	2	3	3	2	2	3	2	2	2	2	2	2	2	2	2	3	2	3	4	3	2	2	4	4	3	2	3
6	3	3	3	3	3	2	3	3	2	2	3	2	2	3	2	1	2	3	3	2	2	2	2	3	3	3	3	3	3	3	3	4	3	2	2
7	2	2	2	3	3	3	4	4	2	2	3	2	2	2	3	3	4	3	3	2	2	2	2	3	2	3	3	3	2	3	3	4	4	3	2
8	2	2	2	2	4	4	4	3	3	3	3	2	2	2	4	2	3	4	3	2	2	2	2	2	2	2	3	2	2	2	3	3	2	2	1
9	3	2	2	2	3	4	2	2	2	2	3	2	3	3	3	2	3	2	3	3	2	3	2	3	3	2	2	2	2	2	2	3	2	2	2
10	2	2	3	3	3	3	2	2	3	2	2	3	2	3	3	2	2	2	3	4	3	3	3	3	3	2	2	2	3	2	3	3	3	2	1
11	2	4	4	3	3	2	3	2	4	3	2	2	2	2	2	3	3	3	4	4	4	3	4	3	3	2	2	2	3	3	3	2	3	2	2
12	3	4	2	2	2	2	3	3	3	2	2	2	2	2	2	3	3	3	4	4	4	3	4	4	3	2	2	2	3	3	2	2	2	1	2
13	4	4	3	2	3	3	3	3	2	2	2	2	3	2	2	2	3	2	3	4	3	3	3	4	2	2	3	3	3	3	3	2	2	2	2
14	4	3	4	4	4	3	3	3	3	3	3	4	4	3	2	2	3	2	2	3	4	3	3	4	2	2	3	3	3	4	3	2	1	2	1
15	3	2	4	4	2	2	2	3	3	4	3	3	4	3	2	3	3	3	3	4	4	4	3	2	1	2	3	3	3	3	3	3	3	1	2
16	2	3	4	4	3	3	3	3	2	2	2	3	2	2	2	3	4	4	4	4	3	3	3	2	2	3	4	2	2	3	3	4	3	3	3
17	3	4	4	4	4	4	2	2	1	1	2	1	1	2	2	3	4	4	4	4	3	3	3	2	1	2	3	2	2	2	2	2	3	4	3
18	3	4	3	4	4	3	1	1	1	1	2	2	2	2	3	3	4	4	3	4	2	2	3	2	2	1	2	2	2	2	2	1	3	3	2
19	3	3	3	3	3	2	2	1	1	2	2	2	1	2	2	2	3	3	2	2	2	2	3	2	2	2	1	1	1	1	2	2	2	3	2
20	2	2	2	2	2	2	1	1	2	1	3	2	2	2	1	2	3	2	2	2	1	2	3	2	1	1	2	2	2	1	1	2	3	4	4
21	2	2	1	2	2	2	1	1	2	2	3	4	4	4	2	3	2	2	2	3	2	2	2	3	3	2	2	2	1	2	1	2	3	2	3
22	2	2	1	1	2	1	1	2	2	3	4	4	3	3	2	3	2	2	3	4	4	3	3	3	3	2	2	1	1	2	1	1	2	2	2
23	2	2	2	2	2	1	1	2	2	2	2	3	3	3	4	3	2	3	4	4	3	3	4	2	2	3	3	1	1	2	2	1	2	2	4
24	2	2	2	2	2	1	3	4	3	2	2	3	4	4	4	3	3	3	3	2	2	3	4	3	3	4	3	2	1	3	2	3	2	3	4
25	2	2	1	1	2	1	1	4	3	3	2	3	4	4	4	4	4	1	2	1	1	2	2	3	3	3	3	2	2	3	4	3	3	4	3
26	1	1	1	1	1	1	2	1	3	4	4	3	4	3	4	4	4	3	1	2	1	1	3	3	3	3	4	3	3	3	3	3	3	3	2
27	1	1	1	1	1	1	2	1	3	3	3	3	3	3	4	4	3	3	1	2	1	2	2	3	3	3	4	3	2	1	2	2	3	3	3
28	1	1	1	1	1	2	2	2	3	3	2	2	1	3	4	3	3	3	3	3	3	3	4	3	1	3	2	1	1	2	3	4	3	2	2
29	1	1	1	2	2	3	2	2	2	2	2	2	1	3	3	1	1	3	2	3	3	4	3	3	3	2	3	3	3	2	2	2	3	3	3
30	2	3	4	3	3	5	3	4	2	2	2	2	1	1	3	3	1	2	1	3	3	4	3	2	1	1	1	2	1	2	1	2	2	3	3
31	2	3	4	4	4	5	4	4	2	2	1	1	1	2	2	2	1	2	2	3	4	3	3	1	2	2	1	2	2	1	2	2	3	1	2
32	2	3	4	4	2	5	3	3	2	2	2	2	2	3	2	2	3	2	2	3	4	2	2	2	1	2	1	2	2	2	2	3	3	2	2
33	2	3	3	3	2	2	3	3	4	3	2	2	3	3	2	3	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2
34	3	4	3	3	2	2	2	2	3	3	3	3	4	4	4	4	2	2	3	2	3	2	1	1	1	2	1	1	1	2	2	2	2	4	4
35	2	3	2	2	2	2	1	2	2	3	4	4	4	4	4	3	2	2	1	1	3	3	3	2	1	2	1	1	1	1	3	3	3	4	4
36	3	2	2	2	2	2	1	1	2	3	3	3	3	4	4	3	2	2	1	2	2	2	2	2	2	1	1	1	1	1	3	3	3	3	3
37	2	2	2	3	3	2	2	2	2	2	3	2	3	4	3	3	4	4	3	3	3	1	2	1	1	1	1	1	2	2	1	2	1	1	2
38	2	3	4	4	4	2	2	3	3	3	4	3	3	2	2	2	3	3	4	3	3	2	2	2	2	1	1	2	3	3	2	2	3	3	3
39	4	4	4	4	3	2	2	2	3	2	2	4	3	3	3	2	2	3	4	4	4	2	2	1	3	3	3	2	3	3	2	3	3	3	2

PRECEDING PAGE BLANK-NOT FILMED

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET \ X OFFSET	74									79
0	3	2	2	3	3	4	4	4	4	5
1	1	2	2	3	3	3	4	4	4	4
2	2	2	2	2	2	3	3	4	4	3
3	2	2	2	3	3	3	3	3	2	2
4	2	2	3	3	3	3	3	2	2	2
5	2	2	3	2	3	2	2	2	2	3
6	2	2	2	2	2	3	2	2	4	3
7	2	2	2	2	2	2	3	3	4	3
8	2	2	2	2	3	4	4	4	4	4
9	2	2	2	2	2	3	4	4	4	4
10	2	2	2	2	2	3	4	3	3	4
11	2	3	2	1	2	3	4	3	2	3
12	2	4	3	3	3	3	4	3	3	4
13	2	4	4	4	4	4	4	4	4	3
14	3	4	3	4	3	4	4	4	4	4
15	3	4	3	2	2	2	2	3	4	4
16	4	4	4	2	2	2	3	3	4	4
17	4	4	4	4	4	3	3	2	3	4
18	3	4	4	3	3	2	2	2	2	3
19	2	4	3	2	3	2	2	2	1	2
20	1	3	1	2	3	3	4	4	3	2
21	2	3	3	2	3	4	3	4	4	4
22	2	3	4	4	4	4	3	3	2	3
23	4	3	4	4	4	4	4	3	4	3
24	3	2	3	3	4	3	4	4	4	4
25	3	3	2	3	2	3	3	4	3	3
26	2	3	3	3	2	2	3	4	4	3
27	2	2	3	4	2	2	2	4	3	2
28	2	3	4	3	3	4	3	3	3	3
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31	2	3	3	3	2	2	3	2	2	2
32	3	4	4	3	3	4	3	2	4	3
33	3	4	2	2	3	4	4	2	2	3
34	4	3	3	2	2	3	3	2	3	3
35	4	3	3	3	3	2	2	3	3	3
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37	2	3	3	3	2	2	2	2	2	4
38	2	3	4	3	3	3	3	3	3	4
39	2	2	3	3	3	3	2	3	4	4

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
OBSTACLES INDEX

REPORT D2-B
PAGE 4

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	37	28	12	37	28	18	12	9	16	25	25	3	18	12
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	37	18	6	6	6	12	9	9	18	9	25	6	18	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	3	6	25	6	6	6	0	18	18	18	0	12	12
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	3	3	3	18	18	12	12	18	18	18	18	9	18
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	25	37	6	9	28	6	18	0	18	25	12	12	12	12
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	12	37	9	18	37	18	9	9	18	25	0	25	0	9
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	3	6	37	18	18	9	0	25	37	18	28	25	28	37
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	18	25	37	18	6	25	28	28	18	37	28	28	37	37
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	28	28	28	6	25	0	12	12	18	18	18	28	9
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	37	18	37	3	0	18	3	25	0	18	18	25	9
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	28	0	37	9	0	9	18	18	18	12	12	25	25
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	28	25	12	37	28	9	18	37	37	28	25	25	12	18
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	25	25	37	18	28	37	37	37	37	28	25	3	3
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	28	9	25	37	18	18	18	9	12	18	9	0	37
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	3	6	6	37	18	18	18	9	18	18	18	18	18	37
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	28	6	6	37	9	9	28	28	25	3	0	25	18	18
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	18	6	9	25	37	18	37	28	0	25	18	18	18	6
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	28	6	12	12	37	28	37	37	37	18	18	25	6	6
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	18	18	9	12	0	37	37	18	28	18	6	12	25	6
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	9	28	9	12	0	25	37	12	18	18	0	0	25	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18	18	0	25	3	37	37	37	18	3	0	12	12
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	18	37	28	28	18	28	37	18	28	37	0	3	0	6
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	6	37	25	9	28	37	37	12	18	37	28	6	6	25
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	9	9	25	18	18	28	37	3	28	37	37	6	18	6
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	37	37	18	37	6	0	6	37	9	28	37	6	6	25
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	37	18	25	18	12	0	6	12	37	28	37	28	6	6
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	28	9	25	9	18	0	6	9	37	37	37	18	12	12
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	37	25	25	18	37	28	37	37	28	37	37	18	18	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	28	37	18	9	18	37	28	37	37	37	37	25	28	9
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	37	9	25	25	37	18	37	37	37	37	25	9	12
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	28	9	18	25	9	6	9	37	9	37	37	18	18	9
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	18	9	12	28	18	9	9	18	9	37	9	25	6	25
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	37	37	9	25	25	3	9	18	37	18	25	25	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	37	37	28	25	0	25	0	28	28	28	25	25	3	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	18	37	37	16	6	0	37	12	28	28	6	25	25	12
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	28	28	25	3	37	6	6	28	28	18	18	25	9
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	3	12	37	25	18	12	25	37	37	37	37	37
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	18	6	25	25	28	25	18	25	25	28	37	37	28	25
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39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	18	18	12	25	9	25	28	28	37	28	37	37	28	28

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
OBSTACLES INDEX

REPORT D2-8
PAGE 5

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET 39					44					49					54					59					64					69
0	9	9	3	18	25	6	0	25	18	37	18	12	25	25	12	9	12	6	0	18	6	6	6	6	25	18	18	25	6	12	0	18	18	28	37
1	6	6	0	18	37	6	3	25	18	28	28	12	25	6	0	25	18	6	6	0	0	25	0	18	12	37	37	0	6	6	6	6	6	18	18
2	18	3	25	25	25	9	0	3	6	18	28	9	25	18	0	25	12	9	0	0	12	12	0	18	9	0	25	9	37	37	6	18	18	18	28
3	6	28	37	6	9	0	0	0	12	6	28	6	25	6	18	12	0	9	0	6	6	0	6	25	12	6	6	28	28	18	0	37	28	37	9
4	9	28	28	3	9	3	25	25	6	6	28	3	25	18	9	0	18	6	6	6	9	9	3	0	6	12	28	18	6	25	28	18	37	28	18
5	18	37	37	25	28	25	6	25	12	18	37	3	25	28	9	25	3	9	9	0	9	6	25	18	25	18	37	18	18	9	28	28	9	6	37
6	28	28	18	28	9	12	18	18	12	18	28	0	25	9	6	0	9	18	18	0	3	25	25	25	18	28	28	18	18	37	37	37	28	0	37
7	9	0	18	18	28	18	37	37	12	0	18	0	25	9	37	28	37	28	28	12	25	0	25	18	0	9	28	25	0	25	28	37	37	9	0
8	25	0	37	18	37	37	37	18	37	28	28	0	25	0	37	9	28	37	28	3	25	12	12	6	3	6	28	9	25	25	28	18	12	0	0
9	25	6	18	12	28	37	12	6	0	0	18	9	25	28	28	3	18	6	37	18	25	9	0	9	18	9	25	0	0	25	9	28	6	6	0
10	25	25	28	28	28	28	6	6	9	25	12	9	25	18	18	25	12	6	28	37	28	28	25	28	37	0	37	0	9	25	18	28	28	25	0
11	18	37	37	28	12	6	28	6	37	25	3	0	25	0	0	25	28	28	37	37	37	37	37	37	37	18	25	12	18	28	37	0	18	25	0
12	18	37	18	6	18	0	28	18	25	18	3	3	6	25	25	9	18	28	37	37	37	37	37	37	25	25	9	25	18	28	18	37	25	0	12
13	37	37	18	18	18	18	28	18	6	0	3	9	28	37	12	6	18	18	25	28	37	37	37	37	6	25	28	28	28	37	25	37	12	12	12
14	37	28	37	37	37	18	25	28	25	28	28	37	37	28	18	9	18	6	12	28	37	37	28	37	6	25	18	28	28	37	12	37	0	0	6
15	18	25	37	37	9	6	25	28	28	37	28	28	37	28	25	28	37	28	18	28	37	37	37	25	0	25	28	25	25	37	37	28	28	25	6
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17	18	37	37	37	37	37	25	6	18	12	12	0	6	9	25	28	37	37	37	37	25	18	9	3	25	9	28	0	25	37	0	12	28	37	28
18	28	37	37	37	37	28	6	25	28	0	12	0	18	18	18	18	37	37	28	37	12	18	9	0	25	9	9	0	25	37	25	0	28	28	12
19	28	28	18	28	28	25	0	37	3	0	9	9	6	6	6	25	28	18	0	12	12	12	18	18	25	25	6	6	6	37	25	6	6	12	6
20	3	3	12	6	3	6	25	50	0	25	28	9	18	25	25	9	18	0	25	3	0	6	9	0	25	6	25	25	0	0	37	0	37	37	37
21	6	0	25	0	6	18	37	37	12	9	28	28	37	37	25	12	12	12	6	12	12	12	25	28	25	0	25	18	0	0	37	0	26	12	18
22		6	0	25	6	25	37	12	12	18	37	37	28	25	9	18	6	0	28	37	37	18	18	28	25	6	3	0	25	28	9	0	0	12	12
23	0	0	6	0	3	37	0	6	25	6	6	28	28	28	37	28	9	18	37	37	18	28	28	37	25	18	18	0	0	37	18	0	18	9	37
24	18	0	18	0	6	37	18	37	18	18	25	28	37	37	37	28	28	37	18	12	0	18	37	25	18	37	28	18	18	28	12	12	0	28	37
25	25	0	12	12	6	37	25	37	28	28	25	28	37	37	37	37	37	12	12	3	3	3	37	18	18	37	28	12	37	28	37	28	28	37	28
26	6	25	25	25	28	25	0	25	28	37	37	37	37	37	37	37	37	37	12	0	6	0	37	28	18	12	37	28	37	28	18	28	28	28	25
27	18	18	25	37	25	6	6	25	18	28	28	28	28	37	37	37	18	18	6	6	6	0	37	18	28	28	37	18	12	37	25	12	18	18	18
28	37	12	12	25	37	0	0	6	18	9	6	3	0	37	37	18	18	9	18	25	9	18	37	37	37	25	37	0	0	37	6	18	37	28	9
29	37	12	0	6	37	18	0	6	12	12	0	18	6	18	18	12	12	18	12	18	28	37	28	37	18	0	28	18	9	12	37	12	28	28	9
30	0	18	28	18	18	37	28	37	25	12	0	9	0	3	18	18	0	6	25	12	28	37	28	3	18	25	0	12	0	0	37	6	6	18	18
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33	25	28	26	18	3	37	28	18	37	28	25	3	28	28	9	18	0	12	12	25	9	0	12	3	6	0	0	25	37	12	12	12	25	12	12
34	28	37	28	18	3	6	25	0	18	25	28	28	37	37	37	37	6	12	28	6	18	6	0	0	0	6	12	37	25	0	3	9	9	37	28
35	12	18	9	0	0	0	37	6	6	28	37	37	37	37	37	28	12	25	0	6	9	25	18	0	0	12	6	37	25	12	18	28	28	37	37
36	18	0	6	6	0	6	37	0	0	9	28	28	18	37	37	28	25	18	9	0	12	25	18	3	0	6	37	37	25	9	37	28	28	28	18
37	9	0	0	12	18	0	37	9	9	12	9	6	18	37	28	25	37	37	28	18	18	6	37	18	28	28	28	28	6	0	6	0	6	12	12
38	12	28	28	37	37	9	37	18	18	28	37	18	18	9	12	6	28	28	37	37	28	25	37	3	6	25	0	0	9	12	12	25	6	28	9
39	28	37	37	37	28	0	37	9	12	9	9	37	18	28	18	6	12	18	37	37	37	18	37	28	25	25	9	0	9	18	6	9	9	28	25

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ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)
X OFFSET

Y OFFSET					74					79
0	18	9	9	28	37	37	37	37	37	37
1	12	18	18	28	37	18	37	37	37	37
2	0	0	37	9	12	18	37	28	28	9
3	18	9	37	28	37	28	28	18	12	25
4	0	6	37	18	37	25	28	6	12	12
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6	0	9	12	37	0	9	28	9	28	18
7	18	18	18	18	18	12	12	28	37	37
8	9	6	12	12	25	28	28	37	37	37
9	9	0	25	18	6	18	37	37	37	37
10	0	18	0	0	0	28	37	28	18	37
11	0	28	25	6	25	18	37	9	25	28
12	9	37	28	37	28	25	37	25	18	37
13	6	37	37	37	37	37	28	37	37	28
14	18	37	28	37	28	37	25	37	37	37
15	28	37	37	12	6	6	25	28	37	37
16	28	37	37	6	3	12	9	25	37	37
17	37	37	37	37	37	28	25	6	25	37
18	18	37	37	37	28	25	9	6	25	9
19	12	37	18	9	18	9	9	12	12	37
20	12	25	6	6	6	25	37	37	18	6
21	25	18	18	12	9	37	28	37	37	37
22	6	18	37	37	37	28	18	18	12	12
23	37	18	37	37	37	37	37	37	37	28
24	37	12	9	37	37	28	37	37	37	37
25	28	18	25	9	25	18	28	37	28	18
26	6	9	25	12	25	25	25	37	37	12
27	25	6	18	28	12	12	0	37	28	12
28	25	18	37	12	25	37	28	28	37	18
29	25	6	28	18	9	28	6	18	28	28
30	25	6	9	18	25	18	9	12	18	6
31	12	9	25	28	9	9	9	12	25	9
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36	18	18	28	37	12	18	6	28	25	18
37	12	12	37	37	0	6	12	12	25	37
38	6	9	37	18	12	12	9	18	18	25
39	0	6	12	28	18	18	9	25	28	28

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TERRAIN
BASE ALTITUDES
(METERS)

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET \ X OFFSET	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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1	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
2	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
3	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
4	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
5	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
6	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
7	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
8	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
9	230	230	230	230	230	230	230	230	230	250	250	250	250	250	250	250	250	250	250	280	280	280	280	280	280
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
BASE ALTITUDES
(METERS)

REPORT D2-C
PAGE 8

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET 29					34					39					44					49				
0	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	280	280	280	280	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
BASE ALTITUDES
(METERS)

REPORT D2-C
PAGE 9

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET 54					59					64					69					74				
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRECEDING PAGE BLANK-NOT FILMED

TERRAIN
BASE ALTITUDES
(METERS)

REPORT D2-C
PAGE 10

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

Y OFFSET	X OFFSET				79
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	0	0
33	0	0	0	0	0
34	0	0	0	0	0
35	0	0	0	0	0
36	0	0	0	0	0
37	0	0	0	0	0
38	0	0	0	0	0
39	0	0	0	0	0

PRECEDING PAGE BLANK-NOT FILMED

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

ID	COORDINATE OF CENTER X	Y	PEAK HEIGHT (METERS)	ANGLE (DEGREES)	ECCENTRICITY	SPREAD (METERS)	HEIGHT OF NORMAL CURVE (METERS)	CUT (METERS)
1	461300	607100	405	145	3.00	1000	155	155.00
2	460100	608000	375	115	2.00	700	125	125.00
3	460700	608300	355	105	2.00	700	105	105.00
4	461200	608400	345	70	3.00	800	95	73.61
5	461400	607800	365	72	3.00	800	115	70.38
6	462600	607800	375	120	2.00	1200	125	92.52
7	462600	607800	375	78	2.00	1200	125	125.00
8	462700	607500	385	105	2.00	1200	135	94.47
9	463300	607400	365	355	3.00	700	115	74.48
10	464000	609900	371	65	2.00	800	121	121.00
11	463800	610300	345	130	2.00	400	95	75.75
12	463500	611800	295	340	2.00	500	51	51.00
13	462000	611800	395	75	2.00	600	145	77.73
14	461700	611300	421	0	1.00	350	171	141.61
15	461700	611300	410	65	2.00	700	160	115.06
16	461700	611900	375	155	2.00	400	125	98.31
17	462300	611800	385	345	2.00	400	135	135.00
18	461500	611500	395	195	2.00	400	145	82.06
19	460700	611100	415	155	2.00	900	165	161.62
20	462000	611300	395	0	2.00	400	145	145.00
21	460900	611200	385	90	2.00	300	135	10.00
22	460100	611500	385	135	3.00	700	135	87.28
23	460100	611500	385	90	3.00	700	135	69.10
24	459700	610800	365	180	2.00	700	115	115.00
25	459700	610600	365	260	3.00	600	115	115.00
26	459700	610400	365	0	1.00	450	115	115.00
27	460600	610700	395	270	3.00	750	145	141.21
28	460500	610300	375	270	2.00	500	125	125.00
29	461000	610500	395	270	3.00	800	145	128.28
30	460900	609900	355	240	2.00	500	105	82.06
31	461400	610500	395	305	4.00	900	145	103.21
32	461800	610200	375	31	3.00	700	125	125.00
33	462200	610500	345	45	4.00	350	95	20.91
34	462200	609600	355	0	3.00	1000	105	92.90
35	462800	609700	335	60	4.00	1000	85	85.00
36	463100	610100	325	60	3.00	350	75	28.06
37	457600	607600	365	52	3.00	800	115	115.00
38	457800	607700	365	0	3.00	800	115	115.00
39	457500	608000	355	145	2.00	750	105	105.00
40	457000	608300	325	170	2.00	300	75	19.35
41	457000	607500	345	130	2.00	300	95	67.02
42	458200	607700	355	110	2.00	550	105	80.18
43	458500	607100	365	23	3.00	600	115	102.13
44	458200	608900	361	0	1.00	500	111	111.00

PRECEDING PAGE BLANK-NOT FILMED

ORIGIN 454000 602000
SIZE OF GRID SQUARE =, 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

OFFSET X	OFFSET Y	---ID NUMBERS OF HILLS APPEARING IN GRID X,Y---							
0	0	110	114	111	115	118	76		
0	1	114	116	115	110	117	118	112	
0	2	112	97	114	98				
0	3	97	102	98					
0	4	102	108	93	104				
0	5	38	62	70	71	102	63	93	69
0	6	62	66	70	63	68	69		
0	7	63	64	62	66	65			
0	8	61	64	60	62	63			
0	9	60	58						
0	10	NONE							
0	11	NONE							
0	12	NONE							
0	13	NONE							
0	14	NONE							
0	15	NONE							
0	16	NONE							
0	17	NONE							
0	18	NONE							
0	19	NONE							
0	20	NONE							
0	21	NONE							
0	22	NONE							
0	23	NONE							
0	24	NONE							
0	25	NONE							
0	26	NONE							
0	27	NONE							
0	28	NONE							
0	29	NONE							
0	30	NONE							
0	31	NONE							
0	32	NONE							
0	33	NONE							
0	34	NONE							
0	35	NONE							
0	36	NONE							
0	37	NONE							
0	38	NONE							
0	39	NONE							
2	0	83	76	74	77	80			
2	1	80	76	117	77	81	124		
2	2	99	80	124	97	117	100	98	

OFFSET X	OFFSET Y	---ID NUMBERS OF HILLS APPEARING IN GRID X,Y---							
1	0	76	110	79	83	80	118	117	
1	1	117	116	76	118	114	112	97	
1	2	97	117	93	98	112			
1	3	94	93	102	98	97	103	99	
1	4	104	93	108	94	102	109	105	106
		107							
1	5	36	93	104	69				
1	6	69	39	66	68	38			
1	7	66	62	39	47	67	65		
1	8	47	52	62	50				
1	9	58	52	53	54				
1	10	NONE							
1	11	NONE							
1	12	NONE							
1	13	NONE							
1	14	NONE							
1	15	NONE							
1	16	NONE							
1	17	NONE							
1	18	NONE							
1	19	NONE							
1	20	NONE							
1	21	NONE							
1	22	NONE							
1	23	NONE							
1	24	NONE							
1	25	NONE							
1	26	NONE							
1	27	NONE							
1	28	NONE							
1	29	NONE							
1	30	NONE							
1	31	NONE							
1	32	NONE							
1	33	NONE							
1	34	NONE							
1	35	NONE							
1	36	NONE							
1	37	NONE							
1	38	NONE							
1	39	NONE							
3	0	75	76	74	78	77	83		
3	1	80	78	81	79	77	76	75	
3	2	80	124	82	99				

PRECEDING PAGE BLANK-NOT FILMED

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

OFFSET X	OFFSET Y	---ID NUMBERS OF HILLS APPEARING IN GRID X,Y---							
2	3	98	84	99	94	124	101		
2	4	37	94	104	84	92	91	153	
2	5	38	91	41	37	39	104	153	
2	6	39	38	45	40				
2	7	39	47	45					
2	8	47	50	52	49	51			
2	9	52	58	50	53	49			
2	10	NONE							
2	11	NONE							
2	12	NONE							
2	13	NONE							
2	14	NONE							
2	15	NONE							
2	16	NONE							
2	17	NONE							
2	18	NONE							
2	19	NONE							
2	20	NONE							
2	21	NONE							
2	22	NONE							
2	23	NONE							
2	24	NONE							
2	25	NONE							
2	26	NONE							
2	27	NONE							
2	28	NONE							
2	29	NONE							
2	30	NONE							
2	31	NONE							
2	32	NONE							
2	33	NONE							
2	34	NONE							
2	35	NONE							
2	36	NONE							
2	37	NONE							
2	38	NONE							
2	39	NONE							
4	0	72	75	76					
4	1	122	72	80	79	73	75	123	
4	2	124	80	122	123				
4	3	84	124	87					
4	4	87	89	153	43	90	84		
4	5	38	43	42	153	37			
4	6	44	38	37	42				
4	7	44	46	55	26	45	59		

OFFSET X	OFFSET Y	---ID NUMBERS OF HILLS APPEARING IN GRID X,Y---							
3	3	85	84	124	98				
3	4	91	43	84	89	92	85	90	153
3	5	91	38	37	39	43	41	153	42
3	6	39	45	44	37	40			
3	7	45	46	55	47	44			
3	8	55	47	59	49				
3	9	58	57	49	50	56	59	55	
3	10	NONE							
3	11	NONE							
3	12	NONE							
3	13	NONE							
3	14	NONE							
3	15	NONE							
3	16	NONE							
3	17	NONE							
3	18	NONE							
3	19	NONE							
3	20	NONE							
3	21	NONE							
3	22	NONE							
3	23	NONE							
3	24	NONE							
3	25	NONE							
3	26	NONE							
3	27	NONE							
3	28	NONE							
3	29	NONE							
3	30	NONE							
3	31	NONE							
3	32	NONE							
3	33	NONE							
3	34	NONE							
3	35	NONE							
3	36	NONE							
3	37	NONE							
3	38	NONE							
3	39	NONE							
5	0	72	119	120					
5	1	122	120	119	72				
5	2	124	122	120					
5	3	124	150	151	148	147	87	152	
5	4	153	152	151	87	150	144		
5	5	153	2	154	38	1			
5	6	2	44	1	38				
5	7	26	2	44	25				

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TERRAIN
COVERS

REPORT 02-F
PAGE 58

ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

ID	COORDINATE OF CENTER X	Y	HEIGHT (METERS)	ANGLE (METERS)	MAJOR AXIS (METERS)	MINOR AXIS (METERS)

NO COVER ELLIPSES

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ORIGIN 454000 602000
SIZE OF GRID SQUARE = 1000 METERS
MAP IS 80 BY 40 GRID SQUARES

COORDINATE OF GRID SQUARE = ORIGIN + (OFFSET * GRID SIZE)

OFFSET X	OFFSET Y	--ID NUMBERS OF COVERS APPEARING IN GRID X,Y---	OFFSET X	OFFSET Y	--ID NUMBERS OF COVERS APPEARING IN GRID X,Y---

NO COVERS WERE INPUT

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EQUIPMENT
DAMAGE CLASS

CLASS	VALUE	CLASS	VALUE
1	10	6	10
2	10	7	10
3	10	8	10
4	10	9	10
5	10	10	10

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BLUE

EQUIPMENT
COMMUNICATIONS EQUIPMENT

REPORT D3-B
PAGE 2

NAME	CLASS	DAMAGE CLASS	MTBF (HOURS)	MTTR (HOURS)	RANGE (METERS)	JAMMING AWARENESS
RADIO.1	RADIO	1	6	2	20000	YES
RADIO.2	RADIO	1	6	2	20000	YES
RADIO.3	RADIO	1	6	2	20000	YES

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BLUE

EQUIPMENT
EW EQUIPMENT

NAME	CLASS	DAMAGE CLASS	MTBF (HR)	MTTR (HR)	RANGE (METERS)	DF TIME (SEC)	INTEL RATE	HIGH FREQ (MHZ)	LOW FREQ (MHZ)	RADAR DURATION (MIN)	RADAR INTERVAL (MIN)	--- EXPENDABLE JAMMERS --- PROB - SAFE ARRIVAL	PROB - ARRIVE ON TARGET
JAMMER.1	NL.SPOT	1	8	1	10000	0	0	35	15	0	0	0	0
JAMMER.2	NL.BARRAGE	1	8	1	10000	0	0	25	20	0	0	0	0
RADAR.TYPE.1	RADAR	3	5	2	20000	0	10	4000	3000	2	30	0	0

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RED

EQUIPMENT
WEAPONS

NAME	COMBAT VALUE	DAMAGE CLASS	RANGE (METERS)	ATTRITION CLASS	TERRAIN EFFECT
TANK.A	15	0	1000	HEAVY	YES
PC.4	15	0	3000	HEAVY	YES

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BLUE

EQUIPMENT
TYPE AIR SORTIES

NAME	CLASS	GROUND COORDINATION	TRANSIT TIME (MIN)	LOITER TIME (MIN)	EFFEC-TIVENESS	TRANSIT ATTRITION	LOITER ATTRITION	RENEWAL TIME (MIN)
AAH	ROTARY	YES	30	20	40	0	0	300
TAC.AIR.1	ROTARY	YES	45	20	60	0	0	600

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TYPE UNITS
ATTRIBUTE VALUES

REPORT D4-A
PAGE 1

```
******          A = ALTERNATE CP                          B = MOVE RATE (METERS / MINUTE)     C = RADIUS (METERS)
*      *        D = INTELLIGENCE FADE RATE                E = MAX ENCRYPTION CAPABILITY       F = ENCRYPTION FACTOR
* BLUE *   KEY  G = SUPPRESSION FACTOR                    H = DURATION OF SUPPRESSION (MIN)   I = ARTY DURATION (MIN)
*      *   ---  J = ARTY INTERVAL (MIN)                   K = COMM SETUP TIME (MIN)           L = COMM TEARDOWN TIME (MIN)
******          M = EW SETUP TIME (MIN)                   N = EW TEARDOWN TIME (MIN)          O = TACTICAL SETUP TIME (MIN)
                P = TACTICAL TEARDOWN TIME (MIN)          Q = EW PRIORITY                     R = IF PRIORITY
```

NAME	CLASS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
DIVISION.HQ	DIV.HQ	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
BRIGADE.HQ	BDE.HQ	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
BATTALION.HQ	BN.HQ	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
MECH.CO	MANEUVER	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
ARMOR.CO	MANEUVER	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
FIRE.CONTROL	FDC	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
RADAR	EW.UNIT	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30
HOWITZERS	ARTILLERY	NO	200	200	1	10	10	5	5	20	2	20	15	20	15	30	20	50	30

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TYPE UNITS
EQUIPMENT LISTS

TYPE UNITS	COMMUNICATIONS		EW		WEAPONS	
DIVISION.HQ	RADIO.1 RADIO.2	5 2	JAMMER.1 JAMMER.2	2 1	NONE	
BRIGADE.HQ	RADIO.1 RADIO.2	3 2	NONE		NONE	
BATTALION.HQ	RADIO.3	2	NONE		NONE	
MECH.CO	RADIO.3	2	NONE		APC.1	17
ARMOR.CO	RADIO.3	2	NONE		TANK.1	17
FIRE.CONTROL	RADIO.3	2	NONE		NONE	
RADAR	RADIO.2	1	RADAR.TYPE.1	1	NONE	
HOWITZERS	RADIO.2	2	NONE		HOWITZERS	18

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RED

TYPE UNITS
PERCENT ATTRITION RATES
PER COMBAT DAY

FORCE RATIO RANGES

TYPE UNIT CLASS	ATTRITION CLASS	NON COMBAT	UP TO 1/5:1	1/4:1	1/3:1	1/2:1	1:1	2:1	3:1	4:1	5:1	ABOVE 5:1
HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
CORPS.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
DIV.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
BDE.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
REGT.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
BN.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
CO.HQ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
ALT.CP	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
FDC	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
ARTILLERY	LIGHT	2.40	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36
	HEAVY	2.40	8.30	10.30	12.40	16.60	16.60	16.60	16.60	16.60	16.60	16.60
MANEUVER	LIGHT	5.00	4.20	7.98	10.64	13.32	13.32	13.32	13.32	13.32	13.32	13.32
	HEAVY	3.00	5.60	8.40	11.20	14.00	14.00	14.00	14.00	14.00	14.00	14.00
SUPPORT	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
EW.UNIT	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COMM.UNIT	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
OTHER	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40

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WEAPON NAMES

A = APC.1 B = TANK.1 C = HOWITZERS

RED	BLUE WEAPONS		
TYPE UNIT CLASS	A	B	C
HQ	700	687	650
CORPS.HQ	700	687	650
DIV.HQ	700	687	650
BDE.HQ	700	687	650
REGT.HQ	700	687	650
BN.HQ	700	687	650
CO.HQ	700	687	650
ALT.CP	700	687	650
FDC	700	687	650
ARTILLERY	1000	934	981
MANEUVER	998	946	903
SUPPORT	700	687	650
EN.UNIT	700	687	650
COMM.UNIT	700	687	650
OTHER	700	687	650

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TYPE UNITS
PERFORMANCE DEGRADATION
SECTOR WIDTHS

BLUE

TYPE UNIT CLASS	POSTURE	WIDTH (METERS)	CUMULATIVE ATTRITION 5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65% AND ABOVE
HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
CORPS.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
DIV.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
BDE.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
REGT.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
BN.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0
CO.HQ	ATTACK	30	100	90	80	60	50	0	0	0	0	0	0	0	0
	DEFEND	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	MOVE	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	WITHDRAW	30	100	100	90	80	70	60	50	40	0	0	0	0	0
	DELAY	30	100	100	90	80	70	60	50	40	0	0	0	0	0

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COMBAT ORGANIZATION UNITS

ID	NAME	TYPE UNIT	COORDINATES X	COORDINATES Y	SUPERIOR UNIT ID	SUBORDINATE UNIT IDS	LINK IDS	AIR SORTIES
1	DIV.HQ	DIVISION.HQ	530000	622000	NONE	2 3	70001 70002	NONE
2	REGT.HQ.1	REGIMENT.HQ	520000	637000	1	4 5	50001 50002 70001	NONE
3	REGT.HQ.2	REGIMENT.HQ	520000	617000	1	6 7	60001 60002 70002	NONE
4	BN.HQ.1	BATTALION.HQ	510000	638000	2	8 9 16 17	10001 10002 10003 10004 50001	NONE
5	BN.HQ.2	BATTALION.HQ	510000	636000	2	10 11 18 19	20001 20002 20003 20004 50002	NONE
6	BN.HQ.3	BATTALION.HQ	510000	618000	3	12 13 20 21	30001 30002 30003 30004 60001	NONE
7	BN.HQ.4	BATTALION.HQ	510000	616000	3	14 15 22 23	40001 40002 40003 40004 60002	NONE
8	TANK.CO.1	TANK.CO	505000	640000	4	NONE	10001	NONE
9	TANK.CO.2	TANK.CO	505000	638000	4	NONE	10002	NONE
10	TANK.CO.3	TANK.CO	505000	636000	5	NONE	20001	NONE
11	TANK.CO.4	TANK.CO	505000	634000	5	NONE	20002	NONE
12	TANK.CO.5	TANK.CO	505000	620000	6	NONE	30001	NONE
13	TANK.CO.6	TANK.CO	505000	618000	6	NONE	30002	NONE
14	TANK.CO.7	TANK.CO	505000	616000	7	NONE	40001	NONE
15	TANK.CO.8	TANK.CO	505000	614000	7	NONE	40002	NONE
16	MR.CO.1	MR.CO	500000	640000	4	NONE	10003	NONE
17	MR.CO.2	MR.CO	500000	638000	4	NONE	10004	NONE
18	MR.CO.3	MR.CO	500000	636000	5	NONE	20003	NONE
19	MR.CO.4	MR.CO	500000	634000	5	NONE	20004	NONE
20	MR.CO.5	MR.CO	500000	620000	6	NONE	30003	NONE
21	MR.CO.6	MR.CO	500000	618000	6	NONE	30004	NONE
22	MR.CO.7	MR.CO	500000	616000	7	NONE	40003	NONE
23	MR.CO.8	MR.CO	500000	614000	7	NONE	40004	NONE

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KEY
A = DIRECTION
B = DESIRABILITY
C = TIME TO CONVERT (MIN)
D = NUMBER OF CHANNELS
E = CONVERTABILITY
F = SWITCHABILITY
G = JAMMABILITY
H = COMPOUND LINK

NET ID	NET ATTRIBUTES	LINK IDS	A END	B END	A END EQUIPMENT	B END EQUIPMENT	A	B	C	D	E	F	G	H
10000	TYPE = RADIO	10001	5	3	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	MODE = VOICE	10002	6	3	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	SECURITY = CLEAR	10003	7	3	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	USAGE = COMMAND													
	CONTINUOUS CARRIER = NO													
	PRIMARY FREQ (MHZ) = 30													
	SECONDARY FREQ(MHZ) = 31													
20000	TYPE = RADIO	20001	8	4	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	MODE = VOICE	20002	9	4	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	SECURITY = CLEAR	20003	10	4	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	USAGE = COMMAND													
	CONTINUOUS CARRIER = NO													
	PRIMARY FREQ (MHZ) = 32													
	SECONDARY FREQ(MHZ) = 33													
30000	TYPE = RADIO	30001	3	2	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	MODE = VOICE	30002	4	2	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	SECURITY = CLEAR													
	USAGE = COMMAND													
	CONTINUOUS CARRIER = NO													
	PRIMARY FREQ (MHZ) = 34													
	SECONDARY FREQ(MHZ) = 35													
40000	TYPE = RADIO	40001	5	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	MODE = VOICE	40002	6	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	SECURITY = CLEAR	40003	7	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	USAGE = FIRE.DIRECT	40004	8	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	CONTINUOUS CARRIER = NO	40005	9	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	PRIMARY FREQ (MHZ) = 36	40006	10	11	RADIO.3	RADIO.3	TWO	100	0	1	NO	YES	YES	NO
	SECONDARY FREQ(MHZ) = 37													
50000	TYPE = RADIO	50001	11	13	RADIO.3	RADIO.2	TWO	100	0	1	NO	YES	YES	NO
	MODE = VOICE													
	SECURITY = CLEAR													
	USAGE = FIRE.DIRECT													
	CONTINUOUS CARRIER = NO													
	PRIMARY FREQ (MHZ) = 38													
	SECONDARY FREQ(MHZ) = 39													

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COMMUNICATIONS ORGANIZATION
COMPOUND LINKS

NET ID	LINK ID	A END	B END	-----OTHER UNITS-----			

NO COMPOUND LINKS FOR THE RED SIDE

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ID	DESTINATION	STIMULUS	MODE	PRECEDENCE	THRESHOLD	LENGTH	INTEL VALUE	ACTION	USAGE	SECURITY	DEADLINE ACTION	MEAN TIME	PROC TIME	DEAD LINE
ORIGIN = HQ														
	THIS TYPE UNIT CLASS HAS NO COMMUNICATIONS ORDERS													
ORIGIN = CORPS.HQ														
	THIS TYPE UNIT CLASS HAS NO COMMUNICATIONS ORDERS													
ORIGIN = DIV.HQ														
1	BDE.HQ	MSG.RECEIPT	VOICE	PRIORITY	0	120	70	SEND 4	COMMAND	CLEAR	MESSENGER	0	1	20
2	BDE.HQ	INFORMATION	VOICE	ROUTINE	20	300	50	NONE	COMMAND	CLEAR	DELETE	0	0	10
3	BDE.HQ	FAILURE.FR	VOICE	IMMEDIATE	0	5	80	WITHDRAW	COMMAND	CLEAR	DELETE	0	0	100
ORIGIN = BDE.HQ														
4	BN.HQ	MSG.RECEIPT	VOICE	PRIORITY	0	120	60	NONE	COMMAND	CLEAR	MESSENGER	0	1	20
5	DIV.HQ	TIME	VOICE	ROUTINE	0	5	20	NONE	COMMAND	CLEAR	DELETE	0	1	10
6	BN.HQ	ATTACK.FR	VOICE	PRIORITY	0	50	90	ATTACK	COMMAND	CLEAR	DELETE	0	1	20
ORIGIN = REGT.HQ														
	THIS TYPE UNIT CLASS HAS NO COMMUNICATIONS ORDERS													
ORIGIN = BN.HQ														
7	MANEUVER	TIME	VOICE	PRIORITY	0	150	40	NONE	COMMAND	CLEAR	DELETE	0	10	10
ORIGIN = CO.HQ														
	THIS TYPE UNIT CLASS HAS NO COMMUNICATIONS ORDERS													

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ORDERS
EW ORDERS

TARGET NET	MIN RANGE (KM)	MAX RANGE (KM)	DURATION (MIN)	FIRST OPTION	SECCND OPTION
COMMAND	0	3	3	BARRAGE.JAM	BARRAGE.JAM
	3	9	1	SPOT.JAM	LOCATE
	9	30	0	INTERCEPT	LOCATE
	30	999	0	INTERCEPT	INTERCEPT

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RED

ORDERS
TACTICAL ORDERS

UNIT ID	UNIT NAME	ACTIVE ORDER	TACTICAL ORDER	RANGE (METERS)	AZIMUTH	DURATION (MIN)	STRENGTH THRESHOLD	ATTACK FR	FAILURE FR	FAILURE ORDER	SUCCESS ORDER
1	DIV.HQ	DEFEND	ATTACK	6000	270	0	75	0.	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	0	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	5000	270	0	80	0.	0.	DEFEND	DEFEND
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
2	REGT.HQ.1	DEFEND	ATTACK	6000	270	0	75	0.	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	0	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	5000	270	0	80	0.	0.	DEFEND	DEFEND
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
3	REGT.HQ.2	DEFEND	ATTACK	6000	270	0	75	0.	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	0	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	5000	270	0	80	0.	0.	DEFEND	DEFEND
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
4	BN.HQ.1	DEFEND	ATTACK	6000	270	0	70	4.00	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	20	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	0	0	0	0	0.	0.	MOVE	MOVE
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
5	BN.HQ.2	DEFEND	ATTACK	6000	270	0	70	4.00	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	20	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	0	0	0	0	0.	0.	MOVE	MOVE
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
6	BN.HQ.3	DEFEND	ATTACK	6000	270	0	70	4.00	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	20	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	0	0	0	0	0.	0.	MOVE	MOVE
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY
7	BN.HQ.4	DEFEND	ATTACK	6000	270	0	70	4.00	1.00	WITHDRAW	DEFEND
			DEFEND	0	0	20	60	4.00	1.00	WITHDRAW	ATTACK
			MOVE	0	0	0	0	0.	0.	MOVE	MOVE
			WITHDRAW	1000	90	0	50	4.00	1.00	DEFEND	DEFEND
			DELAY	0	0	0	0	0.	0.	DELAY	DELAY

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ORDERS
COMBAT POSTURE

BLUE

POSTURE	EFFEC-TIVENESS	STRENGTH THRESHOLD	MEAN TIME MULTIPLIER
ATTACK	80	80	50
DEFEND	100	65	25
MOVE	80	90	0
WITHDRAW	80	50	10
DELAY	100	70	0

RED

POSTURE	EFFEC-TIVENESS	STRENGTH THRESHOLD	MEAN TIME MULTIPLIER
ATTACK	80	80	50
DEFEND	100	65	25
MOVE	80	90	0
WITHDRAW	80	50	10
DELAY	100	70	0

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4.2 Model Reports

This group of reports provides the user with the status of various model factors reflecting the effects of the simulation. The reports reflect the model status at the beginning of the simulation, at intervals specified by the user at input time and at normal termination of the simulation.

Production of any or all the Model Reports is controlled by the user at input time through entries in the REPORTS DATA section of DEWCOM Input Data Preparation Form I.1 (CONTROLS; Global Variables Data, Reports Data). Each Model Report number (1 through 7) entered in the appropriate blank spaces on Form I.1 results in the printing of a corresponding report, as follows:

Report #	Title
M1	Unit Status
M2	Link Status
M3	Message Status
M4	Attrition Summary
M5	EW Status
M6	Equipment Status
M7	Intelligence Logs

The desired reports are produced at the interval specified by the user in the "REPORT.FREQUENCY" entry (Key #14) on Form I.1, and the simulated time is reflected on each. The Model Reports are explained in the following subsections, and a sample of each report format is included at the end of this section.

4.2.1 Report M1 (Unit Status) reflects status of all units on a side with a separate part produced for each side (sample on page 281). For each unit, the following information is listed:

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- o Unit ID and name
- o Type unit
- o X and Y grid coordinates of location
- o Strength
- o Force ratio
- o Artillery status
- o Active tactical orders
- o Number of units in contact list
- o Number of units in indirect fire target list
- o Number of messages in message list

4.2.2 Report M2 (Link Status) is produced separately for each side, and reflects the status of all communications links (sample on page 283). The report includes the following information for each net on a side:

- o Net ID
- o Communications frequency (megahertz) in use
- o ID of each link in the net, along with the following:
  - Unit ID of each end of the link
  - Link status
  - Number of channels available and in use

4.2.3 Report M3 (Message Status) is produced separately for each side and reflects the status of all messages (sample on page 285). The report includes the delay time affecting all messages due to the volume of message traffic, as well as the following:

- o ID of communications order
- o Originating Unit ID
- o Transmitting Unit ID
- o Destination ID
- o Status
- o Usage
- o Mode
- o Message length
- o Minutes to deadline time

4.2.4 Report M4 (Attrition Summary) is produced separately for each side (sample on page 287). It contains the following information concerning each item of equipment within equipment type:

- o Equipment name
- o Original quantity
- o Quantity destroyed
- o Quantity remaining
- o % remaining
- o Killed by direct fire
- o Killed by indirect fire
- o Killed by close air support

4.2.5 Report M5 (EW Status) consists of two parts, Actions in Progress and Awaiting Action. Each part is produced separately for each side, and contains the following information:

4.2.5.1 EW Status - Actions in Progress (sample on page 289)

- o Unit ID
- o Action
- o Opposing side target Unit IDs

4.2.5.2 EW Status - Awaiting Action (sample on page 291)

- o IDs of opposing side units awaiting EW action
- o Equipment triggering action
- o Priority

4.2.6 Report M6 (Equipment Status) consists of three parts, Communications Equipment, EW Equipment, and Weapons (sample on pages 293-297). Each part is produced separately for each side, and contain the following information for each unit:

- o Unit ID and Unit Name
- o For each equipment name within type, the original quantity and the quantity currently remaining.

4.2.7 Report M7 (Intelligence Log) is produced separately for each side (sample on page 299). It reflects the ID of each unit on a side which has intelligence information relating to opposing side units. Entries include the ID of the opposing side units about whom intelligence information is possessed, and the value of the information.

UNIT STATUS REPORT M1

SIMULATION TIME = 0. HOURS PAGE 2

RED

ID	UNIT NAME	TYPE UNIT	COORDINATES X	COORDINATES Y	STRENGTH	FORCE RATIO	ARTY STATUS	ACTIVE TACTICAL ORDER	NUMBER OF UNITS IN CONTACT LIST	NUMBER OF UNITS IN IF TARGET LIST	NUMBER OF MESSAGES IN MESSAGE LIST
1	DIV.HQ	DIVISION.HQ	530000	622000	0	0.	----	DEFEND	0	0	0
2	REGT.HQ.1	REGIMENT.HQ	520000	637000	0	0.	----	DEFEND	0	0	0
3	REGT.HQ.2	REGIMENT.HQ	520000	617000	0	0.	----	DEFEND	0	0	0
4	BN.HQ.1	BATTALION.HQ	510000	638000	0	0.	----	DEFEND	0	0	0
5	BN.HQ.2	BATTALION.HQ	510000	636000	0	0.	----	DEFEND	0	0	0
6	BN.HQ.3	BATTALION.HQ	510000	618000	0	0.	----	DEFEND	0	0	0
7	BN.HQ.4	BATTALION.HQ	510000	616000	0	0.	----	DEFEND	0	0	0
8	TANK.CO.1	TANK.CO	505000	640000	0	0.	----	DEFEND	0	0	0
9	TANK.CO.2	TANK.CO	505000	638000	0	0.	----	DEFEND	0	0	0
10	TANK.CO.3	TANK.CO	505000	636000	0	0.	----	DEFEND	0	0	0
11	TANK.CO.4	TANK.CO	505000	634000	0	0.	----	DEFEND	0	0	0
12	TANK.CO.5	TANK.CO	505000	620000	0	0.	----	DEFEND	0	0	0
13	TANK.CO.6	TANK.CO	505000	618000	0	0.	----	DEFEND	0	0	0
14	TANK.CO.7	TANK.CO	505000	616000	0	0.	----	DEFEND	0	0	0
15	TANK.CO.8	TANK.CO	505000	614000	0	0.	----	DEFEND	0	0	0
16	MR.CO.1	MR.CO	500000	640000	0	0.	----	DEFEND	0	0	0
17	MR.CO.2	MR.CO	500000	638000	0	0.	----	DEFEND	0	0	0
18	MR.CO.3	MR.CO	500000	636000	0	0.	----	DEFEND	0	0	0
19	MR.CO.4	MR.CO	500000	634000	0	0.	----	DEFEND	0	0	0
20	MR.CO.5	MR.CO	500000	620000	0	0.	----	DEFEND	0	0	0
21	MR.CO.6	MR.CO	500000	618000	0	0.	----	DEFEND	0	0	0
22	MR.CO.7	MR.CO	500000	616000	0	0.	----	DEFEND	0	0	0
23	MR.CO.8	MR.CO	500000	614000	0	0.	----	DEFEND	0	0	0

LINK STATUS

REPORT M2

SIMULATION TIME = 0. HOURS

PAGE 1

BLUE

NET ID	FREQUENCY IN USE	LINK ID	A END	B END	LINK STATUS	CHANNELS TOTAL	CHANNELS IN USE
10000	30	10001	5	3	IDLE	1	0
		10002	6	3	IDLE	1	0
		10003	7	3	IDLE	1	0
20000	32	20001	8	4	IDLE	1	0
		20002	9	4	IDLE	1	0
		20003	10	4	IDLE	1	0
30000	34	30001	3	2	IDLE	1	0
		30002	4	2	IDLE	1	0
40000	36	40001	5	11	IDLE	1	0
		40002	6	11	IDLE	1	0
		40003	7	11	IDLE	1	0
		40004	8	11	IDLE	1	0
		40005	9	11	IDLE	1	0
		40006	10	11	IDLE	1	0
50000	38	50001	11	13	IDLE	1	0
60000	40	60001	1	2	IDLE	1	0
70000	42	70001	1	12	IDLE	1	0

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MESSAGE STATUS

REPORT M3

SIMULATION TIME = 0. HOURS

PAGE 1

DELAY FROM TRAFFIC = 0. MINUTES

ID	NET ID	ORIGINATING UNIT	TRANSMITTING UNIT	DESTINATION	STATUS	USAGE	MODE	LENGTH (SEC)	MIN. TO DEADLINE
5	60000	2	2	1	BEING PROCESSED	COMMAND	VOICE	5	75
7	10000	3	3	5	BEING PROCESSED	COMMAND	VOICE	150	50
7	10000	3	3	6	BEING PROCESSED	COMMAND	VOICE	150	50
7	10000	3	3	7	BEING PROCESSED	COMMAND	VOICE	150	50
7	20000	4	4	8	BEING PROCESSED	COMMAND	VOICE	150	50
7	20000	4	4	9	BEING PROCESSED	COMMAND	VOICE	150	50
7	20000	4	4	10	BEING PROCESSED	COMMAND	VOICE	150	50

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ATTRITION SUMMARY — REPORT M4

SIMULATION TIME = 0. HOURS — PAGE 1

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EQUIPMENT NAME	ORIGINAL QUANTITY	QUANTITY DESTROYED	QUANTITY REMAINING	% REMAINING	KILLED BY DIRECT FIRE	KILLED BY INDIRECT FIRE	KILLED BY CAS
COMM EQUIPMENT							
RADIO.1	8	0	8	100	0	0	0
RADIO.2	7	0	7	100	0	0	0
RADIO.3	18	0	18	100	0	0	0
EW EQUIPMENT							
JAMMER.1	2	0	2	100	0	0	0
JAMMER.2	1	0	1	100	0	0	0
RADAR.TYPE.1	1	0	1	100	0	0	0
WEAPONS							
APC.1	51	0	51	100	0	0	0
TANK.1	51	0	51	100	0	0	0
HOWITZERS	18	0	18	100	0	0	0
AIR SORTIES							
AAH	10	---	10	100	---	---	---
TAC.AIR.1	2	---	2	100	---	---	---

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EW STATUS - ACTIONS IN PROGRESS

REPORT M5

SIMULATION TIME = 0. HOURS

PAGE 1

BLUE

UNIT ID	ACTION	RED TARGET UNITS				
		ID	ID	ID	ID	ID
12	RADAR					

UNIT ID	ACTION	RED TARGET UNITS				
		ID	ID	ID	ID	ID

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EW STATUS - AWAITING ACTION

SIMULATION TIME = 0. HOURS

REPORT #5

PAGE 3

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KED UNITS AWAITING EW ACTION	EQUIPMENT TRIGGERING THE ACTION	PRIORITY

NO KED TRANSMITTERS AWAITING EW ACTION BY THE BLUE SIDE

KED UNITS AWAITING EW ACTION	EQUIPMENT TRIGGERING THE ACTION	PRIORITY

KED UNITS AWAITING EW ACTION	EQUIPMENT TRIGGERING THE ACTION	PRIORITY

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EQUIPMENT STATUS - COMMUNICATIONS REPORT M6

SIMULATION TIME = 0. PAGE 1

BLUE KEY

A = RADIO.1 B = RADIO.2 C = RADIO.3 FORMAT : ORIGINAL QUANTITY / CURRENT

UNIT ID	UNIT NAME	A	B	C
1	DIV.HQ	5/ 5	2/ 2	
2	BDE.HQ	3/ 3	2/ 2	
3	MECH.BN.HQ			2/ 2
4	ARM.BN.HQ			2/ 2
5	MECH.CO.1			2/ 2
6	MECH.CO.2			2/ 2
7	MECH.CO.3			2/ 2
8	ARM.CO.1			2/ 2
9	ARM.CO.2			2/ 2
10	ARM.CO.3			2/ 2
11	FDC.1			2/ 2
12	RADAR.3J		1/ 1	
13	ARTY.FC1		2/ 2	

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EQUIPMENT STATUS - EW

SIMULATION TIME = 0.

BLUE

KEY

A = JAMMER.1 B = JAMMER.2 C = RADAR.TYPE.1 FORMAT : ORIGINAL QUANTITY / CURRENT

UNIT ID	UNIT NAME	A	B	C
1	DIV.HQ	2/ 2	1/ 1	
12	RADAR.3J			1/ 1

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EQUIPMENT STATUS - WEAPONS REPORT M6

SIMULATION TIME = 0. PAGE 5

BLUE KEY — A = APC.1 B = TANK.1 C = HOWITZERS FORMAT : ORIGINAL QUANTITY / CURRENT

UNIT ID	UNIT NAME	A	B	C
5	MECH.CO.1	17/ 17		
6	MECH.CO.2	17/ 17		
7	MECH.CO.3	17/ 17		
8	ARM.CO.1		17/ 17	
9	ARM.CO.2		17/ 17	
10	ARM.CO.3		17/ 17	
* 13	ARTY.FC1			18/ 18

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INTELLIGENCE LOGS REPORT M7

SIMULATION TIME = 0. HOURS PAGE 2

UNIT ID	BLUE UNITS IN THE INTELLIGENCE LOGS													
	ID	VALUE	ID	VALUE	ID	VALUE	ID	VALUE	ID	VALUE	ID	VALUE	ID	VALUE

NO UNIT ON RED SIDE HAS ENTRIES IN ITS INTELLIGENCE LOG

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4.3 Ad Hoc Reports

Recognizing that all report requirements cannot be foreseen in advance of development of a system, provision is made for special or one-time reports to be produced from the DEWCOM Model through the use of the QWICK QWERY system.

The QWICK QWERY data analysis and report generation system was created to allow managers and programmers to selectively access and display information from existing data files. It reduces the costs and delays associated with problem definition, system analysis, and the coding, testing, modification, and debugging of special purpose programs. QWICK QWERY provides the means for timely retrieval and display of existing but frequently inaccessible information, satisfying the following requirements:

- o It allows the rapid generation of ad hoc reports without much of the usual programming delays.

- o It is a powerful report design tool. Different report formats, sorting sequences, attribute selections, and subtotals can be conveniently tried until the desired report is produced.

- o It allows report requests to be made directly by the end user, avoiding the frequent miscommunications concerning what exactly is needed or desired.

The QWICK QWERY system provides the DEWCOM military analyst with a very powerful and convenient analysis and report generation capability. User convenience is attained through three simple report and request forms. Form 1 provides for the selection of specific data items from a record and specific records from a file. It also provides for sorting and subtotal calculation. Form 2 is used when new data items are to be computed as a function of existing data items. It also provides the capability to do selective counting and index-

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ing. Form 3 provides the option of conveniently laying out the generated report in the desired format.

The elements of the DEWCOM-QWICK QWERY interface are reflected on the diagram on the facing page and are organized as follow:

- o The QWICK QWERY file produced by the DEWCOM Model
- o A set of standard queries to provide standard reports
- o The provision for ad hoc queries to provide other required reports.

4.3.1 DEWCOM QWICK QWERY File Structure

The DEWCOM Model writes transactions on unit 12 in routine QQ. OUTPUT. The file is a standard output file.

4.3.2 Standard Queries

Standard Queries for the transaction file may be stored and used as needed.

4.3.3 Special (nonstandard) Queries

The special queries for the transaction file are normally used to meet a specific need and are not retained.

5.0 RUN INSTRUCTIONS

The Programmer Manual contains a full set of run instructions for the model. It is suggested that these be retained in a START file on the computer system and used as needed.

APPENDIX A

GLOSSARY OF TERMS

ACKNOWLEDGEMENT	A message from the addressee informing the originator that his communication has been received and understood. (FM 24-1)
ADDRESSEE	The activity or individual to whom a message is directed by the originator. Addressees are indicated as either "ACTION " or "INFORMATION". (FM 24-1)
ADDRESS INDICATING GROUP	An address group which represent a specific set of action or information addressess. (FM 24-1)
AREA SIGNAL CENTER	This signal center provides communications to units within its assigned geographical area of responsibility. This ties the units into the area communications system and supplements their organic means for communications with higher, subordinate, or adjacent headquarters. (FM 24-1)
ATTENUATION	Decrease in strength of a signal, beam, or wave as a result of absorption of energy and of scattering out of the path of a receiver. (FM 24-1).
AUTOMATIC CENTRAL OFFICE	A switch at which communications between subscribers is effected without the intervention of an operator. The electronic switches are controlled by the operation of a keysender on the instrument of the originating subscriber. (FM 24-1)

AUTOMATIC DATA PROCESSING SYSTEM	Automatic Data Processing Equipment linked together by communication and data transmission equipment to form an integrated system for the processing and conveyance of data. (FM 24-1)
BARRAGE JAMMING	The jamming of several channels or frequencies simultaneously. (FM 24-1)
CHAFF	Radar confusion reflectors, which consist of thin, narrow metallic strips of various lengths and frequency responses, used to reflect echoes for confusion purposes. (FM 24-1)
CHANNEL	A facility for telecommunications on a system or circuit. The number of independent channels on a system or circuit is measured by the number of separate communications facilities that can be provided by it. (FM 24-1)
CIPHER, OFF-LINE	A method of encryption which is not associated with a particular transmission system and in which the resulting cryptogram can be transmitted by any means. (FM 24-1)
CIPHER, ON-LINE	An automatic method of encryption associated with a particular transmission system, whereby signals are encrypted and passed directly through the line to operate the reciprocal equipment at the distant station. (FM 24-1)
CIRCUIT	An electronic path between two or more points capable of providing a number of channels. (FM 24-1)

COMMAND POST	A headquarters for a unit from which command and control is centrally exercised. (FM 24-1)
COMMAND SIGNAL CENTER	This signal center provides communications for command and control at division and corps headquarters and to units located in the immediate area as facilities permit. (FM 24-1)
COMMAND SYSTEM	A communications network which connects an echelon of command with some or all of its subordinate echelons for the purpose of command and control. (FM 24-1)
COMMON-USER CIRCUIT	A circuit allocated to furnish communications paths between switching centers to provide communications service on a common basis to all connected stations or subscribers. (FM 24-1)
COMMUNICATIONS-ELECTRONICS OPERATION INSTRUCTIONS	A series of orders issued for the technical control and coordination of the signal communications activities of a command. (FM 24-1)
COMMUNICATIONS NODAL CONTROL ELEMENT	A dual function facility that incorporates both facilities control and technical control requirements. The technical control element contains patching, testing, conditioning, and monitoring equipment and provides technical control or circuits in and through the facility. The management element provides management and control of C-E functions within the node. (FM 24-1)
COMMUNICATIONS SYSTEM	Provides actual focal point for dynamic control, acts as operations center for command

system, and directs organic and subordinate C-E systems. Maintains the data base. Replaces the term SYSCON. (FM 24-1)

CONTINUOUS WAVE — Morse Code transmissions achieved by on and off keying of an unmodulated carrier wave, or by the keying of a modulating subcarrier wave with the carrier suppressed. (FM 24-1)

DATA LINK — A communication link suitable for transmission of data. (FM 24-1)

DIAL CENTRAL OFFICE — A switch at which communications between subscribers is effected without the intervention of an operator, by means of relays set in motion by the operation of a dial on the instrument of the originating subscriber. (FM 24-1)

DIVERSITY SYSTEM — A system of communications in which a single received signal is derived from a combination of, or selections from, a plurality of transmission channels or paths. (FM 24-1)

DUPLEX OPERATION — Duplex (or "Full Duplex") operation refers to communications between two points in both directions simultaneously. (FM 24-1)

ELECTROMAGNETIC COMPATIBILITY — The ability of C-E equipments, subsystems, and systems to operate in their intended operational environments without suffering or causing unacceptable degradation because of unintentional electromagnetic radiation or response. (FM 24-1)

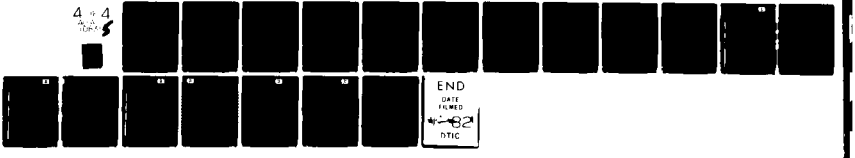
ELECTRONIC COUNTER-COUNTERMEASURES	That division of electronic warfare involving actions taken to insure friendly effective use of the electromagnetic spectrum. (FM 24-1)
ELECTRONIC COUNTERMEASURES	That major subdivision of electronic warfare involving actions taken to prevent or reduce the effectiveness of enemy equipment and tactics employing or affected by electromagnetic radiations, and to exploit the use by the enemy of such radiations. (FM 24-1)
ELECTRONIC DECEPTION	The deliberate radiation, re-radiation, alteration, absorption or reflection of electromagnetic energy in a manner intended to mislead in enemy in the interpretation or use of information received by his electronic systems. There are two categories of deception: MANIPULATIVE and IMITATIVE. (FM 24-1)
ELECTRONIC INTELLIGENCE	The intelligence information product of activities engaged in the collection and processing, for subsequent intelligence purposes, of foreign, noncommunications, electromagnetic raditions emanating from other than nuclear detonations and radioactive sources. (FM 24-1)
ELECTRONIC JAMMING	The deliberate radiation, re-radiation, or reflection of electromagnetic energy with the object of impairing the use of electronic devices, equipment or systems being used by an enemy. (FM 24-1)
ELECTRONIC WARFARE	That division of military use of electronics involving actions taken to prevent or reduce an effective use by an enemy of radiated elec-

	tromagnetic energy, and actions taken to insure our own effective use of radiated electromagnetic energy. Electronic warfare consists of Electronic Countermeasures (ECM), Electronic Counter-countermeasures (ECCM), and Electronic Warfare Support Measures (ESM). (FM 24-1)
ELECTRONIC WARFARE SUPPORT MEASURES	That division of EW involving actions taken to search for, intercept, locate, record, and analyze radiated electromagnetic energy, for the purpose of exploiting such radiations in support of military operations. Thus, ESM provides a source of EW information required to conduct ECM, ECCM, Threat Detection, Warning, Advoidance, Target Acquisition and Homing. (FM 24-1)
FACSIMILE	A system of telecommunications for the transmission of fixed images with a view to their reception in a permanent form. (FM 24-1)
FREQUENCY ASSIGNMENT	The process of designating a radio frequency for use at a specific station or by a specific military unit under specified conditions of operation. (FM 24-1)
GROUND WAVE	In propagation, that portion of the transmitted radio wave that travels near the surface of the earth. (FM 24-1)
HALF-DUPLEX	The capability of operating in either direction, but not in both directions simultaneously. It is also called "SIMPLEX". (FM 24-1)

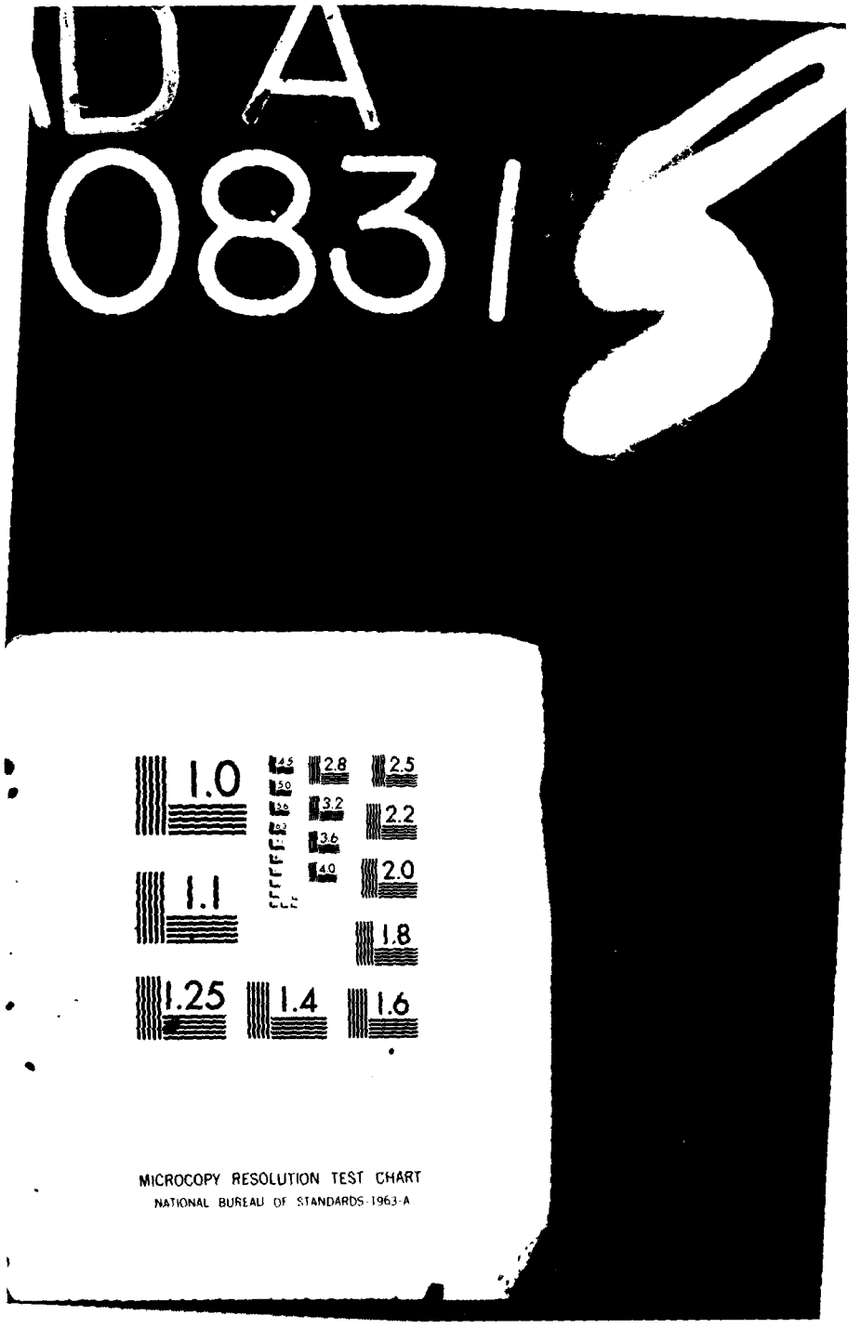
IMITATIVE ELECTRONIC DECEPTION	The intrusion on the channels of the enemy and the introduction of matter in imitation of his own for the purpose of deceiving or confusing him. (FM 24-1)
INTERCEPTION	The act of searching for and listening to and/or recording communications and electronic transmissions for the purpose of obtaining intelligence. (FM 24-1)
INTERFACE	A point common to two or more systems or other entities across which useful information flow takes place. (FM 24-1)
INTERFERENCE	Any electrical disturbance which causes undesirable responses in electronic equipment (FM 24-1)
LASER	A device that utilizes the natural oscillations of atoms for amplifying or generating electromagnetic waves in the region of the spectrum from the ultraviolet to the far-infrared, including the visible region. (FM 24-1)
LIGHT ANTIARMOR WEAPON	The M72A2 is a close-in, lightweight, smoothbore, percussion-fired antiarmor weapon which is designed to give the individual infantryman the capability of defeating armored vehicles. (FM 24-1)
LINK	The basic component of an circuit which assures a direct connection between two units. (See ROUTE)

LOCAL LOOP	A circuit connecting an end instrument to a switching facility or distribution point. (FM 24-1)
MANIPULATIVE ELECTRONIC DECEPTION	The use of friendly electromagnetic radiations so as to falsify the information which a foreign nation can obtain from their analysis. (FM 24-1)
MANUAL CENTRAL OFFICE	A switch in which the lines are connected to a switchboard and interconnections are controlled by an operator. (FM 24-1)
MESSAGE	A demand placed on the communications system which contains some information to be transmitted along a route from one unit to another.
MIJI REPORT	A report to a higher headquarters of an incident of interference in the reception of radio signals. (FM 24-1)
MINIMIZE	A condition wherein normal messages and telephone traffic are drastically reduced, in order that messages connected with an actual or simulated emergency will not be delayed. (FM 24-1)
MULTI-AXIS	More than one line along which communications takes place. (FM 24-1)
MULTI-MEANS	More than one method or system over which a message can be transmitted. (FM 24-1)
MULTIPLEX	The simultaneous use of a number of channels on a single circuit. (FM 24-1)

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NET	An entire communications network consisting of one or more circuits.
NET CONTROL STATION	A station designated to control traffic and enforce circuit discipline within a given net. (FM 24-1)
NETWORK	An organization of stations capable of intercommunication but not necessarily on the same channel. (FM 24-1)
NODE	An end point of a link. It may also be a switching point for messages and is co-located with a unit.
OPERATION ORDER	A directive, usually formal, issued by the commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. (FM 24-1)
PRECEDENCE	A designation, assigned to a message by the originator, to indicate to communications personnel the relative order of handling and to the addressee the order in which the message is to be noted. (FM 24-1)
RADIO DIRECTION FINDING	Radio locations in which only the direction of a station is determined by means of its emission. Since this technique can be used against all electronic emitters, it is sometimes simply referred to as direction finding. (FM 24-1)
RADIO LISTENING SILENCE	Designated radio stations are instructed to monitor their receivers for incoming traffic but not to transmit for a specified period or until further ordered. (FM 24-1)

RADIO RELAY SYSTEM	A radio transmission system in which the signals are received and transmitted from point to point by intermediate radio stations. This system, normally used in conjunction with carrier equipment, provides channels for both voice and teletypewriter operations. (FM 24-1)
RADIO SILENCE	A period during which all or certain radio equipment capable of radiation is kept inoperative. (FM 24-1)
RADIO TELETYPEWRITER	The system of communication by teletypewriter over radio circuits. (FM 24-1)
RADIO WIRE INTEGRATION	The interconnection of wire circuits with radio facilities. (FM 24-1)
READABILITY	The abiltity to be understood, i.e., the readability of signals sent by any means of telecommunications. (FM 24-1)
RETRANSMISSION	Employment of a radio communication set for the purpose of rebroadcasting a message on a different frequency simultaneously with the original broadcast by means of an electrically operated linkage device between the receiver and transmitter of the set. (FM 24-1)
ROUTE	A sequence of links over which messages can be transmitted. It is dynamically selected as a function of the type of message to be transmitted and as a function of the characteristics of the links. (See LINK)

ROUTING	The process of determining and prescribing the path or method to be used in forwarding messages. (FM 24-1)
SIGNAL INTELLIGENCE	The final produce resulting from collection, evaluation, analysis, integration, and interpretation of information gathered from hostile electronic emitters. It includes Communications Intelligence and Electronic Intelligency and is used in determining enemy Order of Battle and planning of future operations.
SOLE-USER CIRCUIT	A circuit from one subscriber to another subscriber on a fixed path. (FM 24-1)
SPOT JAMMING	The jamming of a specific channel or frequency. (FM 24-1)
SWITCHBOARD	An apparatus on which the various circuits from subscribers and other switchboards are ter minated to enable communications either between two subscribers on the same switchboard or between subscribers on different switchboards. (FM 24-1)
TACTICAL COMMUNICATIONS	Communications provided by, or under the operational control of, commanders of combat forces, combat troops, combat support troops, or forces assigned a combat service support mission. (FM 24-1)
TACTICAL OPERATIONS CENTER	A facility from which selected special or general staff members assist in the direction, coordination, and control of current combat operations. (FM 24-1)

TANDEM SWITCH	A switch used primarily as a switching point for traffic between other switches. (FM 24-1)
TAPE RELAY	A method of receiving and retransmitting messages in tape form. (FM 24-1)
TELECOMMUNICATIONS CENTER	An agency charged with the responsibility for acceptance, preparation for transmission, receipt, duplication and delivery of messages. (FM 24-1)
TEXT	That part of a message which contains the thought or idea which the originator desires to be communicated. (FM 24-1)
TRUNK CIRCUIT	A circuit directly connecting two distant central offices. (FM 24-1)
UNIT	A concentration of equipment and personnel on the battlefield. Units move on the battlefield, engage in combat, communicate with each other and apply Electronic Warfare Support Measures (ESM), Electronic Countermeasures (ECM), and Electronic Counter-countermeasures (ECCM) to enemy communications.
VOICE FREQUENCY	Any frequency within the part of the audio frequency range essential for the transmission of speech of commercial quality, i.e., 300-3000 Hz. (FM 24-1)

APPENDIX B

GLOSSARY OF ABBREVIATIONS

ADPS	Automatic Data Processing System
AIG	Address Indicating Group
AM	Amplitude Modulation
ARDF	Airborne Radio Direction Finding
ASA	Army Security Agency
ATSE	Army Security Agency Tactical Support Element
CAS	Close Air Support
C-E	Communications-Electronics
CEOI	Communications Electronics Operating Instructions
CFA	Covering Force Area
CNCE	Communications Nodal Control Element
COMINT	Communication Intelligence
CP	Command Post
CSCE	Communications System Control Element
CW	Continuous Wave
C2	Command and Control
C3	Command, Control, and Communications
DEWCOM	Divisional Electronic Warfare Combat
DF	Direction Findings
EAC	Echelons Above Corps
ECCM	Electronic Counter-Countermeasures
ECM	Electronics Countermeasures
EIM	Extended Interface Meeting
ELINT	Electronic Intelligence
EMC	Electomagnetic Compatibility
EMCON	Emission Control
ESM	Electronic Warfare Support Measures
EW	Electronic Warfare
EWCO	Electronic Warfare Cryptologic Officer
FAX	Facsimile
FEBA	Forward Edge of the Battle Area
FM	Frequency Modulation

HF	High Frequency
HQ	Headquarters
IAW	In Accordance With
ICD	Imitative Communication Deception
JTF	Joint Task Force
LAW	Light Antiarmor Weapon
LOS	Line of Sight
MED	Manipulative Electronic Deception
MIJI	Meaconing, Intrusion, Jamming, Interference
MRD	Motorized Rifle Division
MRR	Motorized Rifle Regiment
MTBF	Mean Time Between Failures
MTTR	Mean Time to Repair
NBC	Nuclear, Biological and Chemical
NCS	Net Control Station
OPSEC	Operations Security
RATT	Radio Teletypewriter
RDF	Radio Direction Finding
RWI	Radio Wire Integration
SAG	Study Advisory Group
SDD	Software Design Document
SDDL	Software Design and Documentation Language
SEAD	Suppression of Enemy Air Defense
SIGINT	Signal Intelligence
TOC	Tactical Operations Center
UHF	Ultra High Frequency
VHF	Very High Frequency
VT	Variable Time

APPENDIX C
REFERENCES

1. Source listing of COMMEL II.5 simulator with a variable name dictionary and subroutine cross-reference list.

2. Source listing of Tactical Preprocessor for COMMEL II.5 with a variable name dictionary.

3. Source listing of Communications Preprocessor for COMMEL II.5 with a variable name dictionary.

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APPENDIX

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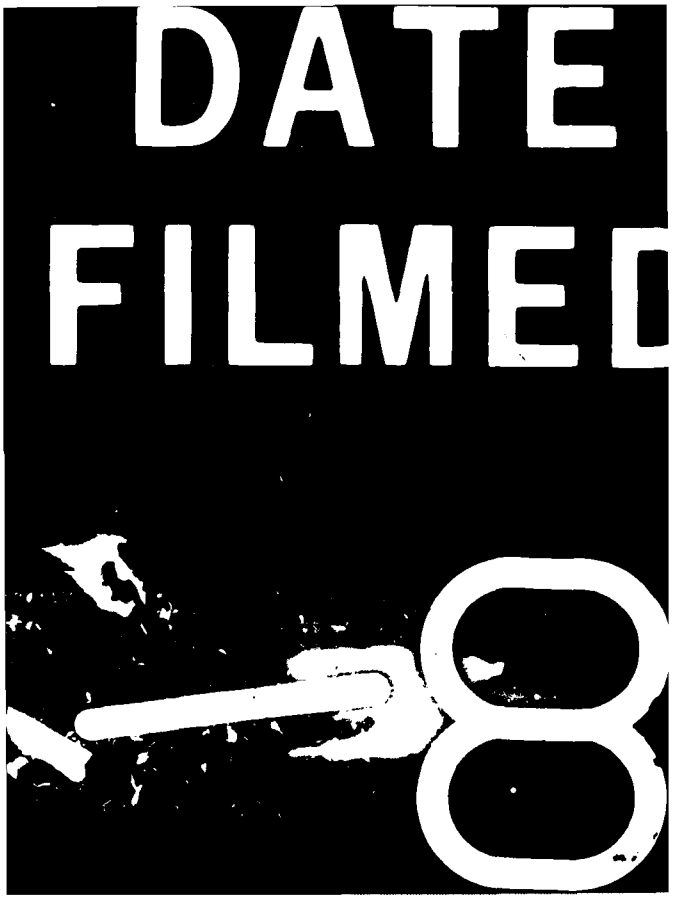
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