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THE DISMOUNTED INFANTRY AGGREGATION METHODOLOGY (DIAM) IN THE JIFFY GAME

Technical Report TR 1-82

UNITED STATES ARMY COMBINED ARMS CENTER

COMBINED ARMS
COMBAT DEVELOPMENT ACTIVITY
COMBINED ARMS STUDIES AND ANALYSIS ACTIVITY

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Studies and Analysis Directorate
Combined Arms Studies and Analysis Activity
US Army Combined Arms Combat Developments Activity
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ABSTRACT

Results from low resolution corps and division level war games and simulations have become increasingly important to decisions involving weapon system procurement and the force structuring process. In the past, dismounted units have been poorly represented in these models. Games such as Jiffy and the developmental CORDIVEM did not portray explicitly the attributes of dismounted squads and platoons. These games were usually oriented to the armor/antiarmor battle, with end of simulation occurring at about 500 meters. Consequently, the effects of dismounted units in the corps/division level combined arms battle were not accounted for satisfactorily. This report describes a method for representing such battles in division or corps level simulations by aggregating terrain effects and numbers of weapon systems in order to reduce set up and run requirements while explicitly representing dismounted tactics, weapon lethality, and target vulnerability. The method has general applicability in existing war games. It has been implemented as a computerized combat model in the Jiffy war game and used in gaming support for the High Technology Light Division study.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.	ii
ABSTRACT.	iii
LIST OF TABLES.	v
LIST OF FIGURES	v
CHAPTER 1	
Background and Purpose.	1-1
The DIAM Data/Information Flow Structure.	1-2
Algorithms Used in DIAM	1-6
References.	1-13
CHAPTER 2	
DIAM Internal Data Base	2-1
File Structure for Terrain Effects.	2-3
File Structure for Weapon Vulnerability	2-10
File Structure for Weapon Movement Rates.	2-11
File Structure for Target Acquisition Rates	2-12
File Structure for Weapons Characteristics.	2-14
CHAPTER 3	
Introduction.	3-1
DIAM Functional Areas	3-1
Subroutine Summary.	3-4
DIAM Self-Documentation Concept	3-4
DIAM Code	3-15

LIST OF TABLES

	<u>Page</u>
3-1. DIAM Subroutine Summary	3-5

LIST OF FIGURES

	<u>Page</u>
1-1. DIAM data and information flow.	1-3
1-2. DIAM Logic Flow for Both Attackers and Defenders.	1-7
2-1. DIAM internal data bases.	2-2
2-2. Battle site.	2-4
2-3. Line-of-sight fan for a TOW position.	2-5
2-4. Line-of-sight fan for a small arms position.	2-6
3-1. Flow chart of DIAM module.	3-2

CHAPTER 1

MODEL METHODOLOGY

1-1. BACKGROUND AND PURPOSE.

a. The role of the Combined Arms Studies and Analysis Activity (CASAA) in the hierarchy of Army analysis requires the study of corps and division level problems. Analyses at this level, including results from corps and division level war game simulations, have become increasingly important to decisions involving weapon system procurements, force structuring, and scenario generation for the TRADOC community.

b. The armor-antiarmor battle is generally well represented in most corps/division models, as are other combined arms aspects such as indirect fire, tactical air, close air support, air defense, and minefields. However, the contributions of small infantry units--especially those involving dismounted operations--have not been adequately represented. Most corps/division level simulations represent closure of the forces to ranges of 1000 to 500 meters. At this point the simulated battles are terminated without regard to the closure, assault, and withdrawal phases.

c. Analysis conducted with these models often fails to give decisionmakers a basis for evaluating the effectiveness of dismounted infantry. Consequently, in February 1980 CASAA was tasked by Commander, Combined Arms Center (CAC) to develop methods for simulating the effectiveness of dismounted infantry in a combined arms corps/division environment. A two-phased effort was initiated to address this problem.

(1) The first phase consisted of the basic research necessary for any combat model development. During this phase the critical battle activities impacting on division effectiveness were defined through the use of mission profiles supplied by the US Army Infantry Center (USAIC) and through informal discussions with USAIC personnel. A review of the ability of currently running combat models to represent these activities was also conducted. The first phase of the study was completed by developing a methodology for representing these activities in a low resolution division model. The methodology included identification of the basic infantry units that must be modeled, algorithms describing the effectiveness of these units in various activities, and data sources to support these algorithms. A complete report on this phase of the study effort is contained in CASAA TR 6-81, Dismounted Infantry Aggregation Methodology Study (DIAMS), August 1981.

(2) The second phase of the effort was implementation of the methodology; i.e., building the model (the Dismounted Infantry Aggregation Model--DIAM), constructing the data bases, validating the model, and exercising it in support of several CAC studies. Model construction was completed in September 1981, and interface with the corps/division level Jiffy War Game took place in October 1981. Although DIAM is currently in use as a

submodule of Jiffy, it can also be used alone to analyze the effectiveness of a combined arms force as it closes on dismounted infantry positions from ranges of 1000 meters.

d. The purpose of this report is to provide a documented reference for DIAM. The report is designed to serve two types of readers.

(1) Chapter 1 describes the overall methodology used in developing the computer code. It contains a general discussion of the algorithms used to represent the dismounted battle and is provided for the use of those readers interested in "What's going on inside the model."

(2) Chapters 2 and 3 were developed for those readers who are interested in executing the model. Chapter 2 describes the model data base. Chapter 3 contains a listing of the model code. DIAM is written in FORTRAN 77 using a modular design dictated by standard software engineering practices. The code listed in chapter 3 represents the current Jiffy application of DIAM in subroutine form. The code could easily be modified for use in stand-alone form.

1-2. THE DIAM DATA/INFORMATION FLOW STRUCTURE. DIAM is a time stepped, expected value simulation. During each minute of battle, the movement of both forces, their ammunition expenditures, and losses to both forces are calculated. The model requires an extensive data base to represent the lethality, vulnerability, and mobility of a dismounted force in a combined arms battle. Figure 1-1 shows the various types of data bases required by the DIAM attrition model. The figure shows that the model requires data inputs from two sources, a host and its own internal data base.

a. Data Input From Host. Host inputs are used by DIAM to establish a battle scenario. In essence they describe who is fighting, what type of battle the user wishes to model, and where (type of terrain) the fight will occur. They represent a simplified version of the type of scenario data required for a high resolution model. The host may be either a larger model using DIAM as a submodule, such as Jiffy, or an analyst/gamer using DIAM in the stand-alone version. The following data are required from the host:

(1) Weapon lists. Complete lists of all weapons to be represented in the DIAM battle must be provided by the host. DIAM currently has a library of 25 different weapon types (e.g., Viper, Dragon, IMAWS, M-1, IFV) for Blue and 25 types for Red. The user is allowed to select a maximum of 10 Blue types and 10 Red types for each battle. The number of weapons of each type (e.g., 75 Viper, 5 Dragon, 10 M-1) must also be provided by the user. The model automatically positions these weapons on the terrain in response to the user's selection of battle scenario (see para b(2), Terrain effects, below).

(2) Artillery firing rates. Artillery firing rates and loss rates to each weapon type are also required from the host. The version of DIAM described in this report uses the Jiffy artillery module to assure consistency

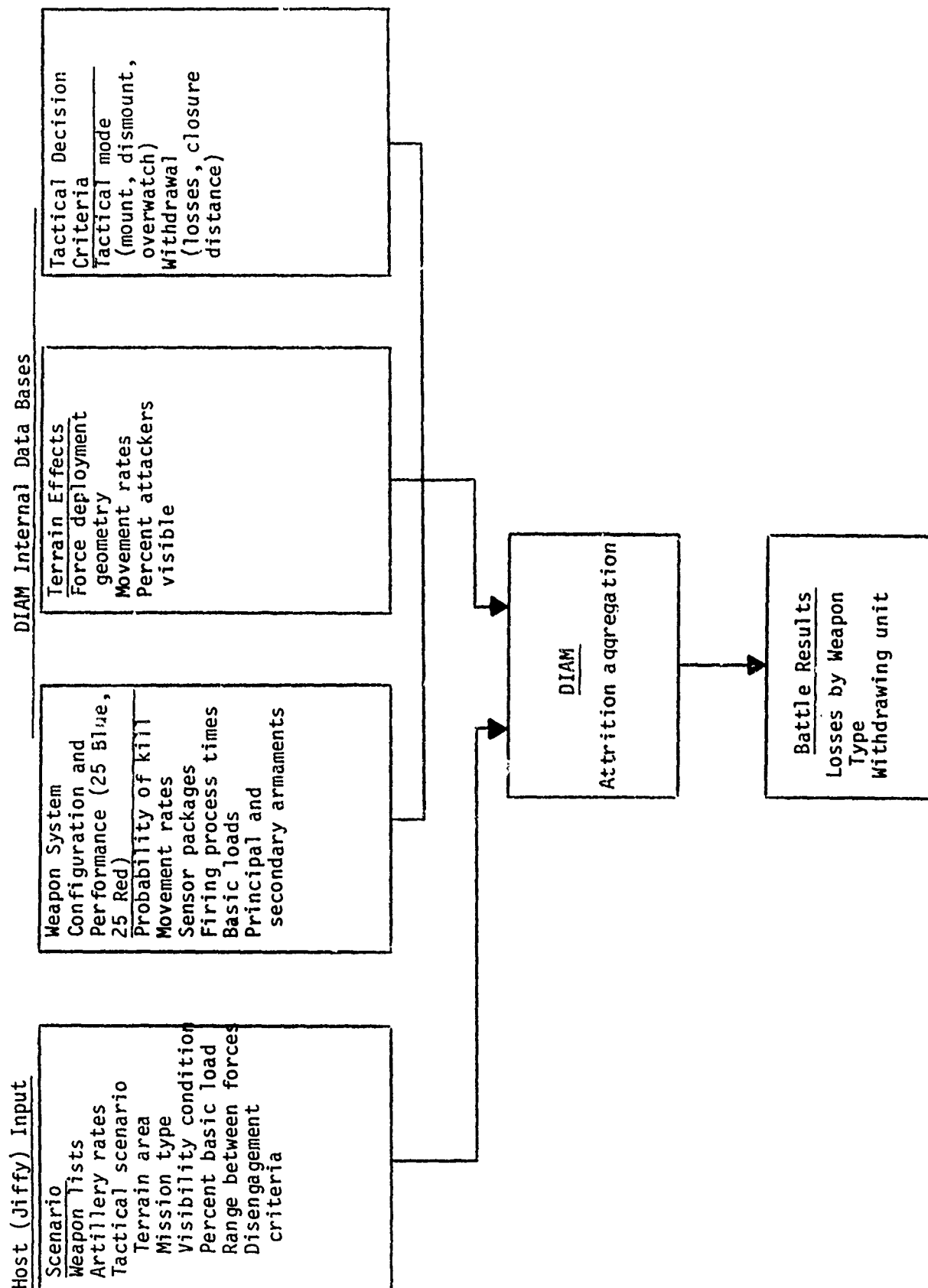


Figure 1-1. DIAM data and information flow.

with other Jiffy results. However, DIAM is structured so that lethal area/target density artillery loss algorithms could easily be implemented in the module.

(3) Tactical scenario. Host selection of the tactical scenario is also required. The DIAM module currently has a library of six terrain areas available. The user is required to select a terrain location and denote either the Red or the Blue force as attacker. DIAM responds by accessing the proper terrain data base and arraying the user-defined forces on the terrain. The visibility condition (day, night, or obscured) is also required by the module. Two other host data elements are required to describe the DIAM battle framework. The initial condition of both forces is represented by the percent of basic load available to each weapon type and the opening ranges between the forces. The opening range must be less than 1000 meters. The host data element describing disengagement criteria is an optional requirement. The DIAM structure allows the host to specify attrition thresholds and range thresholds for each weapon type. These thresholds represent maximum loss levels and minimum closure distances to enemy force elements that will be sustained by a force prior to its withdrawal. Violation of these thresholds for either force will initiate its withdrawal. If the user does not specify these thresholds, they will be specified by the DIAM module.

b. Internal Data Base. The DIAM module also maintains an extensive internal data base. Referring again to figure 1-1, the model has access to a computerized library describing various terrains and weapon systems. These library entries are accessed by the module in response to host requirements. The libraries fall into the following categories:

(1) Weapon system configuration and performance. These data describe weapon system performance under various postures (attack or defend) and environmental conditions (day, night, obscured day). They are supplied by the US Army Materiel Systems Analysis Activity (USAMSAA) and the Night Vision and Electro-optics Laboratory (NV&EOL). The elements of this part of the data base are:

- . Single shot kill probabilities for each ammunition against each platform type in both defensive and attack postures. Platforms are representative of both vehicles and personnel.
- . Movement rates under day and night conditions by platform type.
- . Time required by sensors to detect a target at various ranges. DIAM divides its sensors into four categories: unaided eye, optically aided eye, generic image intensifier, and generic thermal device.
- . Time required to aim, fire, guide, and reload for each weapon system.

- . Principal armaments and basic loads for each platform. Weapon platforms (personnel, vehicles, crews) can carry multiple weapons in DIAM. For example, an infantry Dragon gunner can also engage personnel targets with a rifle.

(2) Terrain effects on vehicles and personnel.

(a) The terrain data base contains data representing an important tactical aspect of the DIAM battle. Each of the weapons selected by the DIAM user is assigned to one of four general groups:

- . Personnel
- . Heavy armor vehicles
- . Light armor vehicles
- . Systems offset from the battle by more than 1000 meters (e.g., mortars, TOW).

These categories are used by DIAM to establish movement locations and the tactical geometry of the force structures. The module considers the center of mass for each group for all calculations involving movement and range parameters. The tactical terrain data base contains initial locations for the center of mass of each DIAM group and is used by the module to deploy weapon systems in a representative tactical array at the beginning of each battle.

(b) The terrain effects data base is used by DIAM to determine the percent of each force visible to firers in the opposing force. This data base was developed using defensive positions and attacker approach routes resulting from a map analysis conducted by CASAA and the US Army Infantry School. The CASAA Battlefield Visualization Graphics computerized terrain system was used to analyze the area along the avenues of approach visible to each defensive position. This provided the percent of the attack corridor visible in range bands of 200-meter increments to each defensive position. As the DIAM attrition module moves the threat forces along the attack corridors, the percent of corridor visible is applied to the force, providing number of systems that can be targeted by the defenders. DIAM currently has a library of six different terrain tactical situations. Analytical procedures to develop data bases for new situations require approximately 2 mandays. A discussion of these procedures can be found in Chapter 2 of this report.

(3) Tactical decision criteria.

(a) The DIAM module simulates tactical responses of both individual weapon systems and the force to battle conditions. Individual tactical responses are limited to the following:

- . Personnel riding in light armor vehicles may dismount for an assault.
- . Dismounted personnel withdrawing from the battle may mount available light carriers.
- . Light armored vehicles may take up overwatch positions.

These tactical responses are triggered by closure distances between the groups. For example, the Red commander may want 50 percent of all mounted personnel to dismount their carriers when they move within 300 meters of the Blue defender's dismounted Viper positions. The tactical data base contains the desired range at which the tactic must be executed, the percent of the group required to perform the tactic, and an identifier of the opposing group triggering the tactic. Under conditions requiring a DIAM group to operate in two tactical modes (in the example, 50 percent personnel mounted, 50 percent dismounted), the module splits the group to represent movement and location characteristics of both groups.

(b) Force tactical responses are centered around the decision to withdraw from the battle. As mentioned previously, the host can optionally provide criteria (percent of force lost, range between groups) to trigger withdrawal. If these are not provided by the host the module defaults to the values found in this data base. DIAM's current implementation in Jiffy allows the gamer to override the withdrawal criteria (either stay and fight or move out) following status reports, which are given at selected intervals during the DIAM battle.

1-3. ALGORITHMS USED IN DIAM.

a. Figure 1-2 presents a generalized logic flow of the processes occurring in the DIAM module. The purpose of this diagram is to provide a framework for consideration of the attrition algorithms used in the module. The DIAM module is a deterministic model using expected value techniques for calculating weapon losses to both forces. DIAM first selects the appropriate weapon system data and terrain data for the battle to be played, then locates the forces in their tactical positions on the terrain. For each battle minute, DIAM constructs a firing profile for each weapon system. This profile consists of the number of targets visible and within range that are detected by the system. On the basis of this profile, the model calculates the rounds fired by each system. Losses to each firer and target are then determined, and force levels are updated. The number of incoming rounds and the losses sustained by the force are used to calculate suppressive effects for the next minute of battle. Suppression affects rate of fire, movement, and vulnerability. After suppressive effects are calculated, movement rates are determined and force weapon positions are updated for the current minute. Tactical thresholds are then compared with current positions and force levels. If the disengagement criteria are satisfied, tactical requirements (for example, mounting of vehicles) are performed and a timer is set for the disengagement period. Individual tactics also may be altered (dismount, overwatch) in response to tactical thresholds. A new terrain data base is retrieved from the module library to represent reduced visibility conditions between forces during disengagement and pursuit, and the status of affected groups is updated. DIAM assumes that disengagement is completed after 10 minutes. A final battle report is printed following disengagement.

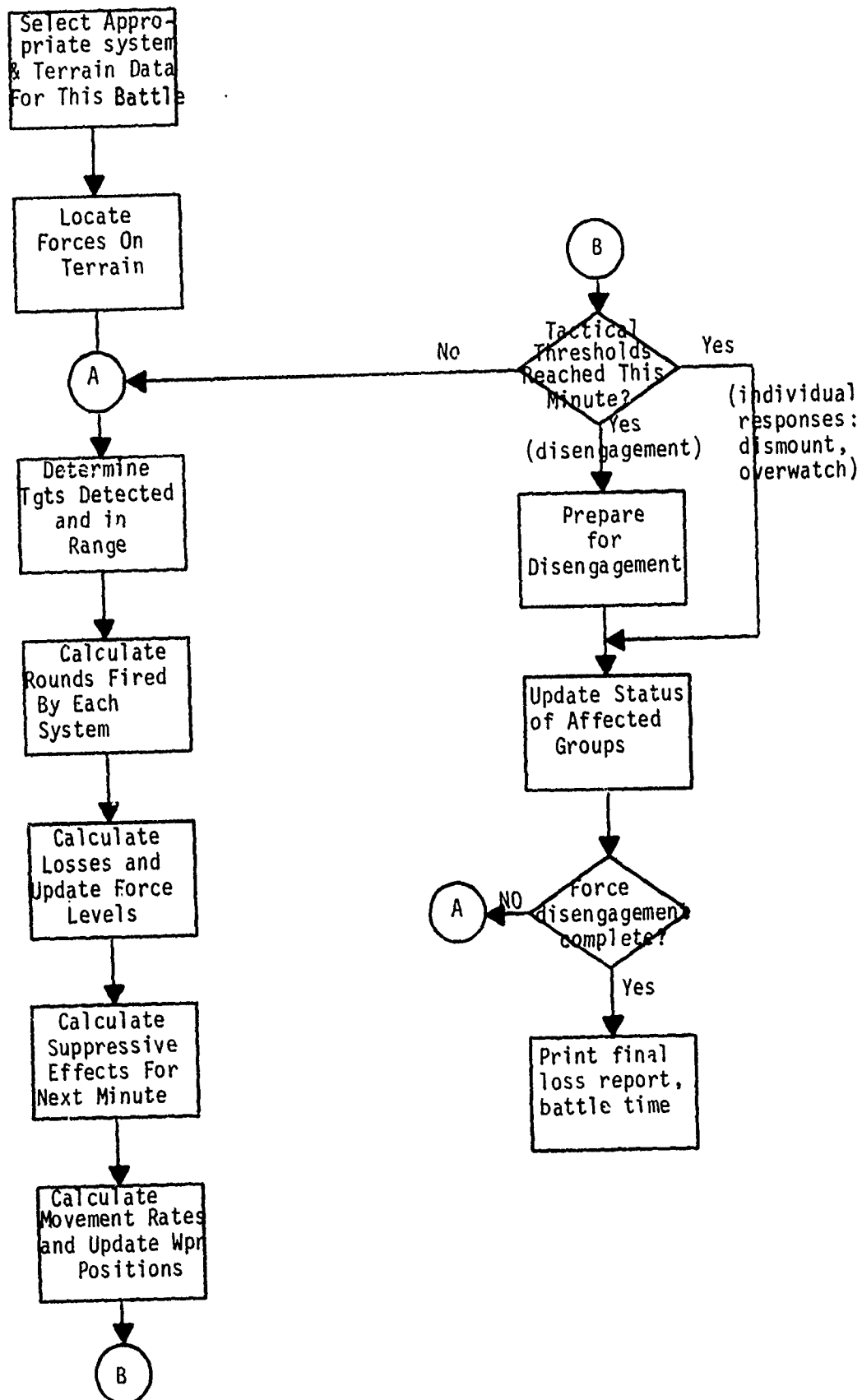


Figure 1-2. DIAM Logic Flow for Both Attackers and Defenders. 1-7

b. The following paragraphs provide a detailed description of the algorithms used for calculation of rounds fired, determination of losses, calculation of suppressive effects, and calculation of group movement. The remaining steps are primarily model bookkeeping and are documented in the DIAM computer code found in chapter 3.

(1) Calculation of rounds fired. The maximum number of rounds fired per minute by weapon i at target j is R_{ij} , which is the reciprocal of the time required to fire one round at the given target; i.e., $R_{ij} = 1/T_{ij}$.

$$T_{ij} = (D_{ij}/F_{ij} + A_{ij} + L_i + M_{ij}) N_{ij}/N_i \quad (1-1)$$

where:

T_{ij} = expected time in minutes for a weapon of type i to fire at a target of type j , given a uniform distribution of fire at all targets available.

D_{ij} = expected number of minutes for a weapon of type i to detect a weapon of type j .

F_{ij} = number of rounds fired by i at j per detection.

A_{ij} = expected number of minutes required to aim i at j .

L_i = expected number of minutes to reload i .

M_{ij} = expected number of minutes for projectile from i to reach j .

N_{ij} = expected number of targets of type j visible to firer i .

N_i = expected number of targets of all types visible to firer i .

(a) This firing rate assumes targets are of equal priority and are allocated uniformly across all targets visible and detected by the firer. If other types of allocations are desired, it is only necessary to change the fraction N_{ij}/N_i to the desired weighting method. The number of targets visible N_{ij} is calculated in the following manner:

$$N_{ij} = n_j(1-\bar{v}) v_{IJ} (1 - \frac{S_j}{2}) \quad (1-2)$$

where:

n_j = the total number of target weapons of type j in the target force.

$\bar{v}$ = the fraction of the terrain corridor containing target weapon system j not visible to any of the firing force containing system i .

v_{IJ} = the fraction of the terrain corridor containing target systems of category J visible to all firing weapons of category I . Recall that all weapon systems fall into one of four categories (dismounted personnel, heavy vehicles, light vehicles, mortars). In this case J is the category containing the target system j and I is the category containing the firing system i . These visibility fractions vary by 200-meter range bands as measured between weapon systems i and j .

S_j = the fraction of targets of type j suppressed for this minute. The factor $\frac{S_j}{2}$ represents DIAM's modeling of one-half of all suppressed personnel in a temporary covered position.

(b) This firing rate (R_{ij}) is for unsuppressed situations--suppression will reduce this rate as follows:

$$R'_{ij} = R_{ij} S_{it} \quad (1-3)$$

where:

R'_{ij} = suppressed firing rate of weapons of type i at targets of type j .

R_{ij} = unsuppressed firing rate of weapons of type i at targets of type j .

S_{it} = suppression factor for firing times of weapon i at time t .

(2) Calculation of loss rates.

(a) The expected number of weapons (considered as targets) of type j killed by weapons in the opposing force of type i is determined from the following equation:

$$K_{ij} = N_{ij} (1 - (1 - P_{ij}/N_j)^{R'_{ij} a_i C_{ij}}) \quad (1-4)$$

where:

K_{ij} = the expected number of type j weapons killed by type i weapons.

N_{ij} = the expected number of type j weapons visible to weapons of type i .

P_{ij} = the single shot kill probability of weapon i against weapon j .

R_{ij} = suppressed firing rate of weapons of type i at targets of type j (from equation 1-3).

C_{ij} = number of weapons of type i firing at targets of type j .

α_i = the fraction of aimed rounds fired by weapon system i . For attackers, $\alpha_i = 0.30$. For defenders $\alpha_i = 0.60$.

(b) The number of weapons of type i firing at target type j is given by:

$$C_{ij} = n_i v_{jI} \left(1 - \frac{S_i}{2}\right) \quad (1-5)$$

where:

n_i = the total number of weapons of type i in the firing force.

v_{jI} = the fraction of firing positions of weapons in category I visible to target weapons in category J . Note that the use of v_{IJ} in the computation of the number of targets and v_{jI} in computing the number of firing weapons causes the following representation in the model: the number of firers engaging targets j are only those that have physical line of sight to j (represented by v_{jI}). Likewise, the number of targets j engageable by i are only those that can be seen by i (represented by v_{IJ}).

S_i = the fraction of firing systems of type i suppressed for this minute. $S_i/2$ indicates that one-half of all suppressed weapons in CIAM do not fire.

(c) Equation 1-4 is consistent with the assumption that targets are selected at random with replacement. Bash and Inselmann (1979) derived the equation. Also developed there is the equation for determining the expected number of kills when more than one type of weapon is firing at one target type and all targets can be engaged by all weapons:

$$L_j = \left(1 - \prod_{\text{all } i} \left(1 - \frac{K_{ij}}{N_{ij}}\right)\right) N_{ij} \quad (1-6)$$

where:

L_j = expected number of losses per minute of weapons of type j .

K_{ij} = expected number of type j weapons killed by type i weapons (from equation 1-4).

N_{ij} = number of weapons of type j in force visible to weapons of type i .

Equations 1-4 and 1-6 produce an approximation to the situation where different weapons see different subsets of targets.

(3) Calculation of suppressive effects. The DIAM suppression module was taken from the Jiffy war game. This module provides suppression of the firing rates and movement rates for both dismounted personnel and vehicular mounted armaments. The following four equations are used to calculate the suppressive effects in DIAM.

$$Y_i = W_i (2.06 X + 1.54)/100 \quad (1-7)$$

$$Y_i = W_i (1.06 X + 0.14)/100 \quad (1-8)$$

$$Y_i = W_i (8 X^{1.5} + 3.28)/100 \quad (1-9)$$

$$Y_i = W_i (2.5 X^{1.5} + 0.5)/100 \quad (1-10)$$

where:

Y_i = fraction of weapons of type i that are suppressed.

X = ratio of total losses suffered by weapons of type i from direct fire, artillery, and mines to total losses inflicted by weapons of type i .

W_i = 1 for category 4 (heavy) weapons and 2.86 for all other types of weapons (from Jiffy).

Equation 1-7 is for defenders in the engagement phase, 1-8 is for defenders in the withdrawal phase, 1-9 is for attackers in the engagement phase, and 1-10 is for attackers in the withdrawal phase. The maximum suppression for firing is set at 0.8 and the maximum for movement is 0.9. Suppressed systems are less lethal and less vulnerable (see use of S_i , S_j in equations 1-2, 1-3, and 1-5). Lethality and mobility are assumed to be reduced because systems being suppressed will seek available cover. This in turn is assumed to make the system less vulnerable.

(4) Calculation of movement rates and tactical locations.

(a) The movement rate for each weapon is calculated by reading the unsuppressed rate for this terrain and tactical scenario from the data base and then applying the suppression factor:

$$M'_{it} = M_i (1 - V_{it}) \quad (1-11)$$

where:

M'_{it} = suppressed movement rate for weapon i at time t .

M_i = unsuppressed movement rate from data base.

V_{it} = fraction of movement suppressed by previous incoming fire.

These rates are adjusted so that weapons in overwatch positions do not move and any vehicles with dismounted personnel will move at the dismounted rate in the meeting and engagement phase of the battle.

(b) Tactical geometry is represented by locating the components of each force about a central force reference point. Each weapon played in the model is categorized as belonging to one of four groups (dismounted personnel, heavy armor, light armor, or mortars). The initial locations of the center of each group with respect to the force reference point are maintained as part of the data base for each tactical scenario available for play in the DIAM submodel. Selection by the main program of a particular scenario causes the DIAM submodel to modify the position of each weapon group based on the following formula.

$$LR_{j0} = D + \Delta_J \quad (1-12)$$

$$LB_{i0} = D + \Delta_I \quad (1-13)$$

where:

LR_{j0} = location of all Red weapons of type j at time zero.

LB_{i0} = location of all Blue weapons of type i at time zero.

D = range between center of mass of forces at start of the battle.

Δ_I, Δ_J = the offset distance of one of four weapon categories from the center mass of the force. Δ_I is the offset for all Blue weapons of category I . Likewise, Δ_J is the offset for all Red weapons of category J .

(c) Each weapon location is changed each minute based upon a suppressed movement rate such that the location at any time $(t + 1)$ minutes into the battle is defined by:

$$LR_{j,t+1} = M_{jt}^i + LR_{jt} \quad (1-14)$$

where:

$LR_{j,t+1}$ and LR_{jt} = the location at time $t+1$ and t respectively of weapon j .

M'_{jt} = the suppression of movement for weapons j
during minute t.

The DIAM battle begins with the attacking force moving toward the defensive positions. Losses are assessed to both forces until a tactical threshold is reached. At this point the withdrawal phase of the battle is begun. This is simulated by a change in the percent visible tables (representing a force minimizing intervisibility with the enemy as it breaks contact). The model moves the withdrawing forces out of firing range and then prints the losses to both Red and Blue forces.

1-4. REFERENCES.

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Godfrey, L., Etheridge, E., Arrington, S., and Pickett, H., 1981, Dismounted Infantry Aggregation Methodology (DIAMS). Technical Report 6-81, US Army Combined Arms Center, Fort Leavenworth, KS.

CHAPTER 2

DIAM FILE STRUCTURES

2-1. DIAM INTERNAL DATA BASE.

a. The DIAM internal data bases are used by the model to describe weapon performance, the terrain effects on the surviving force, and the tactical disengagement criteria. The data are stored on five random access files as shown in figure 2-1.

(1) The Weapon Vulnerability file (Logical Unit 16) contains probabilities of kill for 25 Blue weapons and 25 Red weapons. The probabilities are stored in a range-dependent manner. Two files exist, one representing Blue in prepared defensive positions and the other representing Blue in an attack.

(2) The Terrain Effects file (Logical Unit 25) contains data describing the percentage of the opposing force visible to both attackers and defenders. The percentages are both weapon and range dependent. Six terrain sites (four in the Mideast and two in Europe) are currently available in the DIAM model.

(3) The Movement Rates file (Logical Unit 20) contains rates of advance for four weapon categories; i.e., dismounted personnel, heavy armored systems, light armored systems, and mortars. The movement rates are dependent on terrain type and visibility conditions.

(4) The Target Acquisition Rate file (Logical Unit 20) provides average acquisition times for four sensor types (optical systems $.4\mu$ - $.7\mu$, image intensifier systems $.7\mu$ - 1.1μ , far infrared systems 8μ - 14μ , and the unaided eye) detecting four target types (vehicular target fully exposed or in hull defilade and personnel target fully exposed or in foxhole). The acquisition times are dependent on target range and atmospheric visibility.

(5) The Weapons Characteristics file (Logical Unit 15) is used to describe the primary sensor type, movement rate category, and basic load of the primary armament for each of the 25 Blue and 25 Red weapons found in the Weapon Vulnerability file. For several weapon systems the DIAM model considers both a primary and secondary armament. For dismounted personnel carrying a Dragon or Viper, the model also plays rifle fire against opposing personnel targets. The basic loads for secondary systems are updated by the DIAM model logic and are not contained in this data base.

b. It will be noted from figure 2-1 that DIAM uses the random access file in a read only mode. The random access structure provides the user with flexibility in selecting weapon systems, terrain type, and environmental conditions for play in the dismounted battle. The following paragraphs provide detailed descriptions of the file structures. To avoid classification of this report, example data bases are not included. However, example data bases can be obtained from the US Army Combined Arms Studies and Analysis Activity, Fort Leavenworth, KS upon submission of proper clearances.

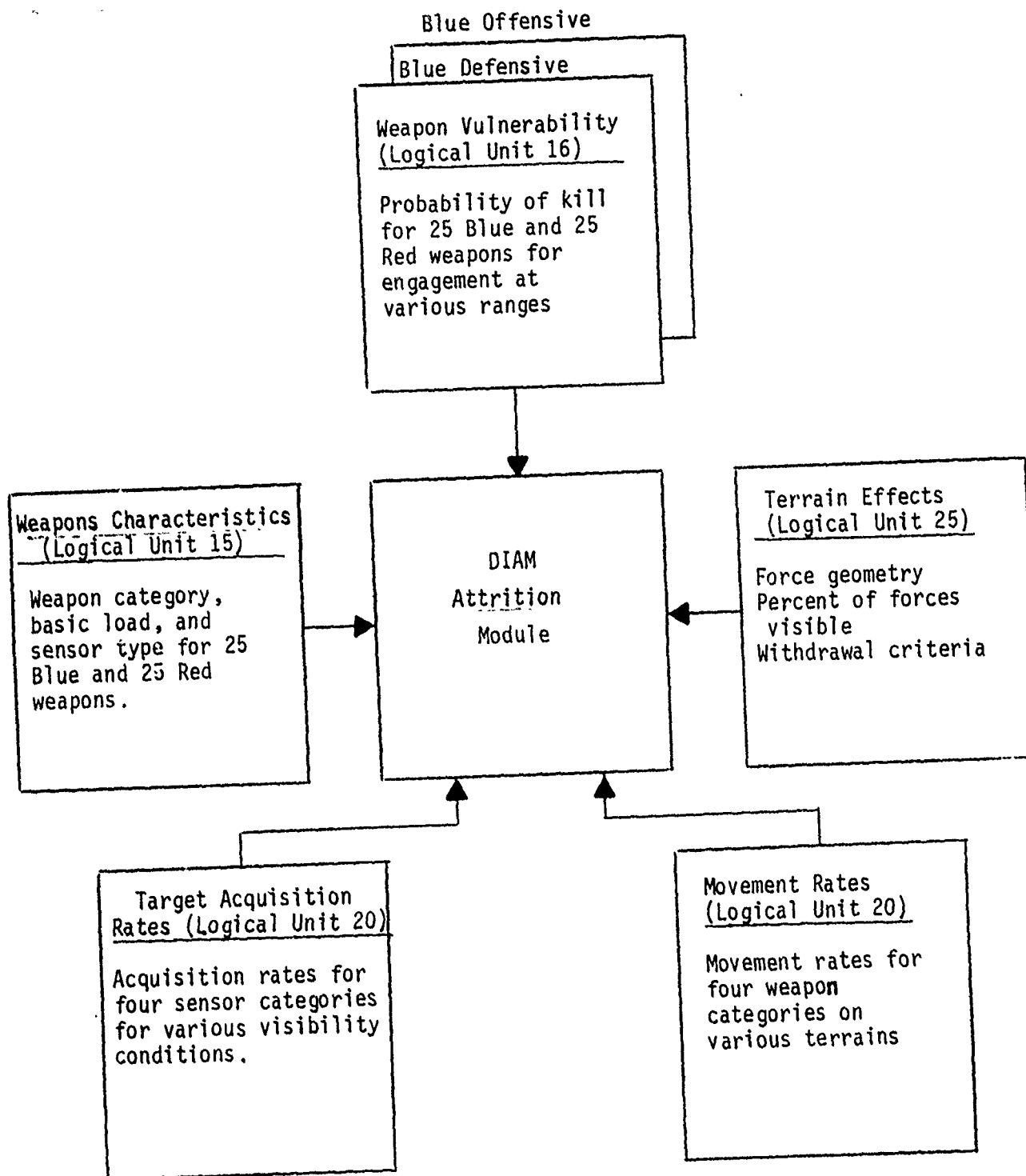


Figure 2-1. DIAM internal data bases.

2-2. FILE STRUCTURE FOR TERRAIN EFFECTS.

a. The terrain effects data are used by the model to represent the percent of forces visible to both attacker and defender during the battle. This data base is developed using digitized terrain and military judgment in selecting the best approach routes and defensive positions for a particular terrain location. Figure 2-2 shows the first step in developing this data base. A piece of digitized terrain has been selected representing the battle site. The possible approach routes have also been noted on the map.

b. The second step in data base development is shown in figures 2-3 and 2-4. Defensive positions have been selected representing typical positions for two of the weapon categories. Line-of-sight fans representing the visible portions of the advance routes have also been drawn using the digitized terrain data base.

c. The final step in data base development is to calculate the percent of attacker corridor visible by range band for each of the defender positions. The resulting percents are used in the terrain effects data base.

d. The structure of the random access file is as follows:

Record 1

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1-20	Alphanumeric	Each word contains four alpha characters. The record contains a description of the terrain; e.g., "GERMANY BLUE ATTACK WOODED AREA".

Record 2

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Percent Red dismounted visible to Blue dismounted, range 0-200m.
2	Real	Percent Red mortars visible to Blue dismounted, range 0-200m.
3	Real	Percent Red light armor visible to Blue dismounted, range 0-200m.

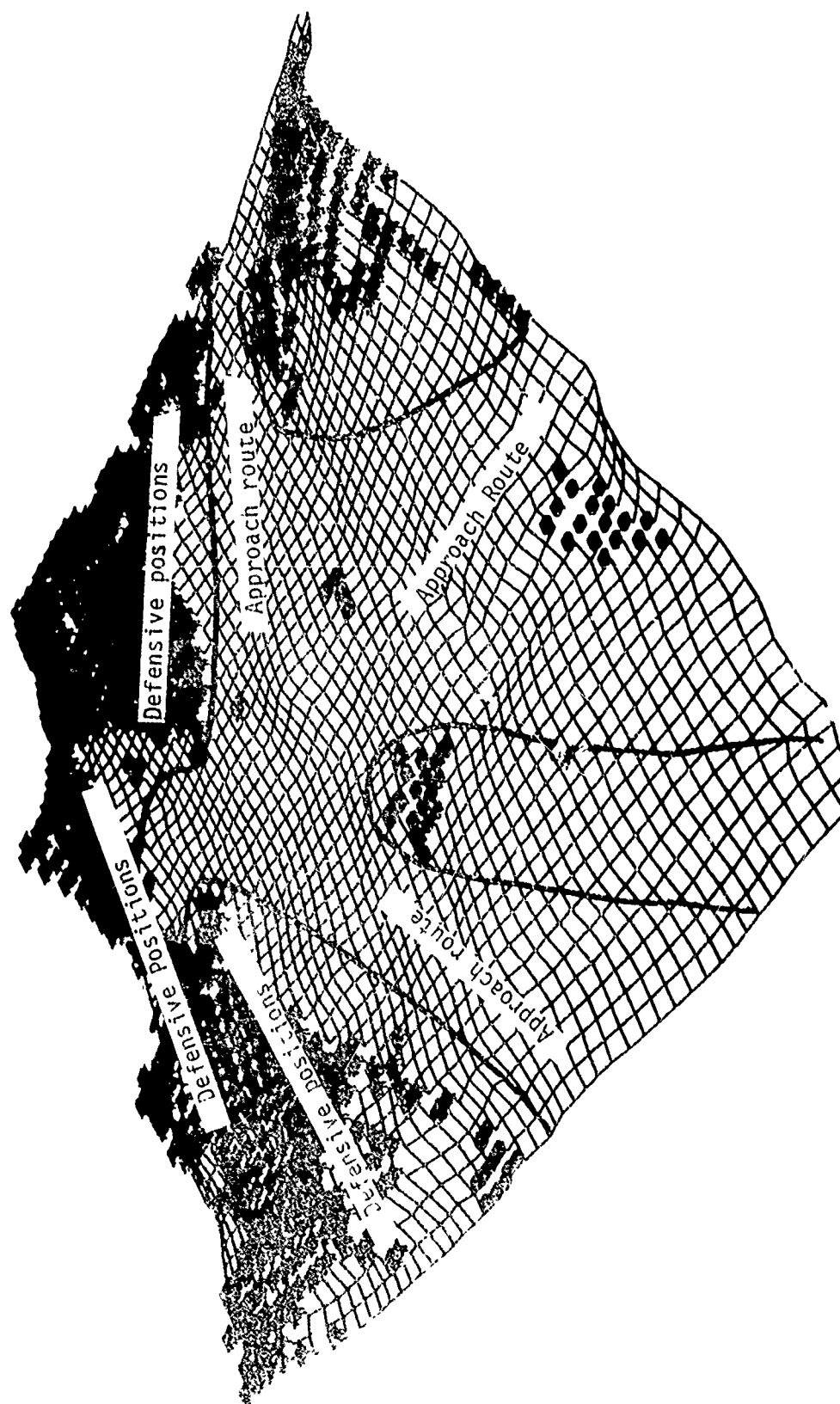


Figure 2-2. The site.

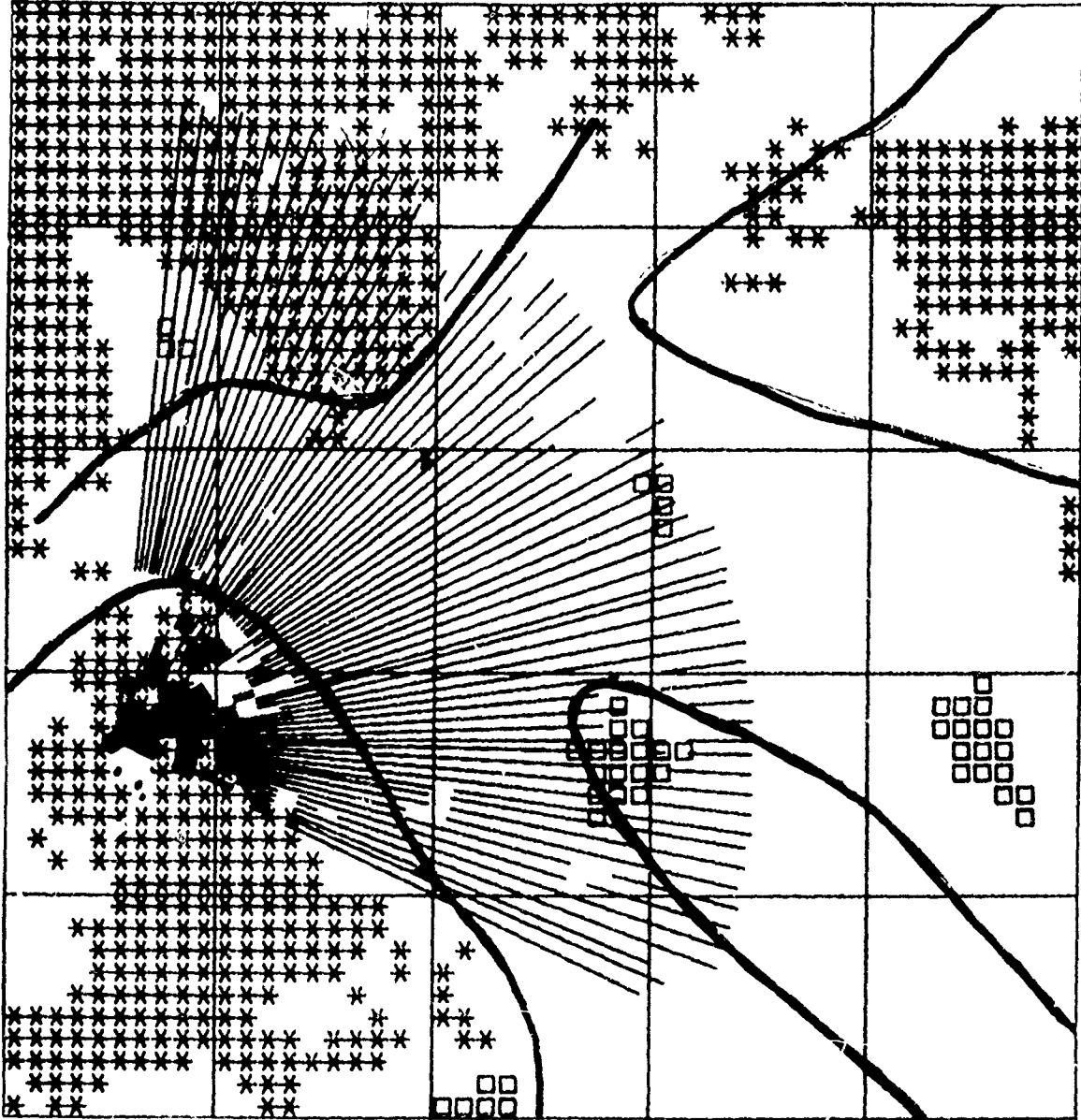


Figure 2-3. Line-of-sight fan for a TOW position.

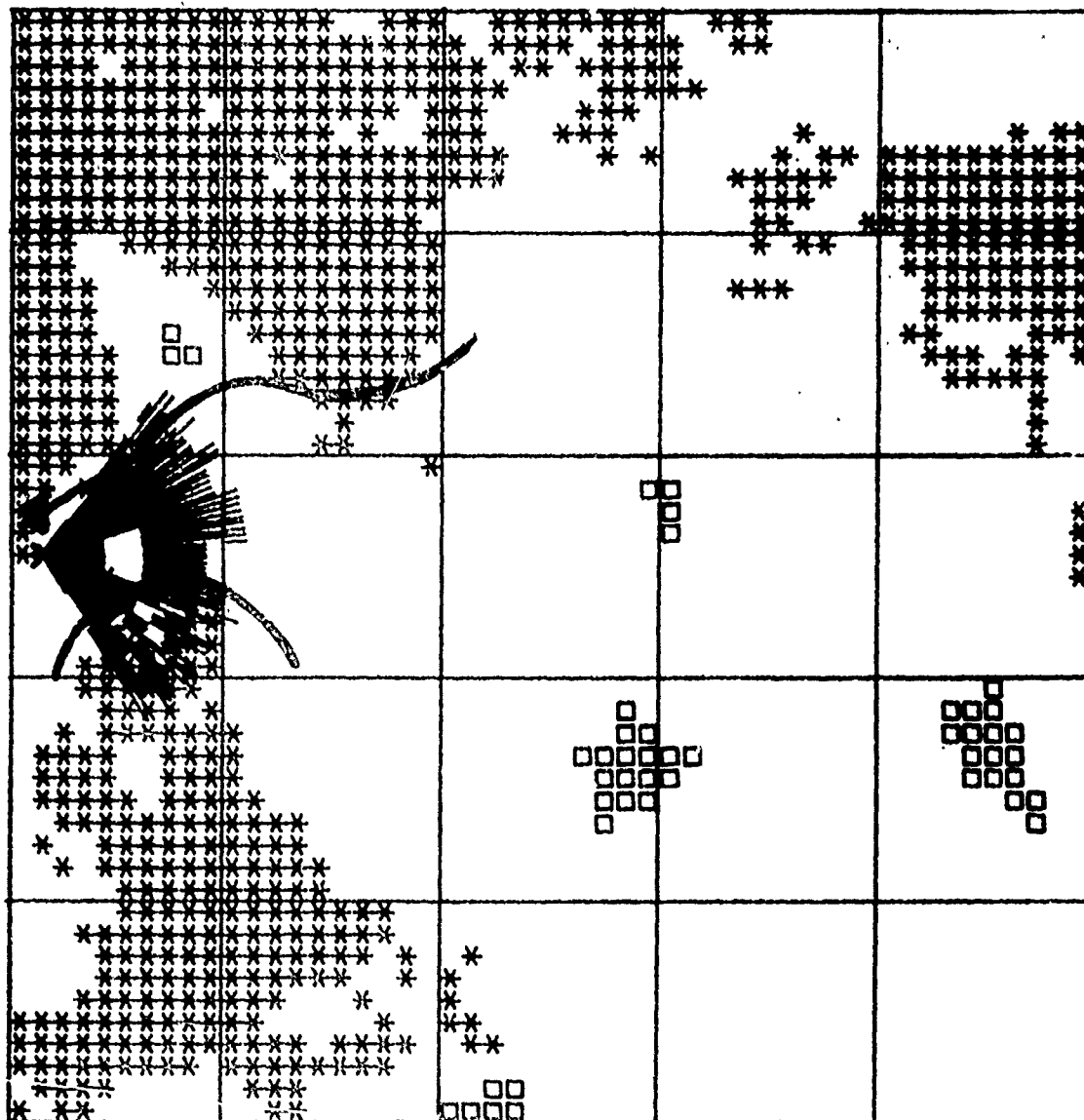


Figure 2-4. Line-of-sight fan for a small arms positions.

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
4	Real	Percent Red heavy armor visible to Blue dismounted.
5-8	Real	Percent Red dismounted, mortars, light armor, heavy armor visible to Blue mortars.
9-12	Real	Percent Red dismounted, mortars, light armor, heavy armor visible to Blue light armor at 0-200m.
13-16	Real	Percent Red dismounted mortar, light armor, heavy armor visible to Blue heavy armor at 0-200m.

Records 3-6

Contain the same information for Red targets at ranges of 201-400, 401-600, 601-800, and 801-1000 meters.

Records 7-11

Contain the percent of Blue visible to Red during the engagement phase of the battle. The structure is similar to that used for records 2-6.

Records 12-21

Contain the percent of Red and Blue visible during Blue withdrawal. The structure is similar to that used for records 2-6.

Records 22-31

Contain the percent of Red and Blue visible during Red withdrawal. The structure is similar to that used for records 2-6.

Record 32

Contains the tactical offset distance of the centroids of the Blue weapons categories (dismounted personnel, mortars, light armor, heavy armor) from the Blue force centroid. It also contains similar Red tactical offset distances.

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Tactical offset of Blue dismounted personnel from Blue force centroid (meters).

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
2	Real	Tactical offset of Blue mortars (meters).
3	Real	Tactical offset of Blue light armor (meters).
4	Real	Tactical offset of Blue heavy armor (meters).
5	Real	Tactical offset of Red dismounted personnel from Red force centroid (meters).
6	Real	Tactical offset of Red mortars from Red force centroid.
7	Real	Tactical offset of Red light armor from force centroid (meters).
8	Real	Tactical offset of Red heavy armor from force centroid (meters).

Record 33

Contains the corridor width (meters) for the attacker.

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Corridor width in meters at ranges of 0-200m from force centroid. The corridor is for attacking dismounted personnel.
2-5	Real	Corridor widths for dismounted personnel at ranges of 201-400m, 401-600m, 601-800m, 801-1000m.
6-10	Real	Corridor widths for mortars at ranges of 0-200m, 201-400m, 601-800m, 801-1000m.
11-15	Real	Corridor widths for light armor at range of 0-200m, 201-400m, 601-800m, 801-1000m.
16-20	Real	Corridor widths for heavy armor at ranges of 0-200m, 201-400m, 601-800m, 801-1000m.

Record 34

Contains the corridor widths for the defender withdrawing. The structure is identical to record 33.

Record 35

Contains the corridor widths for the attacker withdrawal routes. The structure is identical to record 33.

Record 36

Contains the maximum percent of weapons that will be lost before withdrawal. The numbers represent tactical decision thresholds upon which the unit commander bases the withdrawal decision.

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Maximum percent of Blue dismounted lost before Blue withdrawal.
2	Real	Maximum percent of Blue mortars lost before Blue withdrawal.
3	Real	Maximum percent of Blue light armor lost before Blue withdrawal.
4	Real	Maximum percent of Blue heavy armor lost before Blue withdrawal.
5-8	Real	Maximum percent of Red dismounted, mortars, light armor, and heavy armor lost before Red withdrawal.

2-3. FILE STRUCTURE FOR WEAPON VULNERABILITY. The Weapon Vulnerability file is divided into two sections.

a. The first section contains 125 records describing the ability of 25 Blue weapons to kill 25 Red weapons in five range bands 0-200m, 201-400m, 401-600m, 601-800m, and 801-1000m. The records are structured as follows:

Record 1

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Alpha	Six-character name for Blue weapon 1.
2	Real	Probability of kill of Red weapon 1 by Blue weapon 1 at a range of 0-200m. (Probability of kill represents a catastrophic kill--both mobility and firepower).
3	Real	Probability of kill of Red weapon 2 by Blue weapon 1 at a range of 0-200m.
.	.	.
.	.	.
.	.	.
26	Real	Probability of kill of Red weapon 25 by Blue weapon 1 at a range of 0-200m.

Records 2-5

Describe the ability of Blue weapon 1 to kill 25 Red weapons in the remaining four range bands. The first 125 records on the file are required to describe all 25 Blue weapons.

b. The second section of this file, records 126 through 250, contains probabilities of kill for Red weapons firing against Blue targets. These records are structured the same as the Blue lethality records. This file is read in DIAM by subroutine PKIN.

2-4. FILE STRUCTURE FOR WEAPON MOVEMENT RATES.

a. Data in the Movement Rates file is used by DIAM to advance four attacker categories during the engagement phase of the battle and to move the withdrawing systems during the withdrawal phase of the battle. The rates represent rates of advance achievable under unsuppressed conditions. The rates are adjusted by DIAM to represent the suppressive effects of personnel and vehicular losses. The movement rate data must be described in meters per minute.

b. The file contains rates for four weapon categories (dismounted personnel, mortars, light armor, heavy armor) on two terrains (open and heavily vegetated). The file is structured into three sections keying on three visibility conditions (clear day, clear night, and heavily obscured day).

(1) The first section consists of two records describing Blue and Red movement rates on a clear day (visibility range greater than 15km). The records are structured as follows:

Record 1

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Movement rate of dismounted Blue in open terrain (meters/min).
2	Real	Movement rate of Blue mortars in open terrain (meters/min).
3	Real	Movement rate of Blue light armor in open terrain (meters/min).
4	Real	Movement rate of Blue heavy armor in open terrain (meters/min).
5-8	Real	Movement rate of Blue dismounted, mortars, light armor, and heavy armor in close, heavily vegetated terrain.

Record 2

Describes Red's movement in open and close terrain on a clear day.

(2) The second section contains two records describing Blue and Red movement rates at night. The form of records 3 and 4 is identical to records 1 and 2.

(3) The third section contains two records describing Blue and Red movement rates on a heavily obscured day (visibility range of 500 meters). The form of records 5 and 6 is identical to records 1 and 2.

2-5. FILE STRUCTURE FOR TARGET ACQUISITION RATES.

a. The Target Acquisition file data describe the ability of four generic sensor types to detect four types of targets at various ranges. The generic sensor types are unaided eye, optically aided eye, far infrared thermal imager, and image intensifier device. The targets being detected are personnel fully exposed, personnel in foxholes, armored vehicles fully exposed, and armored vehicles in hull defilade. The data represent average times for each sensor to detect each target at various ranges. The file is divided into three sections. Each section represents detection capabilities under conditions of clear day, clear night, and obscured night.

b. The first section, representing clear day, is structured as follows:

Record 1

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Real	Average time for Blue eye to detect a fully exposed vehicle at 0-200m (min/target).
2-4	Real	Average time for Blue eye to detect a hull defilade vehicle, fully exposed soldier, or soldier in defilade at 0-200m.
5-8	Real	Average time for a Blue optical system to detect four target types at 0-200m.
9-12	Real	Average time for a Blue thermal imager to detect four target types at 0-200m.
13-16	Real	Average time for a Blue image intensifier device to detect four target types at 0-200m.

Records 2-5

Consider Blue's ability to detect four Red targets on a clear day at target ranges of 201-400m, 401-600m, 601-800m, and 801-1000m. Their structure is identical to record 1.

Records 6-10

Contain detection times for four generic Red sensors to acquire four Blue targets in five equal range bands from 0 to 1000m. The structure of these records is identical to records 1-5.

c. The second section contains records 11-20. These records describe Blue and Red ability to detect targets on a clear night. The structure of these records is identical to records 1-10.

d. The third section contains records 21-30. These records describe Blue and Red ability to detect targets on an obscure day (visibility range 500m). The structure of these records is identical to records 1-10.

2-6. FILE STRUCTURE FOR WEAPONS CHARACTERISTICS.

a. The Weapons Characteristics file contains data describing the physical characteristics of 25 Blue systems and 25 Red systems. The data on each weapon system are used by the DIAM model to construct firing rates for each weapon. The file also contains pointers to the Movement Rates file and Target Acquisition file for each system, allowing DIAM to retrieve the proper movement and detection rates for each system.

b. The file is structured into two sections. The first section contains 25 records describing Blue weapon characteristics. The second section contains 25 records describing 25 Red weapons. The records have the following structure:

<u>Record Word</u>	<u>Data Type</u>	<u>Data Description</u>
1	Alpha	Six-character weapon name.
2	Integer	The type of primary sensor contained on this weapon: 1=eye, 2=optic, 3=thermal, 4=image intensifier.
3	Real	Round flight time of primary armament (seconds/200 meters).
4	Real	Number of rounds (bursts for burst fire systems) carried by this weapon.
5	Integer	Weapon platform movement category: 1=dismounted personnel, 2=mortars, 3=light armor, 4=heavy armor.
6	Real	Weapon firing cycle time. This represents the average time to aim, fire, and reload the weapon (seconds). Munition guidance time should not be included in this value.

The Blue weapons described in this file must be in the same order as their probability of kill records appear on the Weapon Vulnerability file.

CHAPTER 3

DIAM PROGRAM CODE

3-1. INTRODUCTION.

a. This chapter contains information on the DIAM program code. This introductory paragraph discusses programming philosophy, concepts, and techniques used in constructing the code for DIAM. The second paragraph describes the functional areas of DIAM and presents a system flowchart. The third paragraph contains figures and tables that briefly explain the subroutines called from each functional area and the primary variables influenced by each subroutine. Paragraph 3-4 explains the self-documenting concept used in DIAM with examples. Paragraph 3-5 contains the DIAM code as a subroutine called by subroutine INFANT of Jiffy.

b. The following guidelines were used in developing the DIAM code to allow for easier understanding, maintenance, and modification of the DIAM model.

(1) First, all subroutines are no longer than 150 lines and are functional in application. Efforts were made to keep the length around 50 lines, and only a few subprograms are over 80 lines. The biggest exception is the main DIAM subroutine, which is around 500 lines. However, this main subroutine consists of functional areas or separate procedures of less than 50 lines each.

(2) Second, the DIAM structure is basically two-level. Only the main DIAM subroutine passes control to and from each subroutine in a top-down process. (A third level is occasionally used when subroutine INIT is called to initialize an array.) This design allows for easier understanding of structure flow than do higher level structures.

(3) Third, the DIAM structure includes IF/THEN/ELSE statements, no common blocks, and self-documenting code. IF/THEN/ELSE programming avoids "GO TO" programming; with proper indentation this makes the structure flow easier to understand. No common blocks allows better control of debugging and testing. The self-documenting technique, explained in paragraph 3-4, was used to facilitate understanding, debugging, and future modification of the DIAM code. With this technique, each subroutine contains all information and only that information needed to understand the function of the subroutine.

3-2. DIAM FUNCTIONAL AREAS. This section contains a brief overview of the functional areas in DIAM. Figure 3-1 is a functional flow diagram of the model.

a. As shown in the figure, the low resolution data are loaded first. Since DIAM's first implementation was in conjunction with the Jiffy Model, the low resolution data are received from Jiffy. These data could be loaded by subroutine calls from the main DIAM subroutine if DIAM were used with other models or executed independently. The low resolution data include Blue and

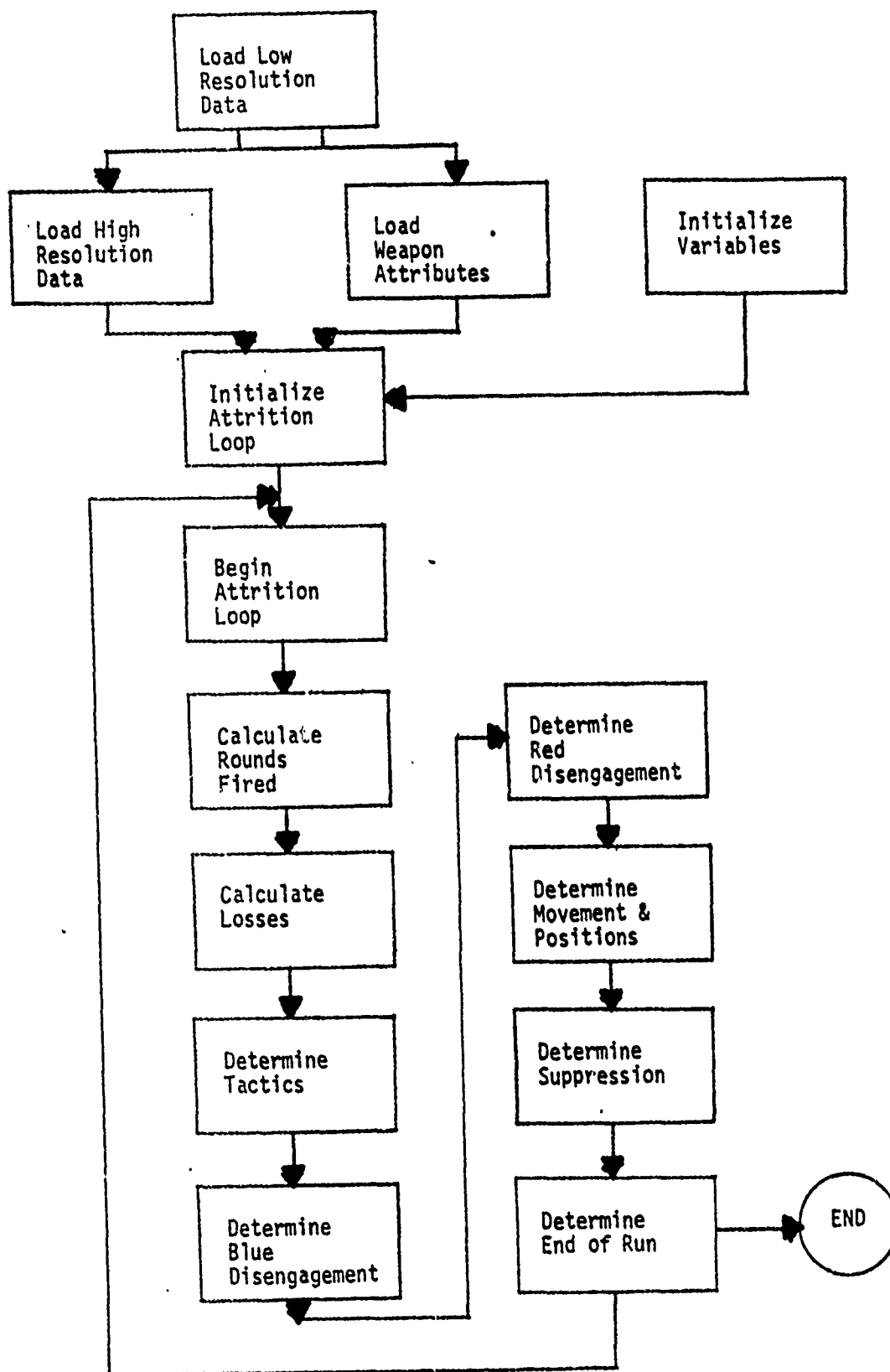


Figure 3-1. Flow chart of DIAM module.

Red weapon systems and scenario information. Predetermined artillery losses from Jiffy are also included, but artillery could be modeled differently in DIAM for different applications.

b. After a gamer selects the type and number of weapon systems and a tactical scenario from the DIAM library, the DIAM model selects the appropriate high resolution data and weapon attributes.

(1) The high resolution data contain terrain information for both forces, including visibility factors, attacker corridor widths, and disengagement criteria. This information is contained in a library and is accessed by the type of tactical scenario. Currently, the library contains terrain data for only a few terrain types. These scenarios require minimal set-up time (approximately 2 days). In the future as many as 30 scenarios will be available for access.

(2) The weapon attributes selected are from a data base developed for all possible weapons played in DIAM. DIAM allows a maximum of 10 weapons per side in a run. Weapon attributes include probability of kill, weapon characteristics, movement rates, and detection times for all Red and Blue weapon types selected for a given scenario.

c. The next two functional areas are initialization procedures. The first procedure initializes variables, arrays, indexes, and counters. The second procedure initializes ammunition loads, artillery losses per minute from Jiffy, and distances from the force centroid to its weapons for both Red and Blue forces. Defending minefields can then be entered, and the force visibility tables are initialized. Both forces are entered as dismounted forces. The attacking force then mounts its vehicles after the number of troops to mount is determined, and the attrition calculations are ready to begin.

d. The attrition loop starts by determining the distance between Red and Blue weapon types and their respective range bands. The range bands are then used to determine the visibility factors and the probability of kill between Red and Blue weapon types during the current minute.

e. Using this information, the next procedure calculates rounds fired by each Red and Blue weapon type. The results are calculated by a sequence of subroutines that first determines number of engageable targets, time to engage targets, rounds to kill targets, and time to kill targets. From this information, the projected rounds required to kill all engageable targets for each weapon type are calculated. These rounds are limited in the final subroutine to one-fourth the available ammunition to determine the actual rounds fired.

f. The next functional area calculates total Red and Blue weapon type losses during the minute. The primary attrition loss calculation occurs in the first two subroutines using the equations developed in chapter 1 where

initial losses, and then total expected losses, are calculated for all weapon types. Artillery and minefield losses are then determined before the mounted infantry personnel losses are calculated. Mounted personnel losses are determined from the losses of troop carriers and proportioned uniformly across the number of personnel inside the troop carriers. The Red and Blue losses are tallied, and the remaining Red and Blue weapon types are determined. The last subroutine of this procedure generates a killer/victim scoreboard for both Red and Blue weapon types.

g. New tactics are determined in the next procedure. Currently, DIAM plays two tactical modes: infantry personnel can dismount troop carriers at a chosen distance from the opposing force, and a percentage of armor vehicles can go into overwatch, also at a chosen distance. After new tactics are determined a killer/victim report is generated for the gamer at chosen minute intervals. The gamer then has the option of continuing the engagement or withdrawing one of the forces.

h. The next two procedures determine if Red or Blue forces disengage. As mentioned previously, the gamer can trigger a withdrawal. If not, attrition losses are checked every minute, and a force will disengage at a chosen attrition loss level. At this point, the gamer can again override the disengagement and continue the battle. Hence, in DIAM the gamer can have complete control of engaging and withdrawing forces or allow the battle to automatically disengage forces at chosen attrition levels.

i. New positions are calculated after disengagement is determined. The attacker moves forward if engaging or pursuing the withdrawing defender. The defender always remains stationary unless withdrawing.

j. One of the last procedures calculates fire and movement suppression for Red and Blue forces. This procedure is processed last since suppression is calculated as losses received divided by losses inflicted for each weapon type. During the first minute fire suppression is assumed to be 50 percent. Currently, suppression in DIAM is consistent with the method of suppression play in Jiffy where firepower ratios are used.

k. Finally, the last procedure determines if the attrition loop continues or ends. Currently, 1000 minutes is the limit during Red and Blue engagement. When either force is withdrawing the battle continues 10 minutes before ending.

3-3. SUBROUTINE SUMMARY. Table 3-1 provides a cross-referenced summary of the DIAM subroutines and their primary variables. Subroutines called by each functional area are shown, and the function of each subroutine is described. The primary variables for each subroutine are listed and described.

3-4. DIAM SELF-DOCUMENTATION CONCEPT. This paragraph explains the self-documenting technique and variable name convention used in DIAM.

Table 3-1. DIAM Subroutine Summary (continued next page)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Load Low Resolution Data	LRDT	Initializes Blue and Red force types and tactics and defense posture.	BFRCIP RFRCIP DPSTR TACA	Blue force type index Red force type index Defense posture index Tactics array
Load High Resolution Data	TERIN	Loads arrays containing visibility factors by weapon categories. Loads corridor widths of forces by weapon categories. Loads distance between force and force weapon categories.	PCRVBE PCRVBW PCRVWB PCRVRE PCVRW PCBWR DFCWC *AWDTH *BWDTH *RWDTH DGMATT	Percent Red visible to Blue during engagement Percent Red visible to Blue withdrawing Percent Red withdrawing visible to Blue Percent Blue visible to Red during engagement Percent Blue visible to Red withdrawing Percent Blue withdrawing visible to Red Offset distance between force centroid and weapon category centroid Corridor width for attacking force Corridor width for withdrawing Blue force Corridor width for withdrawing Red force Disengagement attrition levels for weapon categories
Load Weapon Attributes	PKIN	Loads array containing probability of kill for Blue and Red weapons. Loads Blue and Red weapon characteristics.	BRPK RBPk BCHR RCHR	SSPK for Blue vs Red Targets SSPK for Red vs Blue Targets Blue weapon characteristic array Red weapon characteristic array
	MOVIN	Loads arrays containing Red and Blue movement rates and detection times.	BMVRT RMVRT BDTCT RDTCT	Blue movement rate Red movement rate Blue detection times Red detection times

*Currently not used

Table 3-1. (continued)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Initialize Arrays and Variables	INDX1	Initializes counters, flags, and variables used in attrition loop.	DFRC	Defending force index
			BDFAT	Blue defending/attacking index
			RDFAT	Red defending/attacking index
			BDMNUM	Number of Blue dismounted infantry allowed in carrier
			RDMNUM	Number of Red dismounted infantry allowed in carrier
			BDMV	Blue dismount index
			ROMV	Red dismount index
			BOVWTH	Blue overwatch index
			ROVWTH	Red overwatch index
			BWDRW	Blue withdrawal index
			RWDRW	Red withdrawal index
			KNTMNT	Minute counter for DIAM battle
			KWDMNT	Minute counter for withdrawal
			FPFTM	Minute counter for final protective fires
	INDX2		BDSNG	Blue disengage index
			RDSNG	Red disengage index
			AMFLD	Minefield characteristic array
			BFLSFR	Blue false fire factor
			RFLSFR	Red false fire factor
			BHOLDS	Blue holding position index
			RHOLDS	Red holding position index
			ARRAY	Array to be initialized
			VAR	Value initialized for array

Table 3-1. (continued)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Initialize Attrition Loop	BSETLD	Initializes ammunition loads for Blue weapons.	BAMO	Ammunition loads for Blue weapon types
	RSETLD	Initializes ammunition loads for Red weapons.	RAMO	Ammunition loads for Red weapon types
	INTART	Initializes artillery losses from Jiffy.	BARTJF RARTJF	Blue artillery loss array from Jiffy Red artillery loss array from Jiffy
	INTOST	Initializes distances from force centroid to force weapon types.	DBFBWP	Distance from Blue force centroid to Blue weapon types
	MINCHR	Initializes defending minefield parameters and loss rates.	AMFLD AMLSR FMNFD BMNFD	Minefield characteristic array Minefield loss rates Location of front edge of minefield Location of rear edge of minefield
	PCTBL	Chooses two of the six available visibility tables based on force engagement or withdrawal.	PCBVRC PCRVCB	Percent of Blue weapon categories visible to Red weapon categories Percent of Red weapon categories visible to Blue weapon categories
	DMRTO	Calculates ratio of dismounted troops to troop carriers.	BDMRTO RDMRTO	Blue ratio of dismounted infantry to troop carriers Red ratio of dismounted infantry to troop carriers
	REMNT	Mounts dismounted infantry into troop carriers.	RDMV RNUMDM BDMV BNUMDM	Red dismount index Number of Red troops mounted per carrier Blue dismount index Number of Blue troops mounted per carrier

Table 3-1. (continued)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Begin Attrition Loop	WPNDST	Determines distance from Blue weapon types to Red weapon types.	DBWRWP	Distance from Blue weapon types to Red weapon types
			DRWBWP	Distance from Red weapon types to Blue weapon types
			DSTMIN	Minimum distance between Red and Blue weapon types
	RNGBND	Determines range bands from Blue weapon types to Red weapon types.	BRRGBD	Range band from Blue weapon type to Red weapon type
			RBRGBD	Range band from Red weapon type to Blue weapon type
	PCWPVS	Determines fraction of Red and Blue weapon types visible to Blue and Red weapon types.	PCBVRZ	Percent of Blue weapon types visible to Red weapon types
			PCRVBZ	Percent of Red weapon types visible to Blue weapon types
	PKWP	Determines SSPK for Blue vs Red and Red vs Blue weapon types.	BRPKW	SSPK for Blue firers vs Red target types
			RBPKW	SSPK for Red firers vs Blue target types
Calculation of Rounds Fired	NUMTGT	Calculates total number of Red and Blue engageable target types.	TOTRTG	Total number of Red engageable target types
			TOTBTG	Total number of Blue engageable target types
	TIMENG	Determines time to engage Red and Blue target types.	BTMENG	Blue time to engage Red target types
			RTMENG	Red time to engage Blue target types
	RNDKLL	Calculates rounds to kill Red and Blue target types.	BRDKLL	Number of Blue rounds to kill Red targets types
			RRDKLL	Number of Red rounds to kill Blue target types
	TMKLL	Calculates time to kill Blue and Red target types.	BTMKLL	Blue time to kill Red target types
			RTMKLL	Red time to kill Blue target types

Table 3-1. (continued)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Calculation of Rounds Fired (Cont)	RNDFRD	Calculates projected Blue and Red rounds fired.	BRDFR RRDFR	Rounds fired by Blue weapon types Rounds fired by Red weapon types
	RNDCK	Calculates actual rounds fired based on remaining ammunition loads.	BRDFR BAMO BRDSUM RRDFR RAMO RRDSUM	Rounds fired by Blue weapon types Ammunition loads of Blue weapon types Sum of rounds of Blue weapon types Rounds fired by Red weapon types Ammunition loads of Red weapon types Sum of rounds of Red weapon types
	ECLOSS	Calculates expected Blue and Red committee losses.	EBCLSS ERCLSS	Expected committee losses of Blue weapon types Expected committee losses of Red weapon types
	ETLOSS	Calculates total expected Blue and Red losses	EBTLSS ERTLSS	Total expected losses of Blue weapon types Total expected losses of Red weapon types
	ARTLSS	Calculates artillery losses for Red and Blue weapon types.	BARTLS RARTLS	Artillery losses for Blue weapon types Artillery losses for Red weapon types
	MNLSS	Calculates mine losses for Blue and Red weapon types.	BMNLSS RMNLSS	Mine losses for Blue weapon types Mine losses for Red weapon types
	DMSLSS	Calculates Red and Blue dismounted losses.	EBTLSS ERTLSS BARTLS RARTLS BMNLSS RMNLSS	See above
	TALLY	Cumulates total Red and Blue weapon type losses.	BDEAD RDEAD	Total Blue weapon type losses Total Red weapon type losses
JFLSS		Calculates killer/victim scoreboard for Red and Blue weapon types for Jiffy gamers.	BRKVLS RBKVLS	Blue killer/Red victim weapon type loss table Red killer/Blue victim weapon type loss table

Table 3-1. (continued)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Determination of New Tactics	TACDSM	Determines if attacking force dismounts.	BDMV RDMV	Blue force dismount index Red force dismount index
	TACOVW	Determines if attacking force goes into overwatch status.	BOVWTH ROVWTH	Blue force overwatch index Red force overwatch index
	REPRT	Displays report to gamers. Includes killer/victim score-board, minimum distance between forces, and asks gamer to continue or withdraw forces.	BDSNG RDSNG	Blue force disengage index Red force disengage index
Determination of Blue Force Disengagement	DSNG	Determines if Blue force disengages based on attrition losses. If Blue force is to disengage, then subroutines PCTBL, DMRT0, REMNT are called (See Initialize Attrition Loop functional area).	BWDRW BHOLDS	Blue force withdrawal index Blue hold position index
	DSNG	Determines if Red force disengages based on attrition losses. If Red force is to disengage, then subroutines PCTBL, DMRT0, REMNT are called. (See Initialize Attrition Loop functional area).	RWDRW RHOLDS	Red force withdrawal index Red hold position index
Determination of Movement Rates and Positions	MVRT	Determines movement rates for Red and Blue weapon types.	BWPMVR RWPMMVR	Blue weapon type movement rate Red weapon type movement rate
	NDIST	Calculates new distances between a force and its weapon types.	DBFBWP DRFRWP	Distance between Blue force centroid and Blue weapon types Distance between Red force centroid and Red weapon types

Table 3-1. (concluded)

Functional Area	Subroutines Called	Subroutine Function	Primary Variables	Primary Variable Description
Calculation of Fire and Movement Suppression	ARTSP	Calculates Blue and Red artillery losses for suppression only.	BARTSP	Blue weapon type artillery losses used only for suppression calculation
			RARTSP	Red weapon type artillery losses used only for suppression calculation
	SPDG	Calculates Blue and Red fire and movement suppression degradation factors.	BSPFDG	Blue weapon type fire suppression degradation
			RSPFDG	Red weapon type fire suppression degradation
Check for End of Module Run	REPT	This procedure checks and adds minute counters and returns control to Jiffy after a force has withdrawn 10 minutes (See Determination of New Tactics Functional Area).	BSPMDG	Blue weapon type movement suppression degradation
			RSPMDG	Red weapon type movement suppression degradation
			KWDMNT	Minute counter for withdrawal
			KNTMNT	Minute counter for engagement

a. The main program is sectioned into functional areas or procedures and, with comment statements, is self-explanatory. The main program's primary function is to call subroutines. Each subroutine begins with a brief description of the purpose. When a subroutine is called from the main program, the parameters in the calling statement are listed so that returning variables are at the end of the argument list. All parameters are explained in the subroutine called.

b. The following variable name convention was adopted for single and dual purpose subroutines. Single purpose subroutines are those that receive only one set of parameters from the call statements of the main program. For single purpose subroutines, the parameters match the calling parameters of the main program. Dual purpose subroutines are those that receive two sets of parameters from the main program. In the first case, the set of parameters will be Blue force variables that contain Blue force information in relation to Red. In the second case, the set of parameters will be Red force variables that contain Red force information in relation to Blue. To represent both cases the variable name convention in the subroutines results in "X" force variables that contain "X" force information in relation to "Y" force information.

c. Figures 3-2 and 3-3 show subroutines INDX2 and RNDKLL, a single purpose subroutine and a dual purpose subroutine, respectively, being called from the main program. The dual purpose subroutine RNDKLL is called twice, once to determine Blue rounds to kill Red targets and again to determine Red rounds to kill Blue targets. The first time the main program passes Blue and Red arrays to interpret "X" force for Blue force and "Y" force for Red force variables. The second time the main program passes Blue and Red arrays to interpret "X" force for Red force and "Y" force for Blue force variables.

d. A knowledge of the tactics currently played in DIAM is required to understand most variable names and array variables. All weapons played in DIAM are categorized in one of four groups: dismounted infantry, mortars, light armor, and heavy armor. Two tactical modes are played by the weapons: mounted/dismounted for troops and carriers, and heavy armor in overwatch. Table 3-2 shows the tactical modes for weapons in each weapon category.

```

C   INITIALIZE ARRAYS AND VARIABLES
C
C   DETERMINE INDEXES FOR BLUE AND RED FORCES
      CALL INDX1(DFHC,BDFAT,RDFAT,BFRCTP,BDMHAX,RDMHAX,
1      BWDWR,RWDRW,BDMV,RDMV,BOVWTH,ROVWTH)
      CALL INDX2(KNTMNT,KWDMNT,FPFTM,BDSNG,RDSNG,AMFLD,
1      BDFAT,BFLSFR,RFLSFR,BHOLDS,RHOLDS)
C ***** SUBROUTINE INDX2 *****
C
C
C
C   SUBROUTINE INDX2(KNTMNT,KWDMNT,FPFTM,BDSNG,RDSNG,AMFLD,
1      BDFAT,BFLSFR,RFLSFR,BHOLDS,RHOLDS)
C
C   THIS SUBROUTINE INITIALIZES THE FOLLOWING VARIABLES AND
C   INDEXES
C
C   KNTMNT      MINUTE COUNTER FOR DIAM BATTLE
C   KWDMNT      MINUTE COUNTER DURING WITHDRAWAL IN DIAM
C   FPFTM       MINUTE COUNTER FOR FINAL PROTECTIVE FIRES
C   BDSNG       INDEX FOR X FORCE: 1=ENGAGING, 2=DISENGAGING
C   RDSNG       INDEX FOR Y FORCE: 1=ENGAGING, 2=DISENGAGING
C   AMFLD(1)    INDEX FOR MINES IN USE: 0=NO, 1=YES
C   AMFLD(2)    MINEFIELD WIDTH
C   AMFLD(3)    MINEFIELD FRACTION NOT BYPASSED
C   AMFLD(4)    FRACTION OF ATTACKING FORCE ENTERING MINEFIELD
C   BFLSFR      FALSE FIRING FACTOR FOR BLUE FORCE
C   RFLSFR      FALSE FIRING FACTOR FOR RED FORCE
C   BDFAT       INDEX FOR BLUE FORCE: 1=DEFENDING, 2=ATTACKING
C   BHOLDS      INDEX FOR BLUE FORCE: 1=BLUE FORCE HOLDS POSITION,
C               2=BLUE IS ALLOWED TO WITHDRAW
C   RHOLDS      INDEX FOR RED FORCE: 1=RED FORCE HOLDS POSITION,
C               2=RED IS ALLOWED TO WITHDRAW
C   DIMENSION AMFLD(4)
C   INITIALIZE VARIABLES:
      KNTMNT=1
      KWDMNT=0
      FPFTM=0
      BDSNG=1
      RDSNG=1
      BHOLDS=2
      RHOLDS=2
C
C   DO 10 I=1,4
      AMFLD(I) = 0
10  CONTINUE
C
C   IF (BDFAT.EQ.1) THEN
      BFLSFR = 0.8
      RFLSFR = 0.4
C   ELSE
      BFLSFR = 0.4
      RFLSFR = 0.8
C   END IF
C
C   RETURN
C   END

```

Figure 3-2. Single purpose subroutine

```

C      CALCULATE ROUNDS TO KILL RED TARGET TYPES
C      FOR BLUE WEAPON TYPES
C      CALL RNDKLL (BPKW, BRDKLL)
C
C      CALCULATE ROUNDS TO KILL BLUE TARGET TYPES
C      FOR RED WEAPON TYPES
C      CALL RNDKLL (RBPW, RDKLL)

C***** SUBROUTINE RNDKLL *****
C
C
C      SUBROUTINE RNDKLL (XYPKW, XRDKLL)
C
C      THIS SUBROUTINE CALCULATES XRDKLL (I, M, J), ROUNDS TO KILL
C      FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
C      AGAINST Y FORCE TARGET TYPES M OF WHICH M=1,20
C      ARE IN TACTICAL MODE 2
C
C      XYPKW (I, M, J)    PROBABILITY OF KILL (SSPK) FOR X FORCE
C                        WEAPON TYPES I IN TACTICAL MODE J=1,2
C                        AGAINST Y FORCE TARGET TYPE M OF
C                        WHICH M=1,20 ARE IN TACTICAL MODE 2
C
C      DIMENSION XYPKW (10, 20, 2), XRDKLL (10, 20, 2)
C
C      DO 10 J=1,2
C        DO 20 I=1,10
C          DO 30 M=1,20
C            DO 40 K=1,10
C              PK=XYPKW (I, K, (L-1)*10, J)
C              IF (PK.GT.0) THEN
C                RDKLL=1/PK
C              ELSE
C                RDKLL=0
C              END IF
C              XRDKLL (I, K, (L-1)*10, J) = RDKLL
C            CONTINUE
C          CONTINUE
C        CONTINUE
C      CONTINUE
C
C      RETURN
C      DEBUG SUBCHK
C      AT 100
C      END

```

Figure 3-3. Dual purpose subroutine

Table 3-2. Tactical modes for each weapon category

<u>Weapon Category</u>	<u>Tactical Mode (1)</u>	<u>Tactical Mode (2)</u>
Dismounted Infantry	Mounted in troop carriers	Not in troop carriers
Light/Troop Carriers	Troop carriers mounted	Troop carriers dis-mounted
Light/Non-Troop Carriers	(Engaging)	-999 as non-troop carrier flag
Heavy	Not in overwatch	In overwatch
Mortars	(Engaging)	N/A

3-5. DIAM CODE. This section contains the DIAM code interfaced with Jiffy. Some features of this DIAM version are unique to Jiffy. For example, most of the low resolution data or gamer input for DIAM is implemented by the subroutine Jiffy before DIAM is called by INFANT. Blue and Red weapons from the Jiffy element array are chosen. The arrays IBNFID and IRDFID contain the Jiffy weapon pointers, a mounted or dismounted flag, a non-carrier flag, and a secondary weapon flag for each of the weapon types chosen. Artillery losses from Jiffy are added back to the weapons played in DIAM. Then DIAM reapportions the artillery losses each minute of battle. The DIAM code as shown has been tested and is currently being used to support war game studies with good results.

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100. C ***** SUBROUTINE DIAMMAIN *****
110. C
120. C
130. C
140. SUBROUTINE DIAM (BRKVLS, BRKVLS, SHOTS, IRPTH, IBAT, K25, K15, K20,
150. 1 K27, IOBS, TRNTP, DFRC, AFRC, BWP, RWP, BARTJF,
160. 1 RARTJF, ARPAM, BNUM, RNUM, IBU, IRD, IBNFID,
170. 1 IRNFID, IU, DSTBR)
180. C
190. C
200. COMMON/RELOZ/IOAY1, XINX(4), ICARD(20), IHV, IHN, IHB, IHVS, IHNO
210. C
220. C
230. DIMENSION BWP(10,3), RWP(10,3), OGMATT(4,2), BARTJF(10,4)
240. 1, RARTJF(10,4), ARPAM(8), AMFLD(4), AMLSR(4), AMDT(4,5)
250. 2, BMDTH(4,5), RMDTH(4,5), SHOTS(10,2), PREP(2), IBU(10)
260. 3, IRD(10), BAH(10,2), RAH(10,2), IBNFID(25,4), IRNFID(25,4)
270. C
280. 2, PCRVBE(4,4,5), PCRVBM(4,4,5), PCRVB(4,4,5), PCVRE(4,4,5)
290. 3, PCVBM(4,4,5), PCVBR(4,4,5), DFCWC(4,2)
300. C
310. 4, BRPK(10,10,5), RBP(10,10,5), BCHR(10,5), RCHR(10,5)
320. 5, BMVR(4,2), RMVR(4,2), BDTCT(4,4,5), RDTCT(4,4,5), TACA(2,3)
330. C
340. 6, BDEAD(10,2), RDEAD(10,2), BSPFDG(10,2), RSPFDG(10,2)
350. 7, BSPMG(10,2), RSPMG(10,2), BMNLSS(10,2), RMNLSS(10,2)
360. 8, BRDSUM(10,2), RRDUM(10,2)
370. C
380. 9, BFBUP(10,2), DRFRUP(10,2), PCVRC(4,4,5), PCVBC(4,4,5)
390. C
400. 1, DBWRUP(10,20,2), BRGBO(10,20,2), RRGBO(10,20,2)
410. 2, PCVBZ(10,20,2), PCVBZ(10,20,2), BRPKW(10,20,2)
420. 3, BRPKW(10,20,2), DRUBUP(10,20,2)
430. C
440. 4, TOTRG(10,2), TOTBTG(10,2)
450. 5, BTMENG(10,20,2), RTMENG(10,20,2), BRDKLL(10,20,2)
460. 6, BRDKLL(10,20,2), BTMKLL(10,20,2), RTMKLL(10,20,2)
470. 7, BRDFR(10,20,2), RRDFR(10,20,2)
480. C
490. 8, EBCLS(10,20,2), ERCLS(10,20,2), ERTLSS(10,2), ERTLSS(10,2)
500. 9, BWPVR(10,2), RWPVR(10,2), BARTLS(10,2), RARTLS(10,2)
510. 1, PARTSP(10,2), RARTSP(10,2), BRKVLS(12,13), RBKVLS(12,13)
520. C
530. C
540. C
550. C LOAD LOW RESOLUTION DATA
560. C
570. C INITIALIZE THE REST OF LOW RESOLUTION DATA
580. C CALL LRT16FRC3P, RFRCTP, OPSTR, TACA)
590. C
600. C
610. C
620. C
630. C
640. C
650. C
660. C LOAD HIGH RESOLUTION DATA
670. C
680. C LOAD PERCENT VISIBLE TABLES, DISTANCES, AND CORRIDOR WIDTHS
690. C CALL IERIN1BAT, K25, PCRVBE, PCRVBM, PCRVB, PCVRE, PCVBM,
700. 1 PCVBR, DFCWC, AMDT, BMDTH, RMDTH, OGMATT)
710. C
720. C

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730.  C
740.  C  LOAD WEAPON ATTRIBUTES
750.  C
760.  C  LOAD PROBABILITY OF KILL AND WEAPON CHARACTERISTICS TABLES
770.      NUMB = BNUM
780.      NUMR = RNUM
790.      CALL PKINIBRPK,RBPK,BCHR,RCHR,IBU,IRD,K15,K16,NUMP,NUMR,
800.      1  IU)
810.  C
820.  C  LOAD BLUE AND RED MOVEMENT RATES AND DETECTION DATA
830.      ITRNTP = TRNTP
840.      CALL MOVINIO'S,ITRNT,K27,K20,BMVRT,RMVRT,BDTCT,RODTCT)
850.  C
860.  C
870.  C
880.  C  INITIALIZE ARRAYS AND VARIABLES
890.  C
900.  C  DETERMINE INDEXES FOR BLUE AND RED FORCES
910.      CALL INDX1(DFRC,BDFAT,RDFAT,BFRCIP,BOMMAX,ROMMAX,
920.      1  BMDRW,RMDRW,BDMV,RDMV,BOVWTH,ROVWTH)
930.      CALL INDX2(KNTHNT,KWDMNT,FPFTM,BDSNG,RDSNG,AMFLD,
940.      1  BDFAT,BFLSFR,RFLSFR,BHOLDS,RHOLDS)
950.  C
960.      VAR=0.0
970.  C  ZERO-OUT CUMULATIVE KILLS FOR BLUE WEAPON TYPES
980.      CALL INIT1(BDEAD,VAR)
990.  C
1000.  C  ZERO-OUT CUMULATIVE KILLS FOR RED WEAPON TYPES
1010.      CALL INIT1(RDEAD,VAR)
1020.  C
1030.  C  ZERO-OUT BLUE ARTILLERY LOSSES
1040.      CALL INIT1(BARTLS,VAR)
1050.  C
1060.  C  ZERO-OUT RED ARTILLERY LOSSES
1070.      CALL INIT1(RARTLS,VAR)
1080.  C
1090.  C  ZERO-OUT BLUE ROUNDS FIRED SUMMATION
1100.      CALL INIT1(BRDSUM,VAR)
1110.  C
1120.  C  ZERO-OUT RED ROUNDS FIRED SUMMATION
1130.      CALL INIT1(RRDSUM,VAR)
1140.  C
1150.  C  VAR = 0.5
1160.  C  ZERO-OUT BLUE SUPPRESSION FIRE DEGRADATION
1170.      CALL INIT1(BSPFDG,VAR)
1180.  C
1190.  C  ZERO-OUT RED SUPPRESSION FIRE DEGRADATION
1200.      CALL INIT1(RSPFDG,VAR)
1210.  C
1220.  C  VAR=0.0
1230.  C  ZERO-OUT BLUE SUPPRESSION MOVEMENT DEGRADATION
1240.      CALL INIT1(BSPMDG,VAR)
1250.  C
1260.  C  ZERO-OUT RED SUPPRESSION MOVEMENT DEGRADATION
1270.      CALL INIT1(RSPMDG,VAR)
1280.  C
1290.  C
1300.  C
1310.  C  INITIALIZE ATTRITION LOOP
1320.  C
1330.  C  INITIALIZE AMMUNITION LOADS FOR BLUE WEAPONS
1340.  C
1350.  C
1360.  C
1370.  C
1380.  C
1390.  C
1400.  C
1410.  C
1420.  C
1430.  C
1440.  C

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1450.      BSLO=1.0
1460.      BSLO=1.0
1470.      CALL BSETLD(18NUM,18U,BSLO,BSLDR,BCHR,18NFID,BAMO)
1490.      C
1500.      C      INITIALIZE AMMUNITION LOADS FOR RED WEAPONS
1510.      CALL RSETLD(18NUM,18D,BSLO,BSLDR,RCHR,18NFID,BAMO)
1530.      C
1540.      C      INITIALIZE ARTILLERY LOSSES FROM JIFFY
1550.      CALL INTART(18PAM,BARTJF,RARTJF)
1560.      C
1570.      C      INITIALIZE DISTANCE FROM BLUE FORCE CENTROID
1580.      C      TO BLUE WEAPON TYPES
1590.      IFRC=1
1600.      CALL INTDST(18RC,BCHR,BWPN,DFCWC,DBFBWP)
1610.      C
1620.      C      INITIALIZE DISTANCE FROM RED FORCE CENTROID
1630.      C      TO RED WEAPON TYPES
1640.      IFRC=2
1650.      CALL INTDST(18RC,RCHR,RWPN,DFCWC,DRFRWP)
1660.      C
1670.      C      DETERMINE MINEFIELD CHARACTERISTICS
1680.      CALL MINCH(18MFLD,FMNFLD,BMNFLD,DFCWC,DFRC,AHLSR)
1690.      C
1700.      C      DETERMINE THE VISIBILITY TABLES TO USE IN LOOP
1710.      CALL PCTBL(18BDRW,RDRW,DFRC,PCRVBE,PCRVBW,PCRVB,
1720.      1      PCBVRE,PCBVW,PCBWR,PCRVBC,PCBVRC)
1730.      C
1740.      C      DETERMINE NUMBER OF TROOPS TO MOUNT FOR ATTACKING FORCE
1750.      IF(18DFAT.EQ.2 .AND. 18DMV.EQ.2) THEN
1760.      CALL DMRT(18CHR,BWPN,BDMRT)
1770.      CALL REMNT(18CHR,BWPN,BDMAX,BDMV,BDMRT,18NUMD,
1780.      1      DBFBWP)
1790.      ELSE IF(18DFAT.EQ.2 .AND. 18DMV.EQ.2) THEN
1800.      CALL DMRT(18CHR,RWPN,RDMRT)
1810.      CALL REMNT(18CHR,RWPN,RDMAX,RDMV,RDMRT,18NUMD,
1820.      1      DRFRWP)
1830.      ELSE
1840.      END IF
1850.      C
1890.      C
1900.      C
1910.      C      BEGIN ATTRITION LOOP
1920.      C
1930.      C      DETERMINE DISTANCE FROM BLUE WEAPON TYPES
1940.      C      TO RED WEAPON TYPES
1950.      10      CALL WPNDST(DBFBWP,DRFRWP,DSTBR,BWPN,RWPN,DBWRWP,DSTMIN)
1960.      C
1970.      C      DETERMINE RANGE BANDS FOR BLUE WEAPON TYPES
1980.      C      TO RED WEAPON TYPES
1990.      CALL RNGBND(DBWRWP,BRRGBD)
2000.      C
2010.      C      DETERMINE DISTANCE AND RANGE BANDS FOR RED WEAPON
2020.      C      TYPES TO BLUE WEAPON TYPES
2030.      CALL RNGDST(BRRGBD,BRRGBD,DBWRWP,DRFBWP)
2040.      C
2050.      C      DETERMINE FRACTION OF BLUE WEAPON TYPES VISIBLE
2060.      C      TO RED WEAPON TYPES
2070.      CALL PCWPVS(18CHR,RCHR,PCBVRC,BRRGBD,PCBVZ)
2080.      C
2090.      C      DETERMINE FRACTION OF RED WEAPON TYPES VISIBLE
2100.      C      TO BLUE WEAPON TYPES

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2110.      CALL PCWPVS(RCHR,BCHR,PCRVBC,RBRGBD,PCRVB2)
2120.      C
2130.      C      DETERMINE SINGLE SHOT PROBABILITY OF KILL
2140.      C      FOR BLUE WEAPONS AGAINST RED TARGETS
2150.      CALL PKWP(BRPK,BRRGBD,BRPKW)
2160.      C
2170.      C      DETERMINE SINGLE SHOT PROBABILITY OF KILL
2180.      C      FOR RED WEAPONS AGAINST BLUE TARGETS
2190.      CALL PKWP(RBPk,RBRGBD,RBPKW)
2230.      C
2240.      C
2250.      C
2260.      C      CALCULATION OF ROUNDS FIRED BY WEAPON TYPE
2270.      C
2280.      C      CALCULATE TOTAL NUMBER OF ENGAGABLE RED TARGET TYPES
2290.      C      FOR BLUE WEAPON TYPES
2300.      CALL INIT1(TOTRTG,VAR)
2310.      CALL NUMTGT(BRPKW,RWPN,PCRVB2,RSPFDG,TOTRTG)
2320.      C
2330.      C      CALCULATE TOTAL NUMBER OF ENGAGABLE BLUE TARGET TYPES
2340.      C      FOR RED WEAPON TYPES
2350.      CALL INIT1(TOTBTG,VAR)
2360.      CALL NUMTGT(RBPKW,BWPN,PCBVR2,BSPFDG,TOTBTG)
2370.      C
2380.      C      CALCULATE TIME TO ENGAGE ALL RED TARGET TYPES
2390.      C      FOR BLUE WEAPON TYPES
2400.      CALL TIMENG(BOVWTH,BRPKW,BRRGBD,BCHR,RCHR,BDFAT,
2410.      1      BDTCT,BTMENG)
2420.      C
2430.      C      CALCULATE TIME TO ENGAGE ALL BLUE TARGET TYPES
2440.      C      FOR RED WEAPON TYPES
2450.      CALL TIMENG(ROVWTH,RBPKW,RBRGBD,RCHR,BCHR,RDFAT,
2460.      1      RDTCT,RTMENG)
2470.      C
2480.      C      CALCULATE ROUNDS TO KILL RED TARGET TYPES
2490.      C      FOR BLUE WEAPON TYPES
2500.      CALL RNDKLL(BRPKW,BRDKLL)
2510.      C
2520.      C      CALCULATE ROUNDS TO KILL BLUE TARGET TYPES
2530.      C      FOR RED WEAPON TYPES
2540.      CALL RNDKLL(RBPKW,RDKLL)
2550.      C
2560.      C      CALCULATE TIME TO KILL RED TARGET TYPES
2570.      C      FOR BLUE WEAPON TYPES
2580.      CALL TMKLL(BTMENG,BCHR,BRDKLL,BRRGBD,BTMKLL)
2590.      C
2600.      C      CALCULATE TIME TO KILL BLUE TARGET TYPES
2610.      C      FOR RED WEAPON TYPES
2620.      CALL TMKLL(RTMENG,RCHR,RDKLL,RBRGBD,RTMKLL)
2630.      C
2640.      C      CALCULATE PROJECTED ROUNDS TO FIRE BY BLUE WEAPONS
2650.      C      AGAINST RED TARGET TYPES
2660.      CALL RNDFRD(BTMKLL,TOTRTG,BWPN,RWPN,PCBVR2,PCRVB2,
2670.      1      BDFAT,BWDRW,BRDKLL,BSPFDG,RSPFDG,BRDFR)
2680.      C
2690.      C      CALCULATE PROJECTED ROUNDS TO FIRE BY RED WEAPONS
2700.      C      AGAINST BLUE TARGET TYPES
2710.      CALL RNDFRD(RTMKLL,TOTBTG,RWPN,BWPN,PCRVB2,PCBVR2,
2720.      1      RDFAT,RWDRW,RDKLL,RSPFDG,BSPFDG,RDFR)
2730.      C
2740.      C      CALCULATE ACTUAL ROUNDS FIRED BY BLUE WEAPONS

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2770.      CALL RNDCK(BWPN,BCHR,RCHR,BNUM,RNUM,BRDFR,BAMO,BKDSUM)
2810.      C
2820.      C      CALCULATE ACTUAL ROUNDS FIRED BY RED WEAPONS
2830.      CALL RNDCK(RWPN,RCHR,BCHR,RNUM,BNUM,RRDFR,RAMO,RRDSUM)
2890.      C
2900.      C
2910.      C
2920.      C      CALCULATION OF TOTAL LOSSES
2930.      C
2940.      C      CALCULATE EXPECTED BLUE COMMITTEE LOSSES
2950.      CALL ECLOSS(BBPN,BWPN,PCBRZ,RRDFR,RFLSFR,BSPFUG,EECLSS)
2960.      C
2970.      C      CALCULATE EXPECTED RED COMMITTEE LOSSES
2980.      CALL ECLOSS(RBPN,RWPN,PCRBZ,RRDFR,RFLSFR,RSPFUG,ERCLSS)
2990.      C
3000.      C      CALCULATE TOTAL EXPECTED DIRECT FIRE BLUE LOSSES
3010.      CALL ETLOSS(BWPN,EBCLSS,EBTLSS)
3020.      C
3030.      C      CALCULATE TOTAL EXPECTED DIRECT FIRE RED LOSSES
3040.      CALL ETLOSS(RWPN,ERCLSS,ERTLSS)
3050.      C
3060.      C      CALCULATE BLUE ARTILLERY LOSSES
3070.      CALL ARTLSS(BNTMNT,ARPAM,BARTJF,BWPN,BCHR,BARTLS)
3080.      C
3090.      C      CALCULATE RED ARTILLERY LOSSES
3100.      CALL ARTLSS(RNTMNT,ARPAM,RARTJF,RWPN,RCHR,RARTLS)
3110.      C
3120.      C      CALCULATE ATTACKER MINE LOSSES
3130.      IF(BDFAT.EQ.2) THEN
3140.          CALL MNLSS(BMFLO,AHLR,AWDTH,DSTBR,FMFLO,BMFLO,
3150.      1      BCHR,BWPN,DBFBWP,BMNLSS)
3160.      ELSE
3170.          CALL MNLSS(RMFLO,AHLR,AWDTH,DSTBR,RMFLO,BMNLSS,
3180.      1      RCHR,RWPN,DRFRWP,RMNLSS)
3190.      END IF
3200.      C
3210.      C      CALCULATE MOUNTED INFANTRY LOSSES
3220.      IF(BDMV.EQ.1) THEN
3230.          CALL DSHLSS(BNUMDM,BWPN,BCHR,EBTLSS)
3240.          CALL DSHLSS(BNUMDM,BWPN,BCHR,BARTLS)
3250.          CALL DSHLSS(BNUMDM,BWPN,BCHR,BMNLSS)
3260.      END IF
3270.      IF(RDMV.EQ.1) THEN
3280.          CALL DSHLSS(RNUMDM,RWPN,RCHR,ERTLSS)
3290.          CALL DSHLSS(RNUMDM,RWPN,RCHR,RARTLS)
3300.          CALL DSHLSS(RNUMDM,RWPN,RCHR,RMNLSS)
3310.      END IF
3320.      C
3330.      C      CUMULATE TOTAL LOSSES FOR BLUE WEAPON TYPES
3340.      CALL TALLY(BWPN,EBTLSS,BARTLS,BMNLSS,BDEAD)
3350.      C
3360.      C      CUMULATE TOTAL LOSSES FOR RED WEAPON TYPES
3370.      CALL TALLY(RWPN,ERTLSS,RARTLS,RMNLSS,RDEAD)
3380.      C
3390.      C      CALCULATE BLUE TO RED KILLER VICTIM SCOREBOARD
3400.      CALL JFLSS(RCHR,RWPN,ERCLSS,ERTLSS,RARTLS,RMNLSS,PKKVL)
3410.      C
3420.      C      CALCULATE RED TO BLUE KILLER VICTIM SCOREBOARD
3430.      CALL JFLSS(BCHR,BWPN,EBCLSS,EBTLSS,BARTLS,BMNLSS,PKKVL)
3440.      C
3450.      C

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3490.  C
3500.  C   DETERMINE NEW TACTICS
3510.  C
3520.  C   DETERMINE NEW TACTICAL MODE FOR BLUE FORCE
3530.      IF (BDFAT.EQ.2 .AND. BWORD.EQ.1) THEN
3540.      IF (BDMV.EQ.1) THEN
3550.          CALL TACDSM(BDMV,BCHR,RCHR,BWPN,DBFB,P,
3560.      1      DBWRWP,TACA)
3570.      END IF
3580.      IF (BOVWTH.EQ.1) THEN
3590.          CALL TACOVW(BOVWTH,BCHR,RCHR,BWPN,DBFBWP,
3600.      1      DBWRWP,TACA)
3610.      END IF
3620.      END IF
3630.  C
3640.  C   DETERMINE NEW TACTICAL MODE FOR RED FORCE
3650.      IF (RDFAT.EQ.2 .AND. RWORD.EQ.1) THEN
3660.      IF (RDMV.EQ.1) THEN
3670.          CALL TACDSM(RDMV,RCHR,BCHR,RWPN,DRFRWP,
3680.      1      DRWBWP,TACA)
3690.      END IF
3700.      IF (ROVWTH.EQ.1) THEN
3710.          CALL TACOVW(ROVWTH,RCHR,BCHR,RWPN,DRFRWP,
3720.      1      DRWBWP,TACA)
3730.      END IF
3740.      END IF
3750.  C
3760.  C
3770.  C   DISPLAY REPORT FOR GAMERS
3780.      IF ((KNTMNT/IRPTH)*IRPTH-KNTMNT).EQ.0) THEN
3790.      CALL REPT(KNTMNT,RBKVLS,BRKVLS,BNUM,RNUM,BDEAD,
3800.      1      RDEAD,BWPN,RWPN,BDSNG,RDSNG,BWORD,RWORD,BRDSUM,
3810.      2      RRDSUM,OSTMIN)
3820.      END IF
3830.  C
3840.  C
3850.  C
3860.  C
3870.  C
3880.  C
3890.  C
3900.  C   DETERMINE IF BLUE FORCE DISENGAGES
3910.  C
3920.  C   CHECK FOR BLUE DISENGAGEMENT
3930.      IF (BWORD.EQ.1 .AND. RWORD.EQ.1) THEN
3940.      IF (RC=)
3950.          CALL DSNGIBHOLDS,BDSNG,BWPN,BCHR,BDEAD,IFRC,DGMATT,BWORD)
3960.  C
3970.  C   WHEN BLUE WITHDRAWS, THEN INITIALIZE NEW VISIBILITY
3980.  C   TABLES, REMOUNT FORCE, AND RELEASE OVERWATCH STATUS
3990.      IF (BWORD.EQ.2) THEN
4000.          PRINT *, 'BLUE TO WITHDRAW AT ',KNTMNT, ' MINUTES'
4010.          PRINT *, 'MINIMUM DISTANCE TO RED FORCE IS ',OSTMIN
4020.          PRINT *, 'DO YOU WISH TO WITHDRAW BLUE FORCES?'
4030.          CALL REEDAT(IANS)
4040.          IF (IANS.EQ.1) THEN
4050.              NWDMNT = KNTMNT
4060.              CALL PCIBL(BWORD,RWORD,DFRC,PCRVBE,PCRVBW,PCRVVB,
4070.      1      PCBVRE,PCBVWR,PCBVVR,PCRVBC,PCBVRC)
4080.              IF (BDMV.EQ.2) THEN
4090.                  CALL DMRTIO(BCHR,BWPN,BDMRTIO)
4100.                  CALL REMNT(BCHR,BWPN,BDMAX,BDMV,BDMRTIO,BNUMDM,
4110.      1      DBFBWP)
4120.      END IF

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4120.      IF (BOVWTH.EQ.2) THEN
4130.          BOVWTH = 1
4140.      END IF
4150.      ELSE
4160.          BHOLDS = 1
4170.          BWDW = 1
4180.          BDSNG = 1
4190.      END IF
4200.      END IF
4210.      END IF
4220.      C
4230.      C
4240.      C
4250.      C      DETERMINE IF RED FORCE DISENGAGES
4260.      C
4270.      C
4280.      C      CHECK FOR RED DISENGAGEMENT
4290.          IF (BWDW.EQ.1 .AND. RWDW.EQ.1) THEN
4300.              IFRC=2
4310.              CALL DSNGIRHOLDS,RDSNG,RWPN,RCHR,RDEAD,IFRC,DGMATT,RWDW)
4320.      C
4330.      C      WHEN RED WITHDRAWS, THEN INITIALIZE NEW VISIBILITY
4340.      C      TABLES, REMOUNT FORCE, AND RELEASE OVERWATCH STATUS
4350.          IF (RWDW.EQ.2) THEN
4360.              PRINT *, ' RED TO WITHDRAW AT ',KNTMNT,' MINUTES'
4370.              PRINT *, ' MINIMUM DISTANCE TO BLUE FORCE IS ',DSIMIN
4380.              PRINT *, ' DO YOU WISH TO WITHDRAW RED FORCES?'
4390.              CALL FEEDAIANS)
4400.              IF (IANS.EQ.1) THEN
4410.                  NDMNT = KNTMNT
4420.                  CALL PCTBL(BWDW,RWDW,DFRC,PCRVE,PCRWB,PCRWB,
1          PCBVE,PCBVRW,PCBWR,PCRVC,PCBVR)
4430.                  IF (RDMV.EQ.2) THEN
4440.                      CALL DMRTORCHR,RWPN,RDMRT)
4450.                      CALL REMNTIRCHR,RWPN,RDMAX,RDMV,RDMRT,RNUMD,
1          DFRWP)
4460.      C
4470.      C      END IF
4480.      C      IF (ROVWTH.EQ.2) THEN
4490.          ROVWTH = 1
4500.      END IF
4510.      ELSE
4520.          RHOLDS = 1
4530.          RWDW = 1
4540.          RDSNG = 1
4550.      END IF
4560.      END IF
4570.      END IF
4580.      C
4590.      C
4600.      C
4610.      C      DETERMINE MOVEMENT RATES AND NEW POSITIONS
4620.      C
4630.      C
4640.      C      DETERMINE MOVEMENT RATES FOR EACH BLUE WEAPON TYPE
4650.      C      CALL MVRT(BOVWTH,BUFAT,BWDW,TRNTP,BCHR,BWPN,
1          BMVRT,BWPMVR)
4660.      C
4670.      C      CALCULATE NEW DISTANCE FROM BLUE FORCE CENTROID
4680.      C      TO BLUE WEAPON TYPES
4690.      C      CALL NDISTIDSTH,BWPN,BCHR,BWPMVR,BSPMDG,DBFBWP)
4700.      C
4710.      C      DETERMINE MOVEMENT RATES FOR EACH RED WEAPON TYPE
4720.      C      CALL MVRT(ROVWTH,RDFAT,RWDW,TRNTP,RCHR,RWPN,
4730.      C
4740.      C
4750.      C

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4760.      1      RMVRT,RWPMVR)
4770.      C
4780.      C      CALCULATE NEW DISTANCE FROM RED FORCE CENTROID
4790.      C      TO RED WEAPON TYPES
4800.      C      CALL NDIST(DSTBR,RWPN,RCHR,RWPMVR,RSPMDG,DRFRWP)
4810.      C
4820.      C
4830.      C
4840.      C
4850.      C
4860.      C      CALCULATION OF FIRE AND MOVEMENT SUPPRESSION
4870.      C
4880.      C      CALCULATE BLUE ARTILLERY LOSSES FOR SUPPRESSION
4890.      C      CALL ARTSPI(KNTMNT,FPFTM,DBWRWP,BARTJF,ARPAM,BWPN,
4900.      1      BCHR,BDFAT,BARTSP)
4910.      C
4920.      C      CALCULATE RED ARTILLERY LOSSES FOR SUPPRESSION
4930.      C      CALL ARTSPI(KNTMNT,FPFTM,DRWBWP,RARTJF,ARPAM,RWPN,
4940.      1      RCHR,RDFAT,RARTSP)
4950.      C
4960.      C      CALCULATE BLUE FIRE AND MOVEMENT SUPPRESSION DEGRADATION
4970.      C      CALL SPDG(BWDRW,RWDRW,BDFAT,BCHR,EBCLSS,ERCLSS,
4980.      1      BARTSP,BMNLSS,BSPFDG,BSPMDG)
4990.      C
5000.      C      CALCULATE RED FIRE AND MOVEMENT SUPPRESSION DEGRADATION
5010.      C      CALL SPDG(BWDRW,RWDRW,RDFAT,RCHR,ERCLSS,EBCLSS,
5020.      1      RARTSP,RMNLSS,RSPFDG,RSPMDG)
5030.      C
5040.      C
5050.      C
5060.      C
5070.      C
5080.      C
5090.      C      CHECK FOR END OF MODULE RUN
5100.      C
5110.      C      IF (BWDRW.EQ.2 .OR. RWDRW.EQ.2) THEN
5120.      C      IF (KWDHNT.LT.NWDHNT .AND. KWDHNT.LT.10) THEN
5130.      C      KWDHNT = KWDHNT + 1
5140.      C      KNTMNT = KNTMNT + 1
5150.      C      GO TO 10
5160.      C
5170.      C      ELSE
5180.      C      CALL REPRTI(KNTMNT,RBKVLS,BBKVLS,BNUP,RNUM,BDEAD,
5190.      1      RDEAD,BWPN,RWPN,BOSNG,RDSNG,BWDRW,RWDRW,BRDSUM,
5200.      2      RRDSUM,DSTMIN)
5210.      C      PRINT *, 'END OF DIAM RUN'
5220.      C      END IF
5230.      C
5240.      C
5250.      C      ELSE IF (KNTMNT.LT.1000) THEN
5260.      C      KNTMNT = KNTMNT + 1
5270.      C      GO TO 10
5280.      C
5290.      C
5300.      C      END IF
5310.      C      DEBUG SUBCHK
5320.      C      AT 1
5330.      C      END

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NG 2608 DUMMY ARGUMENT 'AFRC' IS NEVER REFERENCED
 NG 2607 VARIABLE 'PREP' APPEARS IN A DECLARATION BUT IS NEVER REFERENCED
 NG 2608 DUMMY ARGUMENT 'SHOTS1' IS NEVER REFERENCED

3 WARNINGS 765 IBANK 10668 DBANK 30 COMMON

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DIAMPUBLISH.ARTLSS

R1 04/01/82-10:33(0,1)

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100. C=***** SUBROUTINE ARTLSS *****
110. C
120. C
130. C
140. SUBROUTINE ARTLSS(KNTMNT,ARPAM,XARTJF,XWPN,XCHR,XARTLS)
150. C
160. C THIS SUBROUTINE DETERMINES XARTLS(I,J), THE ARTILLERY LOSSES
170. C FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
180. C
190. C KNTMNT MINUTE COUNTER FOR DIAM BATTLE
200. C ARPAM(7) ESTIMATED BATTLE TIME FOR ARTILLERY
210. C XARTJF(I,3) LOSS RATE PER MINUTE FOR X FORCE WEAPON TYPE I
220. C IN TACTICAL MODE J=1,2
230. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
240. C MODE J=1,2
250. C XCHR(I,4) WEAPON CATEGORY OF X FORCE WEAPON TYPE I:
260. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
270. C
280. C
290. DIMENSION XARTJF(10,4),XWPN(10,3),XCHR(10,5),XARTLS(10,2),
300. 1 ARPAM(8)
310. C
320. C
330. IF (KNTMNT.LE.ARPAM(7)) THEN
340. 1 DO 10 I=1,10
350. DO 20 J=1,2
360. C
370. IF (XWPN(I,J+1).GT.0) THEN
380. IF (XCHR(I,4).EQ.1 .AND. J.EQ.1) THEN
390. XARTLS(I,J) = 0
400. ELSE IF (XWPN(I,3).LT.0) THEN
410. XARTLS(I,J) = XARTJF(I,3)
420. ELSE
430. XARTLS(I,J) = XARTJF(I,3) * XWPN(I,J+1) /
440. 1 (XWPN(I,2) + XWPN(I,3))
450. END IF
460. ELSE
470. XARTLS(I,J) = 0
480. END IF
490. 20 CONTINUE
500. 10 CONTINUE
510. C
520. ELSE
530. DO 30 I=1,10
540. DO 40 J=1,2
550. XARTLS(I,J) = 0
560. 40 CONTINUE
570. 30 CONTINUE
580. C
590. END IF
600. RETURN
610. DEBUG SUBCHK
620. AT 1
630. END

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N 253 IBANK 51 DBANK

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DIAMPUBLISH.ARTSP

1 04/01/82-10:3310,1

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100. C ***** SUBROUTINE ARTSP *****
110. C
120. C
130. C
140. SUBROUTINE ARTSP(KNTMNT,FPFTH,DXWYWP,XARTJF,ARPAM,XWPN,
150. I
160. XCHR,XDFAT,XARTSP)
170. C
180. C THIS SUBROUTINE DETERMINES XARTSP(I,J), ARTILLERY LOSSES
190. C USED ONLY IN SUPPRESSION FOR X FORCE WEAPON TYPE I IN
200. C TACTICAL MODE J=1,2
210. C
220. C KNTMNT MINUTE COUNTER FOR DIAM BATTLE
230. C FPFTH FINAL PROTECTIVE FIRE COUNTER FOR DIAM BATTLE
240. C DXWYWP(I,M,J) DISTANCE FROM X FORCE WEAPON TYPE I IN TACTICAL
250. C MODE J=1,2 TO Y FORCE WEAPON TYPE M OF WHICH ONLY
260. C M=1,20 ARE IN TACTICAL MODE 2
270. C XARTJF(I,3) X FORCE ARTILLERY LOSSES FOR WEAPON TYPE
280. C I DURING MINUTE
290. C TACTICAL MODE J=1,2
300. C ARPAM(4) NUMBER OF MINUTES COUNTERPREP
310. C ARPAM(5) NUMBER OF MINUTES FINAL PROTECTIVE FIRE
320. C ARPAM(8) PREP MINUTES FIRED IN DIAM
330. C XDFAT INDEX FOR X FORCE: DEFENDING=1, ATTACKING=2
340. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
350. C MODE J=1,2
360. C
370. C
380. C DIMENSION DXWYWP(10,20,2),ARPAM(8),XARTJF(11,5),XARTSP(10,2)
390. C 1, XCHR(10,5),XWPN(10,3)
400. C
410. C
420. C VAR = 1
430. C IF(XDFAT.EQ.1) THEN
440. C PREPTH = ARPAM(8)
450. C ELSE IF(ARPAM(4).GT.0) THEN
460. C PREPTH = ARPAM(8) * 2/3
470. C ELSE
480. C END IF
490. C
500. C IF(KNTMNT.LE.PREPTH) THEN
510. C VAR = 2
520. C END IF
530. C
540. C DO 10 I=1,10
550. C DO 20 M=1,20
560. C DO 30 J=1,2
570. C DIST = ABS(DXWYWP(I,M,J))
580. C IF(DIST.LT.200) THEN
590. C IF(FPFTH.LT. ARPAM(5)) THEN
600. C VAR = 2
610. C FPFTH = FPFTH + 1
620. C GO TO 35
630. C END IF
640. C END IF
650. C CONTINUE
660. C CONTINUE
670. C CONTINUE
680. C DO 40 I=1,10

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690.      DO 50 J=1,2
700.          IF(XWPN(I,J+1).GT.0) THEN
710.              IF(XCHR(I,4).EQ.1 .AND. J.EQ.1) THEN
720.                  XARTSP(I,J) = 0
730.              ELSE IF(XWPN(I,3).LT.0) THEN
740.                  XARTSP(I,J) = XARTJF(I,3)
750.              ELSE
760.                  XARTSP(I,J) = XARTJF(I,3) * XWPN(I,J+1) /
770.                      (XWPN(I,2) + XWPN(I,3))
780.          1      END IF
790.          ELSE
800.              XARTSP(I,J) = 0
810.          END IF
820.      C
830.          XARTSP(I,J) = XARTSP(I,J) * VAR
840.      C
850.      50      CONTINUE
860.      40      CONTINUE
870.      C
880.      RETURN
890.      DEBUG SUBCHK
900.      AT 1
910.      END
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N 353 IBANK 76 DBANK

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DIAM PUBLISH.BSETLD

21 04/01/P2-10:33(0,)

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100. C ***** SUBROUTINE BSETLD *****
110. C
120. C
130. C
140. SUBROUTINE BSETLD (BNUM,IBU,BSLD,BSLDR,BCHR,IBNFID,BAMO)
150. C
160. C THIS SUBROUTINE LOADS THE AMOUNT OF AMMUNITION AVAILABLE FOR
170. C A PARTICULAR WEAPON TYPE INTO BAMO
180. C
190. C BAMO(I,J) ARRAY FOR AMMUNITION LOAD FOR WEAPON TYPE I
200. C OF WHICH J=1 IS THE PRINCIPAL WEAPON AND J=2
210. C FOR SECONDARY ROUNDS
220. C BNUM NUMBER OF BLUE FORCE WEAPON SYSTEMS
230. C IBU(I) ARRAY POINTING TO PROPER ENTRY IN ARRAY IBNFID
240. C FOR THE I WEAPONS CURRENTLY BEING PLAYED IN DIAM
250. C BSLD FRACTION OF BASIC LOAD AVAILABLE FOR PRIMARY
260. C SYSTEMS
270. C BSLDR FRACTION OF BASIC LOAD AVAILABLE FOR SECONDARY
275. C SYSTEMS
280. C BCHR(I,3) BASIC LOAD FOR BLUE FORCE WEAPON TYPE I
290. C IBNFID(I,J) ARRAY HOLDING PRINCIPAL JIFFY WEAPON DESCRIPTORS
300. C FOR I=1,25 JIFFY WEAPONS PLAYED IN DIAM. J=1,2 ARE
310. C PRINCIPAL WEAPONS ON PLATFORM, AND J=3 CONTAINS A 6
320. C WHEN THE WEAPON HAS A SECONDARY SYSTEM
330. C
340. C
350. DIMENSION BAMO(10,2),IBNFID(25,4),BCHR(10,5),IBU(10)
360. C
370. C
380. C SET LOAD FOR SECONDARY ROUNDS
390. C RRND = 300.0
400. C INITIALIZE ARRAYS AND VARIABLES
410. C VAR=0
420. C CALL INIT1(BAMO,VAR)
430. C BNUM=BNUM
440. C LOAD PRIMARY AND SECONDARY ROUNDS
450. C DO 10 I=1,BNUM
460. C BAMO(I,1) = BSLD * BCHR(I,3)
470. C IF (IBNFID(IBU(I),3).EQ.6) THEN
480. C BAMO(I,2) = BSLDR * RRND
490. C END IF
500. C IF (IBNFID(IBU(I),1).EQ.21 .OR. IBNFID(IBU(I),1).EQ.26) THEN
510. C BAMO(I,2) = BSLDR * 180
520. C END IF
530. 10 CONTINUE
540. C
550. RETURN
560. DEBUG SUBCHK
570. AT 1
580. END
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N 174 IBANK 54 DBANK

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DIAMPUBLISH.DMRTO

R1 04/01/82-13:3310,1

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100. C***** SUBROUTINE DMRTO *****
110. C
120. C
130. C
140. SUBROUTINE DMRTO(XCHR,XWPN,XDMRTO)
150. C
160. C THIS SUBROUTINE CALCULATES XDMRTO, THE RATIO OF X FORCE
170. C DISMOUNTED TROOPS TO X FORCE TROOP CARRIERS
180. C
190. C XCHR(1,4) CATEGORY OF X FORCE WEAPON TYPE 1:
200. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
210. C XWPN(1,3) NUMBER OF WEAPON TYPE 1 IN TACTICAL MODE 2
220. C XTOTDM TOTAL NUMBER OF X FORCE DISMOUNTED TROOPS
230. C XTOTMC TOTAL NUMBER OF X FORCE MOUNTED CARRIERS
240. C
250. C
260. DIMENSION XCHR(10,5),XWPN(10,3)
270. C
280. C
290. C TOTAL NUMBER OF DISMOUNTED TROOPS
300. 1 XTOTDM=0
310. DO 10 I=1,10
320. IF(XCHR(I,4).EQ.1) THEN
330. IF(XWPN(I,3).GT.0) THEN
340. XTOTDM = XTOTDM + XWPN(I,3)
350. END IF
360. END IF
370. 10 CONTINUE
380. C
390. C TOTAL NUMBER OF TROOP CARRIERS
400. XTOTMC=0
410. DO 20 I=1,10
420. IF(XCHR(I,4).EQ.3) THEN
430. IF(XWPN(I,3).GT.0) THEN
440. XTOTMC = XTOTMC + XWPN(I,3)
450. END IF
460. END IF
470. 20 CONTINUE
480. C
490. IF(XTOTMC.EQ.0) THEN
500. XTOTMC=-99999
510. PRINT 1000
520. 1000 FORMAT(1H0,24H NO EMPTY TROOP CARRIERS)
530. END IF
540. IF(XTOTDM.EQ.0) THEN
550. PRINT 1010
560. 1010 FORMAT(1H0,21H NO DISMOUNTED TROOPS)
570. END IF
580. C
590. XDMRTO = XTOTDM/XTOTMC
600. C
610. RETURN
620. DEBUG SUBCHK
630. AT 1
640. END
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DIAMPUBLISH.DSMLESS

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100. C ***** SUBROUTINE DSMLESS *****
11. C
12. C
13. C
14. SUBROUTINE DSMLESS(XNUMDM,XWPN,XCHR,EXTLSS)
15. C
16. C THIS SUBROUTINE DETERMINES THE NUMBER OF DISMOUNTED LOSSES
17. C WHILE BEING CARRIED IN TROOP CARRIERS
18. C
19. C XNUMDM NUMBER OF X FORCE TROOPS THAT DISMOUNT A
20. C CARRIER
21. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
22. C MODE J=1,2
23. C XCHR(I,4) CATEGORY OF X FORCE WEAPON TYPE I:
24. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
25. C EXTLSS(I,J) EXPECTED TOTAL LOSSES OF X FORCE WEAPON
26. C TYPE I IN TACTICAL MODE J=1,2
27. C
28. C DIMENSION XWPN(10,3),XCHR(10,5),EXTLSS(10,2)
29. C
30. C
31. C TOTAL ALL MOUNTED TROOPS
32. C TOTDM = 0
33. C DO 10 I=1,10
34. C IF(XCHR(I,4).EQ.1) THEN
35. C IF(XWPN(I,2).GT.0) THEN
36. C TOTDM = XWPN(I,2) + TOTDM
37. C END IF
38. C END IF
39. C CONTINUE
40. C
41. C IF(TOTDM.LE.0) THEN
42. C RETURN
43. C END IF
44. C SEARCH FOR MOUNTED CARRIERS WITH LOSSES
45. C DO 20 I=1,10
46. C IF(XCHR(I,4).EQ.3) THEN
47. C IF(XWPN(I,2).GT.0) THEN
48. C IF(XWPN(I,3).GE.0) THEN
49. C IF(EXTLSS(I,1).GT.0) THEN
50. C
51. C CALCULATE MOUNTED KILLS
52. C TCLSS = EXTLSS(I,1)
53. C DO 30 J=1,10
54. C IF(XCHR(J,4).EQ.1) THEN
55. C IF(XWPN(J,2).GT.0) THEN
56. C EXTLSS(J,1) = XNUMDM*XWPN(J,2)*TCLSS/TOTDM
57. C + EXTLSS(J,1)
58. C END IF
59. C END IF
60. C CONTINUE
61. C
62. C END IF
63. C END IF
64. C END IF
65. C CONTINUE
66. C

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670.	RETURN
680.	DEBUG SUBCHK
690.	AT 1
700.	END

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DIAM PUBLISH.DSNG

1) 04/01/82-10:33IC,)

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100. C ***** SUBROUTINE DSNG *****
110. C
120. C
130. C
140. SUBROUTINE DSNG (XHOLDS,XDSNG,XWPN,XCHR,XDEAD,IFRC,DGMATT,
150. )
160. C
170. C THIS SUBROUTINE DETERMINES IF THE X FORCE WILL WITHDRAW BASED
180. C ON CUMULATIVE WEAPON CATEGORY KILLS
190. C
200. C XDSNG INDEX FOR X FORCE: ENGAGING=1, DISENGAGING=2
210. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPES I IN TACTICAL
220. C MODE J=1,2
230. C XCHR(I,4) WEAPON CATEGORY OF X FORCE WEAPON TYPE I:
240. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
250. C XDEAD(I,J) CUMULATIVE DEAD FOR X FORCE WEAPON TYPE I IN
260. C TACTICAL MODE J=1,2
270. C IFRC INDEX FOR X FORCE: BLUE=1, RED=2
280. C DGMATT(A,B) DISENGAGEMENT ATTRITION FRACTIONS OF WEAPON
290. C CATEGORY A AND FORCE B
300. C XWDRW INDEX FOR X FORCE: ENGAGING=1, WITHDRAWING=2
310. C CDEAD(A) NUMBER OF WEAPONS DEAD IN WEAPON CATEGORY A
320. C CALIVE(A) NUMBER OF WEAPONS ALIVE IN WEAPON CATEGORY A
330. C XHOLDS INDEX FOR X FORCE: HOLDING POSITION=1, ALLOWED
340. C TO WITHDRAW=2
350. C
360. C
370. C DIMENSION XWPN(10,3),XCHR(10,5),XDEAD(10,2),DGMATT(4,2)
380. C 1,CDEAD(4),CALIVE(4)
390. C
400. C
410. C IF (XDSNG.EQ.2) THEN
420. C XWDRW=2
430. C RETURN
440. C END IF
450. C
460. C IF (XHOLDS.EQ.1) THEN
470. C RETURN
480. C END IF
490. C
500. I DO 10 I=1,4
510. C CDEAD(I) = 0
520. C CALIVE(I) = 0
530. I CONTINUE
540. C
550. DO 20 ICAT=1,4
560. DO 30 J=1,2
570. DO 40 I=1,10
580. IF (XCHR(I,4).EQ.ICAT) THEN
590. IF (XWPN(I,J+1).GT.0) THEN
600. CDEAD(ICAT) = CDEAD(ICAT) + XDEAD(I,J)
610. CALIVE(ICAT) = CALIVE(ICAT) + XWPN(I,J+1)
620. END IF
630. END IF
640. 40 CONTINUE
650. 30 CONTINUE
660. 20 CONTINUE
670. C
680. DO 50 ICAT=1,4

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690.      IF ((CDEAD(I CAT) + CALIVE(I CAT)).GT.0) THEN
700.          FRCT = CDEAD(I CAT) / (CDEAD(I CAT) + CALIVE(I CAT))
710.          IF (FRCT.GE.DGMATT(I CAT,IFRC)) THEN
720.              XWDRW = 2
730.          END IF
740.      END IF
750.      SO  CONTINUE
760.      C
770.      RETURN
780.      DEBUG  SUBCHK
790.      AT 1
800.      END

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N 229 1BANK 75 DBANK

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DIAMPUBLISH.ECLOSS

1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE ECLOSS *****
110. C
120. C
130. C
140. SUBROUTINE ECLOSS(YXPKW,XWPN,PCXVYZ,YRDFR,YFLSFR,
150. 1 XSPFDG,EXCLSS)
160. C
170. C THIS SUBROUTINE CALCULATES EXCLSS(I,M,J), THE EXPECTED
180. C COMMITTEE LOSSES FOR X FORCE TARGET TYPES I IN TACTICAL
190. C MODE J=1,2 FROM Y FORCE WEAPON M OF WHICH M=11,20 ARE IN
200. C TACTICAL MODE 2
210. C
220. C YXPKW(K,N,L) SSPK FOR Y FORCE WEAPON K IN TACTICAL MODE
230. C L=1,2 AGAINST X FORCE TARGET N OF WHICH
240. C ARE IN TACTICAL MODE L
250. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN
260. C TACTICAL MODE J=1,2
270. C PCXVYZ(I,M,J) PERCENT VISIBLE OF X FORCE WEAPON TYPE I
280. C IN TACTICAL MODE J=1,2 TO Y FORCE
290. C WEAPON TYPE M OF WHICH M=11,20 ARE
300. C IN TACTICAL MODE J
310. C YRDFR(K,N,L) ROUNDS FIRED BY Y FORCE WEAPON TYPE K
320. C IN TACTICAL MODE L=1,2 AGAINST X FORCE
330. C TARGET TYPE N OF WHICH N=11,20 ARE IN
340. C TACTICAL MODE 2
350. C YFLSFR FALSE FIRE FACTOR FOR Y FORCE: INABILITY
360. C TO DISTINGUISH TARGETS
370. C XSPFDG(I,J) FIRE SUPPRESSION FOR X FORCE WEAPON
380. C TYPE I IN TACTICAL MODE J=1,2
390. C
400. C DIMENSION YXPKW(10,20,2),XWPN(10,3),PCXVYZ(10,20,2)
410. C , YRDFR(10,20,2),EXCLSS(10,20,2),XSPFDG(10,2)
420. C
430. C
440. 100 DO 10 J=1,2
450. DO 20 I=1,10
460. DO 30 L=1,2
470. DO 40 K=1,10
480. C
490. C PCVIS = PCXVYZ(I,K+(L-1)*10,J) * (1 - XSPFDG(I,J)*0.33)
500. C PK = YXPKW(K,I+(J-1)*10,L)
510. C XNMTG = XWPN(I,J+1)
520. C RDFR = YRDFR(K,I+(J-1)*10,L) * YFLSFR
530. C CMHTT = XNMTG * PCVIS
540. C ACHMTT = AMAX1(1,CMHTT)
550. C
560. C EXCLSS(I,K+(L-1)*10,J) = CMHTT * (1-(1-PK/ACHMTT)**RDFR)
570. C
580. 40 CONTINUE
590. 30 CONTINUE
600. 20 CONTINUE
610. 10 CONTINUE
620. C
630. C RETURN
640. C DEBUG SUBCHK
650. C AT 100
660. C END

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DIAMPUBLISH.ETLOSS

21 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE ETLOSS *****
110. C
120. C
130. C
140. SUBROUTINE ETLOSS(XWPN,EXCLSS,EXTLSS)
150. C
160. C THIS SUBROUTINE CALCULATES EXTLSS(I,J), THE TOTAL EXPECTED
170. C DIRECT FIRE LOSSES OF X FORCE TARGET TYPE I IN TACTICAL
175. C MODE J=1,2
180. C
190. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
200. C MODE J=1,2
210. C EXCLSS(I,M,J) EXPECTED COMMITTEE LOSSES FOR X FORCE TARGET
220. C TYPE I IN TACTICAL MODE J=1,2 AGAINST Y FORCE
230. C WEAPON TYPE M OF WHICH M=1,20 ARE IN TACTICAL
240. C MODE 2
250. C
260. C
270. C DIMENSION XWPN(10,3),EXCLSS(10,20,2),EXTLSS(10,2)
280. C
290. C
300. 100 DO 10 J=1,2
310. DO 20 I=1,10
320. SRV = 1
330. DO 30 L=1,2
340. DO 40 K=1,10
350. C
360. AXWPN = AMAX1(1.,XWPN(I,J+1))
370. SRV = SRV * (1 - EXCLSS(I,K*(L-1)+10,J) / AXWPN)
380. C
390. 40 CONTINUE
400. 30 CONTINUE
410. EXTLSS(I,J) = XWPN(I,J+1) * (1 - SRV)
420. 20 CONTINUE
430. 10 CONTINUE
440. C
450. RETURN
460. DEBUG SUBCHK
470. AT 100
480. END

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V 137 IBANK 46 DBANK

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DIAMPUBLISH.INDX1

R1 04/01/82-10:33(0,1)

100. C:***** SUBROUTINE INDX1 *****

110. C

12. C

13. C

14. SUBROUTINE INDX1(DFR,BOFAT,RDFAT,BFRCTP,BDMMAX,RDMMAX,

150. 1 BWRW,RWDRW,BDMV,RDMV,BOVWTH,ROVWTH)

160. C

17. C THIS SUBROUTINE PASSES THE FOLLOWING INDEXES FOR BLUE

18. C AND RED FORCES:

190. C

200. C DFR 1 = BLUE FORCE DEFENDS

210. C 2 = RED FORCE DEFENDS

22. C BOFAT 1 = BLUE FORCE DEFENDS

230. C 2 = BLUE FORCE ATTACKS

24. C RDFAT 1 = RED FORCE DEFENDS

250. C 2 = RED FORCE ATTACKS

26. C BFRCTP 1 = LIGHT FORCE

270. C 2 = HEAVY FORCE

280. C BDMMAX MAXIMUM NUMBER OF BLUE TROOPS PER CARRIER

29. C RDMMAX MAXIMUM NUMBER OF RED TROOPS PER CARRIER

300. C BWRW 1 = BLUE FORCE ENGAGES

31. C 2 = BLUE FORCE WITHDRAWS

32. C RWDRW 1 = RED FORCE ENGAGES

330. C 2 = RED FORCE WITHDRAWS

34. C BDMV 1 = BLUE FORCE IS MOUNTED

350. C 2 = BLUE FORCE IS DISMOUNTED

360. C RDMV 1 = RED FORCE IS MOUNTED

370. C 2 = RED FORCE IS DISMOUNTED

38. C BOVWTH 1 = BLUE FORCE IS NOT IN OVERWATCH

39. C 2 = BLUE FORCE IS IN OVERWATCH

400. C ROVWTH 1 = RED FORCE IS NOT IN OVERWATCH

410. C 2 = RED FORCE IS IN OVERWATCH

42. C

43. C

44. C DETERMINE IF RED OR BLUE FORCES ARE ATTACKING OR DEFENDING

450. IF(DFR.EQ.1) THEN

46. 1 BOFAT=1

470. RDFAT=2

48. ELSE

49. BOFAT=2

50. RDFAT=1

510. END IF

52. C

53. C DETERMINE MAXIMUM NUMBER OF TROOPS PER RED AND BLUE CARRIERS

540. IF(BFRCTP.EQ.1) THEN

550. BDMMAX=9

56. ELSE

57. BDMMAX=7

58. END IF

59. RDMMAX=8

60. C

61. C SET WITHDRAWAL INDEXES

620. BWRW=1

63. RWDRW=1

640. C

65. C SET DISMOUNT INDEXES

660. BDMV=2

67. RDMV=2

680. C

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690.	C	SET OVERWATCH INDEXE
700.		BOVWTH=1
710.		ROVWTH=1
720.	C	
730.		RETURN
740.		DEBUG SUBCHK
750.		AT 1
760.		END

N 57 IBANK 27 DBANK

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DIAMPUBLISH.INDX2

01 04/01/82-10:33(C,)

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100. C ***** SUBROUTINE INDX2 *****
110. C
120. C
130. C
140. SUBROUTINE INDX2(KNTMNT,KWDMNT,FPFTM,BDSNG,RDSNG,AMFLD,
150. ) BDFAT,BFLSFR,RFLSFR,BHOLDS,RHOLDS)
160. C
170. C THIS SUBROUTINE INITIALIZES THE FOLLOWING VARIABLES AND
180. C INDEXES
190. C
200. C KNTMNT MINUTE COUNTER FOR DIAM BATTLE
210. C KWDMNT MINUTE COUNTER DURING WITHDRAWAL IN DIAM
220. C FPFTM MINUTE COUNTER FOR FINAL PROTECTIVE FIRES
230. C BDSNG INDEX FOR X FORCE: 1=ENGAGING, 2=DISENGAGING
240. C RDSNG INDEX FOR Y FORCE: 1=ENGAGING, 2=DISENGAGING
250. C AMFLD(1) INDEX FOR MINES IN USE: 0=NO, 1=YES
260. C AMFLD(2) MINEFIELD WIDTH
270. C AMFLD(3) MINEFIELD FRACTION NOT BYPASSED
280. C AMFLD(4) FRACTION OF ATTACKING FORCE ENTERING MINEFIELD
290. C BFLSFR FALSE FIRING FACTOR FOR BLUE FORCE
300. C RFLSFR FALSE FIRING FACTOR FOR RED FORCE
310. C BDFAT INDEX FOR BLUE FORCE: 1=DEFENDING, 2=ATTACKING
320. C BHOLDS INDEX FOR BLUE FORCE: 1=BLUE FORCE HOLDS POSITION,
330. C 2=BLUE IS ALLOWED TO WITHDRAW
340. C RHOLDS INDEX FOR RED FORCE: 1=RED FORCE HOLDS POSITION,
350. C 2=RED IS ALLOWED TO WITHDRAW
360. C
370. C
380. C
390. C DIMENSION AMFLD(4)
400. C
410. C
420. C INITIALIZE VARIABLES:
430. C KNTMNT=1
440. C KWDMNT=0
450. C FPFTM=0
460. C BDSNG=1
470. C RDSNG=1
480. C BHOLDS=2
490. C RHOLDS=2
500. C
510. C DO 10 I=1,4
520. C AMFLD(I) = 0
530. C 10 CONTINUE
540. C
550. C IF (BDFAT.EQ.1) THEN
560. C BFLSFR = 0.8
570. C RFLSFR = 0.4
580. C ELSE
590. C BFLSFR = 0.4
600. C RFLSFR = 0.8
610. C END IF
620. C
630. C RETURN
640. C END

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V 54 IBANK 22 DBANK

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DIAMPUBLISH.INITI

04/01/82-10:33(0,)

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***** SUBROUTINE INITI *****
100. C
110. C
120. C
121. SUBROUTINE INITI(ARRAY,VAR)
122. C
130. C THIS SUBROUTINE INITIALIZES ARRAY(I,J) TO EQUAL VAR
150. C
160. C
170. C DIMENSION ARRAY(10,2)
180. C
190. C
200. DO 10 J=1,2
210. DO 20 I=1,10
220. C
230. ARRAY(I,J)=VAR
235. C
240. 20 CONTINUE
250. 10 CONTINUE
260. C
270. RETURN
280. END
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4 40 IBANK 15 DBANK

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DIAMPUBLISH.INTART

R1 04/01/82-10:3310,1

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100. C ***** SUBROUTINE INTART *****
110. C
120. C
130. C
140. SUBROUTINE INTART(ARPAM,BARTJF,RARTJF)
150. C
160. C THIS SUBROUTINE DETERMINES ARTILLERY LOSS RATES TO USE IN DIAM
170. C
180. C ARPAM(7) ESTIMATED BATTLE TIME FOR ARTILLERY
190. C BARTJF(1,4) NUMBER OF BLUE FORCE WEAPON TYPE 1 LOSSES DUE TO
200. C ARTILLERY
210. C BARTJF(1,3) NUMBER OF BLUE FORCE WEAPON TYPE 1 LOSSES PER
220. C MINUTE DUE TO ARTILLERY
230. C RARTJF(1,4) NUMBER OF RED FORCE WEAPON TYPE 1 LOSSES DUE TO
240. C ARTILLERY
250. C RARTJF(1,3) NUMBER OF RED FORCE WEAPON TYPE 1 LOSSES PER
260. C MINUTE DUE TO ARTILLERY
270. C
280. C
290. C DIMENSION BARTJF(10,4),RARTJF(10,4),ARPAM(8)
300. C
310. C
320. C DO 10 I=1,10
330. C BARTJF(I,3) = BARTJF(I,4) / ARPAM(7)
340. C RARTJF(I,3) = RARTJF(I,4) / ARPAM(7)
350. C 10 CONTINUE
360. C
370. C RETURN
380. C DEBUG SUBCHK
390. C AT 1
400. C END
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N 95 1BANK 31 LBANK

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DIAMPUBLISH.INTDST

R1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE INTDST *****
110. C
120. C
130. C
140. SUBROUTINE INTDST(IFRC,XCHR,XWPN,DFCWC,DXFXWP)
150. C
160. C THIS SUBROUTINE INITIALIZES DXFXWP(I,J), THE DISTANCE
170. C FROM X FORCE CENTROID TO X FORCE WEAPON TYPE I IN
180. C TACTICAL MODE J=1,2
190. C
200. C IFRC INDEX: 1=BLUE FORCE, 2=RED FORCE
210. C XCHR(I,4) WEAPON CATEGORY FOR X FORCE WEAPON TYPE I;
220. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
230. C XWPN(I,J*1) NUMBER OF X FORCE WEAPON TYPE I IN
240. C TACTICAL MODE J=1,2
250. C DFCWC(B,IFRC) DISTANCE FROM IFRC CENTROID TO
260. C WEAPON CATEGORY CENTROID B
270. C
280. C
290. DIMENSION XCHR(10,5),XWPN(10,3),DFCWC(4,2),DXFXWP(10,2)
300. C
310. C
320. I DO 10 J=1,2
330. DO 20 I=1,10
340. C
350. IF(XWPN(I,J*1).GT.0) THEN
360. IF((XCHR(I,4).EQ.1).AND.(J.EQ.1)) THEN
370. DXFXWP(I,J) = -9999999
380. ELSE
390. DXFXWP(I,J) = DFCWC(XCHR(I,4),IFRC)
400. END IF
410. ELSE
420. DXFXWP(I,J) = -9999999
430. END IF
440. C
450. 20 CONTINUE
460. 10 CONTINUE
470. C
480. RETURN
490. DEBUG SUBCHK
500. AT 1
510. END

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N 153 IBANK 47 DBANK

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DIAMPUBLISH.JFLSS

R1 04/01/82-10:33(G,)

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100. C***** SUBROUTINE JFLSS *****
110. C
120. C
130. C
140. C SUBROUTINE JFLSS(YCHR,YWPN,EYCLSS,EYTLSS,YARTLS,YMNLSS,XYKVLS)
150. C
160. C THIS SUBROUTINE CALCULATES XYKVLSIM(1), THE KILLER VICTIM
170. C SCOREBOARD FOR X FORCE KILLER WEAPON TYPE M AGAINST Y
180. C FORCE VICTIM WEAPON TYPE I. THE LOSSES ARE UPDATED AND
190. C CUMULATED EVERY MINUTE.
200. C
210. C EYCLSS(I,M,J) THE EXPECTED COMMITTEE LOSSES FOR Y FORCE
220. C TARGET TYPE I IN TACTICAL MODE J FROM THE
230. C OPPOSING FORCE WEAPON TYPE M OF WHICH
240. C J=1,2 ARE TACTICAL MODE 2
250. C EYTLSS(I,J) THE TOTAL EXPECTED LOSSES FOR Y FORCE
260. C WEAPON TYPE I IN TACTICAL MODE J=1,2
270. C AKILL(M) LOCAL ARRAY HOLDING NUMBER OF WEAPONS
280. C KILLED BY WEAPON TYPE M
290. C CLOSS TOTAL NUMBER OF VICTIMS BY COMMITTEE LOSSES
300. C KILLED BY WEAPON TYPE M
310. C YARTLS(I,J) ARTILLERY LOSSES FOR Y FORCE WEAPON TYPE
320. C I IN TACTICAL MODE J=1,2
330. C YMNLSS(I,J) MINE LOSSES FOR Y FORCE WEAPON TYPE I IN
340. C TACTICAL MODE J=1,2
350. C
360. C
370. C DIMENSION EYCLSS(10,20,2),EYTLSS(10,2),XYKVLS(12,13)
380. C 1, AKILL(10),YARTLS(10,2),YMNLSS(10,2),YWPN(10,3)
390. C 2, BKILL(10,10),EZTLSS(10,2),YCHR(10,5)
400. C
410. C
420. C COPY EXPECTED LOSSES DURING MINUTE
430. C DO 10 J=1,2
440. C DO 20 I=1,10
450. C EZTLSS(I,J) = EYTLSS(I,J)
460. C 20 CONTINUE
470. C 10 CONTINUE
480. C
490. C EXCLUDE MOUNTED INFANTRY LOSSES
500. C DO 30 I=1,10
510. C IF(YCHR(I,4).EQ.1 .AND. EYTLSS(I,1).GT.0) THEN
520. C EZTLSS(I,1) = 0
530. C
540. C END IF
550. C 30 CONTINUE
560. C
570. C CALCULATE ARTILLERY AND MINE LOSSES AGAINST VICTIMS
580. C DO 40 I=1,10
590. C XYKVLS(11,I) = YARTLS(I,1) + YARTLS(I,2) + XYKVLS(11,I)
600. C XYKVLS(12,I) = YMNLSS(I,1) + YMNLSS(I,2) + XYKVLS(12,I)
610. C 40 CONTINUE
620. C
630. C CALCULATE KILLER/VICTIM SCOREBOARD EXCLUDING MOUNTED INFANTRY
640. C DO 70 I=1,10
650. C CLOSS = 0
660. C DO 50 M=1,10
670. C AKILL(M) = EYCLSS(I,M,1) + EYCLSS(I,M,2)
680. C AKILL(M) = AKILL(M) + EYCLSS(I,M+10,1) + EYCLSS(I,M+10,2)
690. C CLOSS = CLOSS + AKILL(M)
700. C
710. C

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720. 50      CONTINUE
730.  C      COMPUTE FRACTION OF VICTIM I KILLED BY WEAPON M
740.      DO 60 M=1,10
750.          IF(CLOSS.GT.0) THEN
760.              BKILL(M,I) = AKILL(M)*(EZTLSS(I,1)+EZTLSS(I,2))/CLOSS
770.              XYKVL(M,I) = XYKVL(M,I) + BKILL(M,I)
780.          END IF
790. 60      CONTINUE
800. 70      CONTINUE
810.  C
820.  C      TOTAL KILLER/VICTIM TROOP CARRIER LOSSES
830.          TOTCKL = 0
840.          DO 80 M=1,10
850.              DO 90 I=1,10
860.                  IF(IYCHR(I,4).EQ.3 .AND. YHPN(I,3).NE.-999) THEN
870.                      TOTCKL = TOTCKL + BKILL(M,I)
880.                  END IF
890.          90      CONTINUE
900. 80      CONTINUE
910.  C
920.  C      CALCULATE KILLER/VICTIM SCOREBOARD FOR MOUNTED INFANTRY
930.          DO 100 M=1,10
940.              DO 110 I=1,10
950.                  IF(IYCHR(I,4).EQ.3 .AND. YHPN(I,3).NE.-999) THEN
960.                      CARR = BKILL(M,I)
970.                      DO 120 J=1,10
980.                          IF(IYCHR(J,4).EQ.1 .AND. EYTLSS(J,1).GT.0) THEN
985.                              IF(TOTCKL.GT.0) THEN
990.                                  XYKVL(M,J) = XYKVL(M,J) + (CARR/TOTCKL)
995.                                  * EYTLSS(J,1)
1010.                              END IF
1015.                          END IF
1020.          120      CONTINUE
1030.          END IF
1040.          110      CONTINUE
1050.          100      CONTINUE
1060.  C
1070.  C
1080.      RETURN
1090.      DEBUG SUBCHK
1100.      AT 1
1110.      END

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N 557 1BANK 227 DBANK

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DIAMPUBLISH.LRDT

21 04/01/82-10:33(0,)

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101. C ***** S BROUTINE LRDT *****
110. C
120. C
130. C
140. SUBROUTINE LRDT(BFRCTP,RFRCTP,DPSTR,TACA)
150. C
160. C THIS SUBROUTINE INITIALIZES THE FOLLOWING VARIABLES
170. C AND THE TACTICS ARRAY. TACTICS PERTAIN TO ATTACKER
180. C LIGHT AND HEAVY CATEGORY WEAPONS ONLY. LIGHT
190. C SYSTEMS WHICH ARE TROOP CARRIERS CAN DISMOUNT
200. C INFANTRY, AND HEAVY SYSTEMS CAN GO INTO OVERWATCH.
210. C
220. C BFRCTP INDEX FOR BLUE FORCE: LIGHT=1, HEAVY=2
230. C RFRCTP INDEX FOR RED FORCE: LIGHT=1, HEAVY=2
240. C DPSTR INDEX FOR DEFENSE POSTURE: PREPARED=1,
250. C HASTY=2, AMBUSHED=3
260. C BLUE FORCE CENTROID (MAX IS 1000 METERS)
270. C
280. C
290. C THE FOLLOWING EXPLAIN THE SUBSCRIPTS FOR TACA(I,J)
300. C I=1 ATTACKING LIGHT CATEGORY WEAPON
310. C I=2 ATTACKING HEAVY CATEGORY WEAPON
320. C J=1 POINTER TO DEFENDER WEAPON CATEGORY WHO INITIATES
330. C TACTICAL MODE CHANGE FOR I
340. C J=2 DISTANCE FROM DEFENDER TO ATTACKER AT WHICH
350. C TACTICAL MODE CHANGE OCCURS.
360. C J=3 PERCENTAGE OF I=2 TYPE WEAPONS THAT GOES INTO
370. C TACTICAL MODE CHANGE. FOR I=1 TYPE WEAPONS ALL
380. C TROOP CARRIERS WILL DISMOUNT TROOPS
390. C
400. C
410. C DIMENSION TACA(2,3)
420. C
430. C
440. C BFRCTP = 1
450. C RFRCTP = 1
460. C DPSTR = 1
470. C
480. C DO J=1,3
490. C TACA(I,J) = 1
500. C TACA(I,J) = 300
510. C TACA(I,J) = 0.33
520. C
530. C CONTINUE
540. C
550. C RETURN
560. C DEBUG SUBCHK
570. C AT 1
580. C END
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N 63 IBANK 01 UBANK

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DIAMPUBLISH.MINCHR

04/01/82-10:33(D,)

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100. C ***** SUBROUTINE MINCHR *****
110. C
120. C
130. C
140. SUBROUTINE MINCHR(AMFLD,FMNFLO,BMNFLO,DFCWC,DFRC,AMLSR)
150. C THIS SUBROUTINE REQUESTS MINEFIELD INFORMATION FOR THE
160. C DEFENDING FORCE FROM THE GAMER
170. C
180. C AMFLD(1) INDEX FOR PLAYING MINEFIELDS: NO=0, YES=1
190. C AMFLD(2) MINEFIELD WIDTH
200. C AMFLD(3) MINEFIELD FRACTION NOT BYPASSED
210. C AMFLD(4) FRACTION OF ATTACKING FORCE ENTERING MINEFIELD
220. C FMNFLO LOCATION OF FRONT EDGE OF MINEFIELD
230. C BMNFLO LOCATION OF BACK EDGE OF MINEFIELD
240. C AMLS(1) MINEFIELD LOSS RATES FOR ATTACKING WEAPON
250. C CATEGORY TYPE I=1,4:
260. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
270. C DFCWC(I,J) DISTANCE FROM FORCE CENTROID J=1,2 TO WEAPON
280. C CATEGORY I=1,4: BLUE=1, RED=2,
290. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
300. C DFRC INDEX FOR DEFENDING FORCE: BLUE=1, RED=2
310. C
320. C
325. COMMON/REED/JDAY1,XINX(4),ICARD(20),IHY,IHN,IHD,IHYES,IHNO
329. C
330. DIMENSION AMFLD(4),DFCWC(4,2),AMLS(4)
340. C
345. C
350. C
360. C INITIALIZE MINEFIELD LOSS RATES
370. I AMLS(1) = 0.10
380. AMLS(2) = 0.14
390. AMLS(3) = 0.14
400. AMLS(4) = 0.14
410. C
420. 10 PRINT 1000
430. 1000 FORMAT(1X,'IS THE DEFENDER USING MINES IN THE 200-400 METER',
440. 1' RANGE BAND? ')
450. CALL REED(1ANS)
470. IF(1ANS.EQ.IHY) THEN
480. AMFLD(1) = 1.0
490. ELSE IF(1ANS.NE.IHY .AND. 1ANS.NE.IHN) THEN
500. GO TO 1C
510. ELSE
520. RETURN
530. END IF
540. C
550. 20 PRINT 1010
560. 1010 FORMAT(1X,'ENTER WIDTH OF MINEFIELD IN METERS')
570. CALL REED4
575. AMFLD(2) = XINX(1)
580. IF(AMFLD(2).LT.0 .OR. AMFLD(2).GT.9999) THEN
590. GO TO 20
600. END IF
610. C
620. 30 PRINT 1020
630. 1020 FORMAT(1X,'ENTER FRACTION OF MINEFIELD NOT BYPASSED BY',
640. 1' ATTACKER ')
650. CALL REED4

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655.      AMFLD(3) = XINX(1)
660.      IF (AMFLD(3).LT.0 .OR. AMFLD(3).GT.1.0) THEN
670.          GO TO 30
680.      END IF
690.      C
700.      40 PRINT 1030
710.      1030 FORMAT(1X,'WHAT FRACTION OF THE ATTACKING FORCE ENTERS '
720.          1 'THE MINEFIELD?')
730.      CALL FEED4
735.      AMFLD(4) = XINX(1)
740.      IF (AMFLD(4).LT.0 .OR. AMFLD(4).GT.1.0) THEN
750.          GO TO 40
760.      END IF
770.      C
780.      PRINT 1040
790.      1040 FORMAT(1X,'DO YOU WISH TO CHANGE INPUTS?')
800.      CALL REEDA(IANS)
810.      IF (IANS.EQ.1HY) THEN
820.          GO TO 10
830.      END IF
840.      C
850.      C FIX FRONT AND REAR EDGES OF THE MINEFIELD
860.          FMFLD = 400 + DFCWC(1,DFRC)
870.          BMFLD = 200 + DFCWC(1,DFRC)
880.      C
890.      RETURN
900.      DEBUG SUBCHK
910.      AT 1
920.      END
```

N 27" IBANK 143 DEANK 30 COMMON

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DIAMPUBLISH.MNLSS
R) 04/01/82-10:33(0,1)
100. C ***** SUBROUTINE MNLSS *****
110. C
120. C
130. C
140. SUBROUTINE MNLSS(AMFLD,AMLSR,AWDTH,DSTBR,FMNFLD,BMNFLD,
150. 1 XCHR,XWPN,DXFXWP,XMNLSS)
160. C
170. C THIS SUBROUTINE COMPUTES ATTACKER LOSSES FROM DEFENDER
180. C MINEFIELDS
190. C
200. C AWDTH(1,J) CORRIDOR WIDTH FOR ATTACKER FOR WEAPON CATEGORY
210. C I=1,4 AND IN RANGE BAND J=1,5:
220. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4;
230. C 0-200=1, 200-400=2, 400-600=3, 600-800=4,
240. C 800-1000=5
250. C AMFLD(1) INDEX FOR DEFENDER PLAYING MINES: NO=1, YES=2
260. C AMFLD(2) MINEFIELD WIDTH
270. C AMFLD(3) MINEFIELD FRACTION NOT BYPASSED
280. C AMFLD(4) FRACTION OF ATTACKING FORCE ENTERING MINEFIELD
290. C XMNLSS(1,J) MINE LOSSES TO WEAPON TYPE 1 IN TACTICAL MODE
300. C J=1,2
310. C DXWFM ATTACKER POSITION RELATIVE TO THE FRONT EDGE OF
320. C THE MINEFIELD
330. C DXWBM ATTACKER POSITION RELATIVE TO THE REAR EDGE OF
340. C THE MINEFIELD
350. C PVC PERCENT TERRAIN COVERAGE OF THE MINEFIELD
360. C DSTBR DISTANCE BETWEEN RED AND BLUE FORCE CENTROIDS
370. C DXFXWP(1,J) DISTANCE FROM X FORCE CENTROID TO X FORCE
380. C WEAPON TYPE 1 IN TACTICAL MODE J=1,2
390. C XCHR(1,4) WEAPON CATEGORY FOR X FORCE WEAPON TYPE 1:
400. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
410. C FMNFLD LOCATION OF FRONT EDGE OF MINEFIELD
420. C BMNFLD LOCATION OF BACK EDGE OF MINEFIELD
430. C
440. C
450. C DIMENSION AMFLD(4),AMLSR(4),AWDTH(4,5),XMNLSS(10,2),
460. 1 DXFXWP(10,2),XCHR(10,5),XWPN(10,3)
470. C
480. C
490. C CHECK FOR MINE FIELD PARAMETERS
500. 1 IF(AMFLD(1).EQ.0 .OR. AMFLD(4).EQ.0) THEN
510. C RETURN
520. C END IF
530. C
540. C ZERO-OUT PAST MINEFIELD LOSSES
550. C VAR=0
560. C CALL INIT1(XMNLSS,VAR)
570. C
580. C CHECK FOR ENTRANCE INTO MINEFIELD
590. C DO 30 J=1,10
600. C DO 40 J=1,2
610. C IF(XWPN(1,J+1).GT.0) THEN
620. C DXWFM = DSTBR - DXFXWP(1,J) - FMNFLD
630. C DXWBM = DSTBR - DXFXWP(1,J) - BMNFLD
640. C IF(DXWFM.LE.0 .AND. DXWBM.GE.0) THEN
650. C
660. C CALCULATE MINE LOSSES
670. C IF(AWDTH(XCHR(1,4),1).GT.0) THEN
680. C PVC = AMFLD(2) * AMFLD(3) / AWDTH(XCHR(1,4),1)

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690.                                XMNLS(I,J) = XWPN(I,J+1) * PCV * AMFLD(4)
700.                                * AMLSR(XCHR(I,4))
710.                                END IF
720.                                END IF
730.                                END IF
740.                                40      CONTINUE
750.                                30      CONTINUE
760.                                C
770.                                RETURN
780.                                DEBUG SUBCHK
790.                                AT 1
800.                                END
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N. 273 IBANK 78 DBANK

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DIAMPUBLISH.MOVIN

R1 04/01/82-10:33(0,1)

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100. C ***** SUBROUTINE MOVIN *****
110. C
120. C
130. C
140. SUBROUTINE MOVIN(IOPS,IOPN, KK27, KK20, BMVRT, RMVRT, BDTCT, RDTCT)
150. C
160. C THIS SUBROUTINE LOADS BLUE MOVEMENT RATES AND DETECTION
170. C DATA AND RED MOVEMENT RATES AND DETECTION DATA FROM
180. C RANDOM ACCESS FILES 27 AND 20
190. C
200. C IOPS POINTS TO THE DAY TYPE: 1=CLEAR, 2=NIGHT,
210. C 3=OBSCURED
220. C IOPN POINTS TO TERRAIN TYPE 1=OPEN, 2=CLOSED
230. C KK27 POINTER FROM MOVEMENT RATE FILE
240. C KK20 POINTER FROM DETECTION FILE
250. C BMVRT(A,B) MOVEMENT RATE FOR BLUE FORCE BASED ON
260. C WEAPON CATEGORY A (1=DISMOUNTED,
270. C 2=MORTARS, 3=LIGHT, 4=HEAVY) AND
280. C TERRAIN TYPE B (1=OPEN, 2=CLOSED)
290. C RMVRT(A,B) MOVEMENT RATE FOR RED FORCE BASED ON
300. C WEAPON CATEGORY A (SEE ABOVE)
310. C BDTCT(I,J,K) BLUE WEAPON DETECT TIMES AGAINST RED
320. C TARGETS BASED ON TARGET EXPOSURE I
330. C (1=VEHICLE EXPOSED, 2=VEHICLE DEFILADE,
340. C 3=SOLDIER EXPOSED, 4=SOLDIER DEFILADE),
350. C BLUE WEAPON SENSOR B (1=EYE, 2=OPTICAL
360. C SIGHT, 3=THERMAL SIGHT, 4=IMAGE INTEN-
370. C SIFIER), AND RANGE BAND K (1=1-200,
380. C 2=200-400, 3=400-600, 4=600-800,
390. C 5=800-1000)
400. C RDTCT(I,J,K) RED WEAPON DETECT TIMES AGAINST BLUE
410. C TARGETS BASED ON TARGET EXPOSURE I,
420. C RED WEAPON SENSOR B, AND RANGE BAND K
430. C (SEE ABOVE)
440. C
450. C
460. C DIMENSION BMVRT(4,2), RMVRT(4,2), BDTCT(4,4,5), RDTCT(4,4,5)
470. C
480. C
490. C
500. C SELECT POINTER TO PROPER MOVEMENT RATE
510. C DEFINE FILE 27(6,8,U,K27),20(30,16,U,K20)
520. C K27=(IOPN-1)*2+1
530. C READ (27,K27) ((BMVRT(I,J),I=1,4),J=1,2)
540. C READ (27,K27) ((RMVRT(I,J),I=1,4),J=1,2)
550. C
560. C SELECT POINTER TO PROPER DETECTION FILE
570. C K20=(IOPS-1)*10+1
580. C DO 10 K=1,5
590. C READ (20,K20) ((BDTCT(I,J,K),I=1,4),J=1,4)
600. C CONTINUE
610. C
620. C DO 20 K=1,5
630. C READ (20,K20) ((RDTCT(I,J,K),I=1,4),J=1,4)
640. C CONTINUE
650. C
660. C CLOSE (20)
670. C CLOSE (27)
680. C KK27=K27

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690.	KK20=K20
700.	RETURN
710.	DEBUG SUBCHK
720.	A1 1
730.	END

N 99 IBANK 219 DBANK

DIAMPUBLISH.MVRT

R1 04/01/82-10:33(D,)

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100. C***** SUBROUTINE MVRT *****
110. C
120. C
130. C
140. SUBROUTINE MVRT(XOVWTH,XDFAT,XWDRW,TRNTP,XCHR,XWPN,
150. )
160. C
170. C THIS SUBROUTINE DETERMINES XWPMVR(I,J), THE MOVEMENT RATES
180. C FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
190. C
200. C XOVWTH INDEX FOR X FORCE: 1=NOT IN OVERWATCH,
210. C 2=IN OVERWATCH
220. C XDFAT INDEX FOR X FORCE: 1=DEFENSE, 2=OFFENSE
230. C XWDRW INDEX FOR X FORCE: 1=ENGAGE, 2=WITHDRAW
240. C XCHR(I,4) CATEGORY FOR X FORCE WEAPON TYPE 1:
250. C 1=DISMOUNTED, 2=MORTARS, 3=LIGHT, 4=HEAVY
260. C XWPN(I,J+1) NUMBER OF X FORCE WEAPONS IN TACTICAL
270. C MODE J=1,2
280. C XMVRT(A,B) MOVEMENT RATE FOR X FORCE BASED ON:
290. C A=WEAPON CATEGORY, B=TERRAIN TYPE
300. C TRNTP INDEX FOR TERRAIN TYPE: 1=OPEN, 2=CLOSE
310. C
320. C
330. DIMENSION XCHR(10,5),XWPN(10,3),XMVRT(4,2),XWPMVR(10,2)
340. C
350. C
360. 1 IF(XWDRW.EQ.2) THEN
370. VAR = -1
380. ELSE IF(XDFAT.EQ.1) THEN
390. VAR = 0
400. ELSE
410. VAR = 1
420. END IF
430. C
440. DO 10 J=1,2
450. DO 20 I=1,10
460. IF(XWPN(I,J+1).GT.0) THEN
470. XWPMVR(I,J) = XMVRT(XCHR(I,4),TRNTP) * VAR
480. ELSE
490. XWPMVR(I,J) = 0
500. END IF
510. 20 CONTINUE
520. 10 CONTINUE
530. C
540. DO 30 I=1,10
550. IF(XCHR(I,4).EQ.4) THEN
560. IF(XWPN(I,3).GT.0) THEN
570. IF(XOVWTH.EQ.2) THEN
580. XWPMVR(I,2) = 0
590. END IF
600. END IF
610. ELSE IF(XCHR(I,4).EQ.1) THEN
620. IF(XWPN(I,2).GT.0) THEN
630. XWPMVR(I,1) = 0
640. END IF
650. ELSE
660. END IF
670. 30 CONTINUE
680. C

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690.	C	
700.		RETURN
710.		DEBUG SUBCHK
720.		AT 1
730.		END

N 223 IBANK 55 DBANK

DIAMPUBLISH.NDIST

R1 04/01/82-10:33(0,)

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100. C***** SUBROUTINE NDIST *****
110. C
120. C
130. C
140. SUBROUTINE NDIST(DSTBR,XWPN,XCHR,XWPMVR,XSPMDG,DXFXWP)
150. C
160. C THIS SUBROUTINE RECALCULATES DXFXWP(I,J), THE DISTANCE
170. C FROM THE X FORCE CENTROID TO X FORCE WEAPON TYPE I IN
180. C TACTICAL MODE J=1,2
190. C
193. C DSTBR DISTANCE BETWEEN RED AND BLUE CENTROIDS
200. C XWPN(I,J+1) NUMBER OF X FORCE TYPE WEAPON TYPE I IN
210. C TACTICAL MODE J=1,2
220. C XWPMVR(I,J) MOVEMENT RATE FOR X FORCE WEAPON TYPE I IN
230. C TACTICAL MODE J=1,2
240. C XSPMDG(I,J) MOVEMENT SUPPRESSION DEGRADATION FOR X
250. C FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
260. C XCHR(I,4) X FORCE WEAPON TYPE I CATEGORIES:
270. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
280. C
290. C
300. DIMENSION XWPN(10,3),XWPMVR(10,2),XSPMDG(10,2),
310. 1 DXFXWP(10,2),XCHR(10,5)
320. C
330. C
340. C CALCULATE MINIMUM (SUPPRESSION X MOVEMENT RATE)
350. 1 ZMIN = 1000
360. DO 10 J=1,2
370. DO 20 I=1,10
380. IF(XWPN(I,J+1).GT.0) THEN
390. IF(XCHR(I,4).NE.1 .OR. J.NE.1) THEN
400. IF(XWPMVR(I,J).NE.0) THEN
410. ZMIN = AMIN1(ZMIN,XWPMVR(I,J)*(1-XSPMDG(I,J)))
420. END IF
430. END IF
440. END IF
450. 20 CONTINUE
460. 10 CONTINUE
470. C
480. IF(ZMIN.EQ.1000) THEN
490. RETURN
500. END IF
510. C
520. C CALCULATE NEW DISTANCES
530. DO 30 J=1,2
540. DO 40 I=1,10
550. IF(XWPN(I,J+1).GT.0) THEN
560. IF(XCHR(I,4).NE.1 .OR. J.NE.1) THEN
570. IF(XWPMVR(I,J).NE.0) THEN
580. DXFXWP(I,J) = DXFXWP(I,J) + ZMIN
590. END IF
600. ELSE
610. DXFXWP(I,J) = -9999999
620. END IF
630. ELSE
640. DXFXWP(I,J) = -9999999
650. END IF
660. 40 CONTINUE
670. 30 CONTINUE

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680.  C
690.  C      CHECK FOR OVERRUNNING OPPONENTS
700.      DO 50 J=1,2
710.      DO 60 I=1,10
730.      IF(DXFXNP(I,J).GE.DSTBR) THEN
740.      DXFXNP(I,J) = DSTBR -10.0
750.      END IF
760.  60      CONTINUE
770.  50      CONTINUE
780.  C
790.      RETURN
800.      DEBUG SUBCHK
810.      AT 1
820.      END
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N 295 IBANK 61 DBANK

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DIAMPUBLISH.NUMTGT

R1 04/01/82-10:3310,1

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100. C ***** SUBROUTINE NUMTGT *****
110. C
120. C
130. C
140. SUBROUTINE NUMTGT(XYPKW,YWPN,PCYVXZ,YSPFDG,TOTYTG)
150. C
160. C THIS SUBROUTINE CALCULATES TOTYTG(I,J), TOTAL Y TARGETS
170. C FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
180. C
190. C YWPN(K,L+1) CONTAINS NUMBER OF Y FORCE WEAPON TYPE K
200. C IN TACTICAL MODE L=1,2
210. C PCYVXZ(K,N,L) PERCENT OF Y FORCE WEAPON TYPE K IN TACTICAL
220. C MODE L=1,2 VISIBLE TO X FORCE WEAPON TYPE N
230. C OF WHICH N=11,20 ARE IN TACTICAL MODE 2
240. C XYPKW(I,M,J) SINGLE SHOT PROBABILITY OF KILL(SSPK)
250. C OF X FORCE WEAPON TYPE I IN TACTICAL
260. C MODE J=1,2 AGAINST Y FORCE TARGET TYPE M
270. C OF WHICH M=11,20 ARE IN TACTICAL MODE 2
280. C YSPFDG(K,L) FIRE SUPPRESSION AGAINST Y FORCE
290. C WEAPON TYPE K IN TACTICAL MODE L=1,2
300. C
310. C
320. DIMENSION XYPKW(10,20,2),YWPN(10,3),PCYVXZ(10,20,2)
330. 1, YSPFDG(10,2),TOTYTG(10,2)
340. C
350. DO 10 J=1,2
360. DO 20 I=1,10
370. DO 30 L=1,2
380. DO 40 K=1,10
390. C
400. IF (XYPKW(I,K+(L-1)*10,J).GT.0) THEN
410. TOTYTG(I,J) = PCYVXZ(K,I+(J-1)*10,L) * YWPN(K,L+1)
420. 1 * (1-YSPFDG(K,L)*0.33) + TOTYTG(I,J)
430. END IF
440. C
450. 40 CONTINUE
460. 30 CONTINUE
470. 20 CONTINUE
480. 10 CONTINUE
490. C
500. RETURN
510. DEBUG SUBCHK
520. END

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N 176 IBANK 61 DBANK

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DIAMPUBLISH.PCTBL

R1 04/01/82-10:33(U,)

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100. C***** SUBROUTINE PCTBL *****
11. C
12. C
13. C
14. SUBROUTINE PCTBL(BWDRW,RWDRW,DFRC,PCRVBE,PCRVBW,PCRWVB,
15. 1 PCVRE,PCVRW,PCBWR,PCRVBC,PCBVR)
16. C
17. C THIS SUBROUTINE DETERMINES WHICH TWO OF THE SIX
18. C VISIBILITY TABLES TO USE IN THE ATTRITION LOOP
19. C BASED ON THE VALUE OF XWITHR AND YWITHR
20. C
21. C BWDRW INDEX FOR BLUE FORCE: 1=ENGAGE, 2=WITHDRAW
22. C RWDRW INDEX FOR RED FORCE: 1=ENGAGE, 2=WITHDRAW
23. C DFRC INDEX: 1=BLUE DEFENDS, 2=RED DEFENDS
24. C PCRVBE(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
25. C VISIBLE TO BLUE FORCE WEAPON CATEGORY J
26. C IN THE KTH RANGE BAND DURING ENGAGEMENT
27. C PCVRE(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
28. C VISIBLE TO RED FORCE WEAPON CATEGORY J
29. C IN THE KTH RANGE BAND DURING ENGAGEMENT
30. C PCRVBW(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
31. C VISIBLE TO BLUE FORCE WEAPON CATEGORY J
32. C IN THE KTH RANGE BAND DURING BLUE FORCE
33. C WITHDRAWAL
34. C PCBWR(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
35. C VISIBLE TO RED FORCE WEAPON CATEGORY J
36. C IN THE KTH RANGE BAND DURING BLUE FORCE
37. C WITHDRAWAL
38. C PCRWVB(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
39. C VISIBLE TO BLUE FORCE WEAPON CATEGORY J
40. C IN THE KTH RANGE BAND DURING RED FORCE
41. C WITHDRAWAL
42. C PCVRW(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
43. C VISIBLE TO RED FORCE WEAPON CATEGORY J
44. C IN THE KTH RANGE BAND DURING RED FORCE
45. C WITHDRAWAL
46. C
47. C
48. C DIMENSION PCRVBE(4,4,5),PCRVBW(4,4,5),PCRWVB(4,4,5)
49. C 1, PCVRE(4,4,5),PCVRW(4,4,5),PCBWR(4,4,5)
50. C 2, PCRVBC(4,4,5),PCBVR(4,4,5)
51. C
52. C
53. C IF(BWDRW.EQ.2 .AND. RWDRW.EQ.2) THEN
54. C IF(DFRC.EQ.1) THEN
55. C 1 RWDRW=1
56. C ELSE
57. C BWDRW=1
58. C END IF
59. C END IF
60. C
61. C IF(BWDRW.EQ.1 .AND. RWDRW.EQ.1) THEN
62. C DO 10 I=1,4
63. C DO 20 J=1,4
64. C DO 30 K=1,5
65. C PCRVBC(I,J,K)=PCRVBE(I,J,K)
66. C PCBVR(I,J,K)=PCVRE(I,J,K)
67. C 30 CONTINUE
68. C 20 CONTINUE

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690. 10 CONTINUE
700. C
710. LLSE IF IBWDRW.EQ.21 THEN
720. DO 40 I=1,4
730. DO 50 J=1,4
740. DO 60 K=1,5
750. PCRVBC(I,J,K)=PCRVBW(I,J,K)
760. PCBVRC(I,J,K)=PCBVWR(I,J,K)
770. 60 CONTINUE
780. 50 CONTINUE
790. 40 CONTINUE
800. C
810. LLSE
820. DO 70 I=1,4
830. DO 80 J=1,4
840. DO 90 K=1,5
850. PCRVBC(I,J,K)=PCRVWB(I,J,K)
860. PCBVRC(I,J,K)=PCBVWR(I,J,K)
870. 90 CONTINUE
880. 80 CONTINUE
890. 70 CONTINUE
900. END IF
910. C
920. RETURN
930. DEBUG SUBCHK
940. AT 1
950. END

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N 344 IBANK 87 DBANK

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DIAMPUBLISH.PCWPVS

21 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE PCWPVS *****
110. C
120. C
130. C
140. SUBROUTINE PCWPVS(XCHR,YCHR,PCXVYC,XVRGBD,PCXVYZ)
150. C
160. C THIS SUBROUTINE DETERMINES PCXVYZ(I,M,J), THE FRACTION OF X
170. C FORCE WEAPON TYPE J IN TACTICAL MODE J=1,2 VISIBLE TO Y
180. C FORCE WEAPON TYPE M OF WHICH M=1,20 ARE IN TACTICAL
190. C MODE 2
200. C
210. C XCHR(I,4) WEAPON CATEGORY OF X FORCE WEAPON TYPE I:
220. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
230. C YCHR(K,4) WEAPON CATEGORY OF Y FORCE WEAPON TYPE K:
240. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
250. C PCXVYC(A,B,C) FRACTION OF X FORCE WEAPON CATEGORY A
260. C VISIBLE TO Y FORCE WEAPON CATEGORY B
270. C IN RANGE BAND C
280. C XVRGBD(I,M,J) RANGE BANDS FOR X FORCE WEAPON TYPE I IN
290. C TACTICAL MODE J=1,2 AGAINST Y FORCE WEAPON
300. C TYPE M OF WHICH M=1,20 ARE IN TACTICAL
310. C MODE 2
320. C
330. C
340. DIMENSION XCHR(10,5),YCHR(10,5),PCXVYC(4,4,5),XVRGBD(10,20,2)
350. 1, PCXVYZ(10,20,2)
360. C
370. C
380. 1 DO 10 J=1,2
390. DO 20 I=1,10
400. DO 30 L=1,2
410. DO 40 K=1,10
420. C
430. IF(XVRGBD(I,K+(L-1)*10,J).EQ.6) THEN
440. PCXVYZ(I,K+(L-1)*10,J) = 0
450. ELSE
460. PCXVYZ(I,K+(L-1)*10,J) =
470. 1 PCXVYC(XCHR(I,4),YCHR(K,4),XVRGBD(I,K+(L-1)*10,J))
480. END IF
490. C
500. 40 CONTINUE
510. 30 CONTINUE
520. 20 CONTINUE
530. 10 CONTINUE
540. C
550. RETURN
560. DEBUG SUBCHK
570. AT 1
580. END

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N 2(7 10ANK 6) DBANK

SIFIED

DIAMPUBLISH.PKIN

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R1 01/01/82-10:33(0,)  
100. SUBROUTINE PKIN(BRPK, RBPK, BCHR, RCHR, IBU, IRD, KK15, KK16, NUMB,  
110. INUMR, IU)  
120. DIMENSION IBU(10), IRD(10), PREC(25), BRPK(10,10,5), RBPK(10,10,5)  
130. 1, BCHR(10,5), RCHR(10,5), BNAME(10), RNAME(10)  
140. C  
150. C ZERO PK ARRAYS  
160. C  
170. DEFINE FILE 15(300,26,U,K15), 16(300,26,U,K16)  
180. CC PRINT 2002, IU  
190. 2002 FORMAT(1X, 'IU ', 15)  
200. 1 DO 30 I=1,10  
210. DO 20 J=1,10  
220. DO 10 K=1,5  
230. BRPK(I,J,K)=-1.0  
240. RBPK(I,J,K)=-1.0  
250. 10 CONTINUE  
260. 20 CONTINUE  
270. 30 CONTINUE  
280. C  
290. C FILL ARRAY BRPK WITH BLUE VS RED PK  
300. C  
310. DO 60 I=1,NUMB  
320. C  
330. C FIND PROPER BLUE WEAPON ON PK FILE  
340. C  
350. K15=51+(IBU(I)-1)*5  
360. K16=K15  
370. C  
380. C READ IN BLUE RECORDS FOR 5 RANGES  
390. C  
400. DO 50 K=1,5  
410. IF(IU.EQ.1) GO TO 35  
420. READ(15*K15)NAM1,(PREC(L),L=1,25)  
430. GO TO 37  
440. 35 READ(16*K16)NAM1,(PREC(L),L=1,25)  
450. C  
460. C SELECT PROPER RED WEAPON VULNERABILITIES  
470. C  
480. CC PRINT 2001, NAM1,(PREC(L),L=1,14)  
490. 2001 FORMAT(1X,A9,14F5.2)  
500. 37 DO 40 J=1,INUMR  
510. IPT=IRD(J)  
520. IF(PREC(IPT).NE.0.0) BRPK(I,J,K)=PREC(IPT)  
530. 40 CONTINUE  
540. 50 CONTINUE  
550. 60 CONTINUE  
560. C  
570. C FILL ARRAY RBPK WITH RED VS BLUE  
580. C  
590. DO 90 I=1,NUMR  
600. C  
610. C FIND PROPER RED WEAPON ON PK FILE  
620. C  
630. K15=176+(IRD(I)-1)*5  
640. K16=K15  
650. C  
660. C READ IN RED RECORDS FOR 5 RANGES  
670. DO 80 K=1,5  
680. IF(IU.EQ.1) GO TO 65
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690.      READ(15*'K15') NAM1,(PREC(L),L=1,25)
700.      GO TO 67
710.      65  READ(16*'K16') NAM1,(PREC(L),L=1,25)
720.      C
730.      C SELECT PROPER BLUE WEAPON VULNERABILITIES
740.      C
750.      67  DO 70 J=1,NUMB
760.          IPT=JBU(IJ)
770.          IF(PREC(IPT).NE.0) RBP(K1,J,K)=PREC(IPT)
780.      70  CONTINUE
790.      80  CONTINUE
800.      90  CONTINUE
810.      C
820.      C LOAD BLUE WEAPON CHARACTERISTICS
830.      C
840.      DO 140 I=1,NUMB
850.      K15=JBU(I)
860.      K16=K15
870.      IF(IU.EQ.1) GO TO 95
880.      READ(15*'K15') BNAME(I),ISEN,BCHR(I,2),BCHR(I,3),ICAT, BCHR(I,5)
890.      GO TO 97
900.      95  READ(16*'K16') BNAME(I),ISEN,BCHR(I,2),BCHR(I,3),ICAT,BCHR(I,5)
910.      97  BCHR(I,1)=ISEN
920.      BCHR(I,4)=ICAT
930.      CC  PRINT 1000, BNAME(I),(BCHR(I,J),J=1,5)
940.      100  CONTINUE
950.      C
960.      C LOAD RED WEAPON CHARACTERISTICS
970.      C
980.      DO 200 I=1,NUMB
990.      K15=IRD(I)+25
1000.      K16=K15
1010.      IF(IU.EQ.1) GO TO 150
1020.      READ(15*'K15') RNAME(I),ISEN,RCHR(I,2),RCHR(I,3),ICAT,RCHR(I,5)
1030.      GO TO 160
1040.      150  READ(16*'K16') RNAME(I),ISEN,RCHR(I,2),RCHR(I,3),ICAT,RCHR(I,5)
1050.      160  RCHR(I,1)=ISEN
1060.      RCHR(I,4)=ICAT
1070.      CC  PRINT 1000, RNAME(I),(RCHR(I,J),J=1,5)
1080.      200  CONTINUE
1090.      CLOSE(15)
1100.      CLOSE(16)
1110.      KK15=K15
1120.      1000  FORMAT(1X,A4,5F10.3)
1130.      KK16=K16
1140.      RETURN
1150.      C  DEBUG SUBCHK,SUBTRACE
1160.      C  AT 1
1170.      END

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N 311 1BANK 316 DBANK

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DIAMPUBLISH.PKWP

R1 04/01/P2-10:3310,1

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100. C ***** SUBROUTINE PKWP *****
110. C
120. C
130. C
140. SUBROUTINE PKWP (XYPK,XYRGBD,XYPKWP)
150. C
160. C THIS SUBROUTINE DETERMINES XYPKWP(I,M,J), THE SSPK FOR X
170. C FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2 AGAINST Y FORCE
180. C TARGET TYPE M OF WHICH M=1,20 ARE IN TACTICAL MODE 2
190. C
200. C XYPK(I,K,C) SSPK FOR X FORCE WEAPON TYPE I VERSUS Y
210. C FORCE TARGET TYPE M IN RANGE BAND C
220. C XYRGBD(I,M,J) RANGE BAND FOR X FORCE WEAPON TYPE I IN
230. C TACTICAL MODE J=1,2 AGAINST Y FORCE TARGET
240. C TYPE M OF WHICH M=1,20 ARE TACTICAL MODE 2
250. C
260. C
270. DIMENSION XYPK(10,10,5),XYRGBD(10,20,2),XYPKWP(10,20,2)
280. C
290. C
300. 1 DO 10 J=1,2
310. DO 20 I=1,10
320. DO 30 L=1,2
330. DO 40 K=1,10
340. C
350. IF (XYRGBD(I,K+(L-1)*10,J).EQ.0) THEN
360. XYPKWP(I,K+(L-1)*10,J) = 0
370. ELSE
380. XYPKWP(I,K+(L-1)*10,J)=XYPK(I,K,XYRGBD(I,K+(L-1)*10,J))
390. END IF
400. C
410. 40 CONTINUE
420. 30 CONTINUE
430. 20 CONTINUE
440. 10 CONTINUE
450. C
460. RETURN
470. DEBUG SUBCHK
480. AT 1
490. END

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N 166 IBANK 45 DBANK

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DIAMPUBLISH.REMNT

R1 04/01/82-10:33 (0,1)

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100. C***** SUBROUTINE REMNT *****
110. C
120. C
130. C
140. SUBROUTINE REMNT(XCHR,XWPN,XDMAX,XDMV,XDMRTO,XNUMDM,
150. 1 DXFXWP)
160. C
170. C THIS SUBROUTINE MOUNTS DISMOUNTED TROOPS FOR X FORCE
180. C
190. C XTOTDM TOTAL NUMBER OF DISMOUNTED TROOPS
200. C XTOTMC TOTAL NUMBER OF TROOP CARRIERS
210. C XCHR(1,4) CATEGORY OF X FORCE WEAPON TYPE 1:
220. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
230. C XWPN(1,J+1) NUMBER OF X FORCE WEAPON TYPE 1 IN TACTICAL
240. C MODE J=1,2
250. C XDMAX MAXIMUM NUMBER OF TROOPS ALLOWED IN TROOP CARRIER
260. C XDMV INDEX FOR X FORCE: 1=DISMOUNTED, 2=MOUNTED
270. C XDMRTO RATIO OF DISMOUNTED TROOPS TO CARRIERS
280. C XNUMDM NUMBER OF TROOPS THAT MOUNT PER CARRIER
290. C DXFXWP(1,J) DISTANCE FROM X FORCE CENTROID TO X FORCE
300. C WEAPON TYPE 1 IN TACTICAL MODE J=1,2
310. C
320. C
330. C DIMENSION XCHR(10,5),DXFXWP(10,2),XWPN(10,3)
340. C
350. C
360. C IF(XDMRTO.LE.0) THEN
370. C DO NOT REMOUNT
380. C RETURN
390. C
400. C ELSE IF(XDMRTO.LE.XDMAX) THEN
410. 1 DO 10 I=1,10
420. C IF(XCHR(I,4).EQ.1) THEN
430. C IF(XWPN(I,3).GT.0) THEN
440. C XWPN(I,1) = XWPN(I,3)
450. C XWPN(I,3) = 0
460. C DXFXWP(I,1) = -9999999
470. C DXFXWP(I,2) = -9999999
480. C END IF
490. C END IF
500. 10 CONTINUE
510. C XNUMDM = XDMRTO
520. C
530. C ELSE
540. C DO 20 I=1,10
550. C IF(XCHR(I,4).EQ.1) THEN
560. C IF(XWPN(I,3).GT.0) THEN
570. C XWPN(I,2) = XWPN(I,3) * XDMAX/XDMRTO
580. C XWPN(I,3) = XWPN(I,3) - XWPN(I,2)
590. C DXFXWP(I,1) = -9999999
600. C END IF
610. C END IF
620. 20 CONTINUE
630. C XNUMDM = XDMAX
640. C END IF
650. C
660. C CHANGE TROOP CARRIER MODE
670. 25 DO 30 I=1,10
680. C IF(XCHR(I,4).EQ.3) THEN

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690.          IF (XWPN(I,3).GE.0) THEN
700.            XWPN(I,2) = XWPN(I,3)
710.            XWPN(I,3) = 0
720.            DXFXWP(I,1) = DXFXWP(I,2)
730.            DXFXWP(I,2) = -9999999
740.          END IF
750.        END IF
760.      30      CONTINUE
770.      C
780.      XDMV = 1
790.      C
800.      RETURN
810.      DEBUG SUBCHK
820.      AT J
830.      END
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N 321 IBANK 43 DBANK

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DIAMPUBLISH.REPRT

R1 04/01/82-11:33(0,)

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100. C ***** SUBROUTINE REPRT *****
110. C
120. C
130. C
140. C SUBROUTINE REPRT(IGAMTH, RBKVL5, BRKVL5, BNUM, RNUM, BDEAD,
150. 1 RDEAD, BWPN, RWPN, BDSNG, RDSNG, BWDRW, RWDRW,
160. 1 BRDSUM, RRD5UM, DSTMIN)
170. C
180. C THIS SUBROUTINE PRINTS A DIAM BATTLE STATUS REPORT. THE
190. C REPORT LISTS THE KILLER VICTIM SCOREBOARDS AND ALLOWS
200. C THE GAMER TO STOP THE GAME. THE FOLLOWING VARIABLES
210. C ARE INPUT
220. C
230. C IGAMTH GAME TIME IN MINUTES
240. C RBKVL5(I,J) LOSSES OF BLUE WEAPON TYPE J FROM RED WEAPON
250. C TYPE I
260. C BRKVL5(I,J) LOSSES OF RED WEAPON TYPE J FROM BLUE WEAPON
270. C TYPE I
280. C BNUM NUMBER OF BLUE WEAPON SYSTEM TYPES
290. C RNUM NUMBER OF RED WEAPON SYSTEM TYPES
300. C BDEAD(I,J) TOTAL NUMBER OF BLUE WEAPON TYPE I IN TACTICAL
310. C MODE J=1,2
320. C RDEAD(I,J) TOTAL NUMBER OF RED WEAPON TYPE I IN TACTICAL
330. C MODE J=1,2
340. C BDSNG BLUE FORCE INDEX: ENGAGING=1, DISENGAGE=2
350. C RDSNG RED FORCE INDEX: ENGAGING=1, DISENGAGE=2
360. C BWPN(I,J*1) NUMBER OF BLUE FORCE WEAPON TYPE I IN TACTICAL
370. C MODE J=1,2
380. C RWPN(I,J*1) NUMBER OF RED FORCE WEAPON TYPE I IN TACTICAL
390. C MODE J=1,2
400. C BWDRW INDEX FOR BLUE FORCE: ENGAGING=1, WITHDRAWING=2
410. C RWDRW INDEX FOR RED FORCE: ENGAGING=1, WITHDRAWING=2
420. C DSTMIN MINIMUM DISTANCE BETWEEN OPPOSING WEAPONS
430. C
440. C
450. C COMMON/REED/JDAY),XINX(4),ICARD(20),IHY,IHN,IH6,IHYES,IHNO
460. C
470. C DIMENSION RBKVL5(12,13),BRKVL5(12,13),BDEAD(10,2),RDEAD(10,2),
480. 1 DEAD(10),IAM(2),BWPN(10,3),RWPN(10,3),IBH(10),
490. 1 IRH(10),BRDSUM(10,2),RRDSUM(10,2)
500. C
510. C
520. C PRINT 1000, IGAMTH
530. C PRINT 1010, DSTMIN
540. 1 IBNUM=BNUM
550. IRNUM=RNUM
560. IAM(1)='ARTY'
570. IAM(2)='MINE'
580. C
590. C INTEGERIZE BLUE JIFFY POINTERS
600. DO 10 I=1,IBNUM
610. IBH(I) = BWPN(I,1)
620. 10 CONTINUE
630. C
640. C INTEGERIZE RED JIFFY POINTERS
650. DO 20 I=1,IRNUM
660. IRH(I) = RWPN(I,1)
670. 20 CONTINUE
680. C

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690.  C      PRINT BLUE KILLER/RED VICTIM INFORMATION
700.  C      PRINT HEADINGS
710.      PRINT 2000
720.      PRINT 3000, (IRH(I),I=1,IRNUM)
730.  C      PRINT RED DIRECT FIRE LOSSES AND ROUNDS FIRED
740.      DO 30 I=1,IRNUM
750.          PRINT 4000, (BRH(I),(BRVLS(I,J),J=1,IRNUM)
760.          PRINT 4005, (BROSUM(I,K),K=1,2)
770.  30      CONTINUE
780.  C      PRINT RED ARTILLERY AND MINE LOSSES
790.      DO 40 I=1,2
800.          PRINT 4010, (IAM(I),(BRKVLS(I+10,J),J=1,IRNUM)
810.  40      CONTINUE
820.  C      SUM DEAD REDS AND PRINT SUM
830.      DO 50 I=1,IRNUM
840.          DEAD(I) = RDEAD(I,1) + RDEAD(I,2)
850.  50      CONTINUE
860.          PRINT 5000, (DEAD(I),I=1,IRNUM)
870.  C
880.  C      PRINT RED KILLER/BLUE VICTIM INFORMATION
890.  C      PRINT HEADINGS
900.      PRINT 6000
910.      PRINT 3000, (IBH(I),I=1,IBNUM)
920.  C      PRINT BLUE DIRECT FIRE LOSSES AND ROUNDS FIRED
930.      DO 60 I=1,IBNUM
940.          PRINT 4000, (IRH(I),(IBKVLS(I,J),J=1,IBNUM)
950.          PRINT 4005, (IROSUM(I,K),K=1,2)
960.  60      CONTINUE
970.  C      PRINT BLUE ARTILLERY AND MINE LOSSES
980.      DO 70 I=1,2
990.          PRINT 4010, (IAM(I),(IBKVLS(I+10,J),J=1,IBNUM)
1000.  70      CONTINUE
1010.  C      SUM DEAD BLUES AND PRINT SUM
1020.      DO 80 I=1,IBNUM
1030.          DEAD(I) = BDEAD(I,1) + BDEAD(I,2)
1040.  80      CONTINUE
1050.          PRINT 5000, (DEAD(I),I=1,IBNUM)
1060.  C
1070.  C      QUESTION GAMER FOR DISENGAGEMENT
1080.      IF (BWDRW.EQ.1 .AND. RWDRW.EQ.1) THEN
1090.  90      PRINT 7000
1100.          CALL FEED4
1110.          IOUT = XINX(1)
1120.          IF (IOUT.LT.1 .OR. IOUT.GT.3) THEN
1130.              GO TO 90
1140.          ELSE IF (IOUT.EQ.2) THEN
1150.              BDSNG = 2
1160.          ELSE IF (IOUT.EQ.3) THEN
1170.              RDSNG = 1
1180.          ELSE
1190.              BDSNG = 1
1200.              RDSNG = 1
1210.          END IF
1220.      END IF
1230.  C
1240.  1000  FORMAT(1X,'DIAM INFANTRY STATUS REPORT',10X,
1250.      1'BATTLE TIME IS ',13,2X,'MINUTES')
1260.  1010  FORMAT(1X,'MINIMUM DISTANCE BETWEEN OPPOSING WEAPONS IS ',
1270.      1 F6.1,' METERS')
1280.  2000  FORMAT(1X,/,2X,'BLUE',23X,' RED LOSSES',25X,'BLUE RNDS',
1290.      1 /,1X,'KILLER',52X,'PRIMARY/SECONDARY')

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1300. 3000 FORMAT(6X,10(I6))
1310. 4000 FORMAT(3X,I4,12F6.1)
1315. 4005 FORMAT(55X,2F12.1)
1320. 4010 FORMAT(3X,A4,10F6.1)
1330. 5000 FORMAT(1X,/,2X,'TOTAL',10F6.1)
1340. 6000 FORMAT(1X,/,2X,' RED',23X,'BLUE LOSSES',23X,' RED RND',
1350. 1 /,1X,'KILLER',52X,'PRIMARY/SECONDARY')
1360. 7000 FORMAT(//,2X,'DO YOU WISH TO WITHDRAW FORCES? ',
1370. 1')=NO 2=BLUE WITHDRAWS 3=RED WITHDRAWS')
1380. 8000 FORMAT(1)
1390. C
1400. RETURN
1410. DEBUG SUBCHK
1420. AT 1
1430. END

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N 334 IBANK 621 DBANK 30 COMMON

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DIAMPUBLISH.RNDCK

R1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE RNDCK *****
110. C
120. C
130. C
140. SUBROUTINE RNDCK(XWPN,XCHR,YCHR,XNUM,YNUM,XRDFR,XAMO,XRDSUM)
150. C
160. C THIS SUBROUTINE COMPARES THE AMOUNT OF ROUNDS TO FIRE WITH
170. C THE NUMBER OF ROUNDS AVAILABLE TO FIRE. IF ROUNDS FIRED
180. C FROM XRDFR ARE GREATER THAN THE ROUNDS AVAILABLE TO FIRE
190. C IN XAMO, THEN THE ROUNDS ARE REAPPORTIONED SO THAT THE
200. C TOTAL NUMBER OF ROUNDS TO FIRE DOES NOT EXCEED ONE FOURTH
210. C OF THE CURRENTLY AVAILABLE ROUNDS.
220. C
230. C FOR WEAPON SYSTEMS THAT CARRY RIFLES AS SECONDARY WEAPONS,
240. C THE NUMBER OF ROUNDS FOR RIFLES IS INCREASED TO REFLECT
250. C RIFLE FIRING
260. C
270. C XWPN(I,J) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
280. C MODE J=2,3
290. C XAMO(I,J) AMMUNITION FOR X FORCE WEAPON TYPE I OF WHICH
300. C J=1 IS FOR THE PRINCIPAL WEAPON, AND J=2 IS
310. C FOR RIFLES. THIS ARRAY CONTAINS THE AVERAGE OF
320. C AMMO AVAILABLE PER WEAPON
330. C XCHR(I,4) WEAPON CATEGORY FOR X FORCE WEAPON TYPE I:
340. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
350. C YCHR(I,4) WEAPON CATEGORY FOR Y FORCE WEAPON TYPE I:
360. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
370. C XCHR(I,5) TIME TO AIM, RELOAD, AND FIRE FOR X FORCE
380. C WEAPON TYPE I
390. C XRDFR(I,J,K) ROUNDS TO FIRE FOR X FORCE WEAPON TYPE
400. C I IN TACTICAL MODE K=1,2 AGAINST TARGETS J OF
410. C WHICH J=11,20 ARE TACTICAL CODE 2
420. C XRDSUM(I,J) TOTAL ROUNDS FIRED FOR WEAPON TYPE I OF
430. C WHICH J=1 IS PRINCIPAL AMMUNITION AND J=2
440. C IS RIFLE AMMUNITION
450. C
460. C
470. C DIMENSION XAMO(10,2),XWPN(10,3),YCHR(10,5),XCHR(10,5)
480. C 1, XRDFR(10,20,2),XRDSUM(10,2)
490. C
500. C
510. I IXNUM=XNUM
520. I YNUM=YNUM
530. C THIS LOOP REAPPORTIONS ALL NON-RIFLE ROUNDS FOR EACH FIRER
540. C DO 100 I=1,IXNUM
550. C SUM TOTAL ROUNDS FIRED AT ALL TARGETS
560. C IF(XWPN(I,2).GT.0.0) GO TO 5
570. C IF(XWPN(I,3).LE.0.0) GO TO 100
580. C SUM =0.0
590. C
600. C SET RIFLE FLAG
610. C IRIFLE=0
620. C IF(XAMO(I,2).NE.0.0) IRIFLE=1
630. C RUN THROUGH ALL TARGETS FOR NON-RIFLE FIRING
640. C DO 20 J=1,IYNUM
650. C CHECK FOR PERSONNEL TYPE TARGET. IF PERSON AND RIFLE
660. C ROUNDS AVAILABLE THEN MUST FIRE RIFLE
670. C IF(YCHR(J,4).EQ.1 .AND. IRIFLE.EQ.1) GO TO 20
680. C SUM TOTAL ROUNDS FIRED AT THIS TARGET BY FIRERS IN

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690.  C   TACTICAL MODES 1 AND 2
700.    DO 10 K=1,2
710.      SUM=XRDFR(I,J,K)+XRDFR(I,J+10,K) + SUM
720.  10  CONTINUE
730.  20  CONTINUE
740.  C
750.  C   COMPARE NUMBER OF ROUNDS FIRED WITH NUMBER AVAILABLE.
760.  C   FIRST TOTAL NUMBER OF WEAPONS ALIVE TO FIRE
770.      TWPN = XWPN(I,2)
780.      IF(XWPN(I,3).GT.0.0) TWPN = TWPN + XWPN(I,3)
790.  C
800.  C
810.  C   COMPUTE THE NUMBER OF NON-RIFLE ROUNDS AVAILABLE
820.  C   PER WEAPON
830.      AVL = TWPN * XAMO(I,1) * 0.25
840.  C   IF NUMBER FIRED LESS THAN AVAILABLE REDUCE ROUNDS
850.  C   IF(SUM.LE.AVL) GO TO 50
860.  C
870.  C   REAPPORTION THE NUMBER AVAILABLE OVER ALL FIRED
880.  C   DO 40 J=1,IYNUM
890.  C   IGNORE PERSONNEL IF RIFLES ARE AVAILABLE
900.  C   IF(IYCHR(J,4).EQ.1 .AND. IRIFLE.EQ.1) GO TO 40
910.      DO 30 K=1,2
920.      XRDFR(I,J,K) = XRDFR(I,J,K)/SUM * AVL
930.      XRDFR(I,J+10,K) = XRDFR(I,J+10,K)/SUM * AVL
940.  30  CONTINUE
950.  40  CONTINUE
960.  C
970.  C   UPDATE XAMO ARRAY
980.  C   XAMO(I,1) = XAMO(I,1) * 0.75
990.  C   GO TO 55
1000.  C   COMPUTE THE AVERAGE NUMBER OF ROUNDS LOST
1010.  50  XAMO(I,1) = XAMO(I,1) - SUM/TWPN
1020.  C
1030.  C   IF NO RIFLE TOTAL ROUNDS
1040.  C   IF(IRIFLE.EQ.0) GO TO 94
1050.  55  CALCULATE RIFLE SHOTS AND SUM ALL SHOTS
1060.  C   SUM = 0.0
1070.  C   DO 70 J=1,IYNUM
1080.      IF(IYCHR(J,4).NE.1.0) GO TO 70
1090.      DO 60 K=1,2
1100.      SUM = XRDFR(I,J,K) + XRDFR(I,J+10,K) + SUM
1110.  60  CONTINUE
1120.  70  CONTINUE
1130.  C
1140.  C   IF(SUM.EQ.0.0) GO TO 94
1150.  C   COMPUTE NUMBER OF WEAPONS AVAILABLE
1160.  C   TWPN = XWPN(I,2)
1170.  C   IF(XWPN(I,3).GT.0) TWPN= TWPN + XWPN(I,3)
1180.  C
1190.  C   COMPUTE NUMBER OF RIFLE ROUNDS FIRED TAKE AIM
1200.  C   FIRE RELOAD TIME FOR THIS PRINCIPAL WEAPON ARE
1210.  C   DIVIDED BY 3 SECONDS FOR AIM, FIRE, AND RELOAD
1220.  C   FOR RIFLE
1230.      AVL = XAMO(I,2) * TWPN * 0.25
1240.      IF(SUM*XCHR(I,5)/3.0 .LT. AVL) AVL=SUM*XCHR(I,5)/3.0
1250.  C
1260.  C   REAPPORTION RIFLE FIRINGS
1270.  C   DO 90 J=1,IYNUM
1280.  C   CHECK FOR PERSONNEL TARGET
1290.  C   IF (YCHR(J,4).NE.1) GO TO 90
1300.  C
1310.  C
1320.  C
1330.  C
1340.  C

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1350.      DO 80 K=1,2
1360.      XRDFR(I,J,K) = XRDFR(I,J,K)/SUM * AVL
1370.      XRDFR(I,J+10,K) = XRDFR(I,J+10,K)/SUM * AVL
1380.      80  CONTINUE
1390.      90  CONTINUE
1400.      XAMC(I,2) = XAMC(I,2) - AVL/TWPN
1410.      C
1420.      C      SUM ROUNDS FIRED
1430.      94  DO 95 J=1,IYNUM
1440.      K=1
1450.      IF (IRIFLE.EQ.1 .AND. YCHR(J,4).EQ.1) K=2
1460.      XROSUM(I,K) = XRDFR(I,J,1) + XRDFR(I,J+10,2) + XROSUM(I,K)
1465.      1    + XRDFR(I,J+10,1) + XRDFR(I,J,2)
1470.      95  CONTINUE
1480.      100 CONTINUE
1490.      C
1500.      RETURN
1510.      DEBUG SUBCHK
1520.      AT 1
1530.      END

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N 761 1BANK 85 DBANK

SIFIED

DIAMPUBLISH,RNDFRD

R1 04/19/82-11:50(0,)

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100. C***** SUBROUTINE RNDFRD *****
110. C
120. C
130. C
140. SUBROUTINE RNDFRD(XTHKLL,TOTYTG,XWPN,YWPN,PCXVYZ,PCYVXZ,
150. 1 XDFAT,XWRW,XRDKLL,YSPFDG,XSPFDG,XRDFR)
160. C
170. C THIS SUBROUTINE CALCULATES XRDFR(I,M,J), ROUNDS TO FIRE BY X
180. C FORCE WEAPON TYPES I IN TACTICAL MODE J=1,2 TO Y FORCE
190. C TARGET TYPES M OF WHICH M=11,20 ARE IN TACTICAL MODE 2
200. C
210. C XDFAT INDEX FOR X FORCE: 1=DEFENDING, 2=ATTACKING
220. C XWRW INDEX FOR X FORCE: 1=ENGAGING, 2=WITHDRAWING
230. C XTHKLL(I,M,J) TIME TO KILL FOR X FORCE WEAPON TYPE I
240. C IN TACTICAL MODE J=1,2 AGAINST TARGET
250. C TYPE M OF WHICH M=11,20 ARE IN TACTICAL
260. C MODE 2
270. C TOTYTG(I,J) TOTAL NUMBER OF Y FORCE TARGETS FOR
280. C X FORCE WEAPON TYPE I IN TACTICAL
290. C MODE 2
300. C XHPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE K IN
310. C TACTICAL MODE L=1,2
320. C YHPN(K,L+1) NUMBER OF Y FORCE WEAPON TYPE K IN
330. C TACTICAL MODE L=1,2
340. C PCYVXW(K,N,L) PERCENT VISIBLE OF Y FORCE WEAPON
350. C TYPE K IN TACTICAL MODE L=1,2 TO X
360. C FORCE WEAPON TYPE N OF WHICH N=11,20
370. C ARE IN TACTICAL MODE 2
380. C PCXVYW(I,M,J) PERCENT VISIBLE OF X FORCE WEAPON
390. C TYPE I IN TACTICAL MODE J=1,2 TO
400. C Y FORCE WEAPON TYPE M OF WHICH M=11,20
410. C ARE IN TACTICAL MODE 2
420. C XRDKLL(I,M,J) ROUNDS TO KILL FOR X FORCE WEAPON
430. C TYPE I IN TACTICAL MODE J=1,2
440. C AGAINST Y FORCE TARGET TYPES M
450. C OF WHICH M=11,20 ARE IN TACTICAL
460. C MODE 2
470. C XSPFDG(I,J) FIRE SUPPRESSION AGAINST X FORCE
480. C WEAPON TYPE I IN TACTICAL MODE J=1,2
490. C YSPFDG(K,L) FIRE SUPPRESSION AGAINST Y FORCE
500. C WEAPON TYPE K IN TACTICAL MODE L=1,2
510. C FRCTN FRACTION INDICATING TRUE FIRINGS
520. C
530. C
540. DIMENSION XTHKLL(10,20,2),TOTYTG(10,2),YWPN(10,3),XWPN(10,3)
550. 1, PCYVXZ(10,20,2),XRDFR(10,20,2),XRDKLL(10,20,2)
560. 2, XSPFDG(10,2),PCXVYZ(10,20,2),YSPFDG(10,2)
570. C
580. C
590. C FRCTN = 0.5
600. C IF(XDFAT.EQ.2) THEN
610. C FRCTN = 0.25
620. C END IF
630. C IF(XWRW.EQ.2) THEN
640. C FRCTN = 0.20
650. C END IF
660. C
670. 100 DO 10 J=1,2
680. DO 20 I=1,10

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3-70

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690.          DO 30 L=1,2
700.          DO 40 K=1,10
710.      C
720.          XSPDG = 1 - XSPFDG(I,J)
730.          YSPDG = 1 - YSPFDG(K,L)*0.33
740.          RDKLL = XRDKLL(I,K+(L-1)*10,J)
750.          TMKLL = XTMKLL(I,K+(L-1)*10,J)
760.          TOTTG = TOTVTG(I,J)
770.          YWPNN = YWPNN(K,L+1) * PCYVXZ(K,I+(J-1)*10,L)
780.          XWPNN = XWPNN(I,J+1) * PCXVYZ(I,K+(L-1)*10,J)
790.      C
800.          IF (TOTTG.NE.0 .AND. TMKLL.NE.0) THEN
810.              RDFR = ((RDKLL/TMKLL)*XWPNN+YWPNN)/TOTTG) *XSPDG*VSPDG
820.          ELSE
830.              RDFR = 0
840.          END IF
850.          XRDFR(I,K+(L-1)*10,J) = RDFR * FRCIN
860.      C
870.      40      CONTINUE
880.      30      CONTINUE
890.      20      CONTINUE
900.      10      CONTINUE
910.      C
920.          RETURN
930.          DEBUG SUBCHK
940.          AT 100
950.          END

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'N 302 IBANK 110 DBANK

SIFIED

DIAMPUBLISH.RNDKLL

R1 04/01/82-10:33:10.3

C***** SUBROUTINE RNDKLL *****

100.

C

110.

C

120.

C

130.

C

140.

SUBROUTINE RNDKLL(XYPKW,XRDKLL)

150.

C

160.

C

THIS SUBROUTINE CALCULATES XRDKLL(I,M,J), ROUNDS TO KILL
FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2
AGAINST Y FORCE TARGET TYPES M OF WHICH M=11,20
ARE IN TACTICAL MODE 2

170.

C

180.

C

190.

C

200.

C

XYPKW(I,M,J) PROBABILITY OF KILL (SSPK) FOR X FORCE
WEAPON TYPES I IN TACTICAL MODE J=1,2
AGAINST Y FORCE TARGET TYPE M OF
WHICH M=11,20 ARE IN TACTICAL MODE 2

210.

C

220.

C

230.

C

240.

C

250.

C

260.

C

DIMENSION XYPKW(10,20,2),XRDKLL(10,20,2)

270.

C

280.

C

290.

C

300.

100

DO 10 J=1,2

310.

C

DO 20 I=1,10

320.

C

DO 30 L=1,2

330.

C

DO 40 K=1,10

340.

C

PK=XYPKW(I,K+(L-1)*10,J)

350.

C

IF (PK.GT.0) THEN

360.

C

RDKLL=1/PK

370.

C

ELSE

380.

C

RDKLL=0

390.

C

END IF

400.

C

XRDKLL(I,K+(L-1)*10,J) = RDKLL

410.

C

420.

C

430.

40

CONTINUE

440.

30

CONTINUE

450.

20

CONTINUE

460.

10

CONTINUE

470.

C

480.

C

RETURN

490.

C

DEBUG SUBCHK

500.

C

AT 100

510.

C

END

N 106 IBANK 36 DBANK

SIFIED

DIAMPUBLISH.RNGBND

21 04/01/P2-10:33IG,J

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100. C=***** SUBROUTINE RNGBND *****
110. C
120. C
130. C
140. SUBROUTINE RNGBND(DBWRWP,BRRGBD)
150. C
160. C THIS SUBROUTINE CALCULATES BRRGBD(I,J,K), THE RANGE BANDS FOR
170. C EACH BLUE FORCE WEAPON TYPE I IN TACTICAL MODE K=1,2 TO EACH RED
180. C FORCE WEAPON TYPE J OF WHICH J=11,20 ARE IN TACTICAL MODE 2
190. C
200. C DBWRWP(I,J,K) DISTANCE FROM BLUE FORCE WEAPON TYPE I IN TACTICAL
210. C MODE K=1,2 TO RED FORCE WEAPON TYPE J OF WHICH
220. C J=11,20 ARE IN TACTICAL MODE 2
230. C
240. C
250. C DIMENSION DBWRWP(10,20,2),BRRGBD(10,20,2)
260. C
270. C
280. 1 DO 10 K=1,2
290. DO 20 I=1,10
300. DO 30 J=1,20
310. C
320. C ABSDST = ABS(DBWRWP(I,J,K))
330. C
340. C IF(ABSDST.GT.4000) THEN
350. C IBAND=6
360. C ELSE IF(ABSDST.GE.0 .AND. ABSDST.LE.200) THEN
370. C IBAND=1
380. C ELSE IF(ABSDST.GT.200 .AND. ABSDST.LE.400) THEN
390. C IBAND=2
400. C ELSE IF(ABSDST.GT.400 .AND. ABSDST.LE.600) THEN
410. C IBAND=3
420. C ELSE IF(ABSDST.GT.600 .AND. ABSDST.LE.800) THEN
430. C IBAND=4
440. C ELSE
450. C IBAND=5
460. C END IF
470. C
480. C BRRGBD(I,J,K) = IBAND
490. C
500. 30 CONTINUE
510. 20 CONTINUE
520. 10 CONTINUE
530. C
540. C RETURN
550. C DEBUG SUBCHK
560. C AT 1
570. C END

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N 127 IBANK 38 DBANK

SIFIED

DIAMPUBLISH.RNGDST

R1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE RNGDST *****
110. C
120. C
130. C
140. SUBROUTINE RNGDST(BRRGBD,RBRGBD,DBWRWP,DRWBWP)
150. C
160. C THIS SUBROUTINE DETERMINES RED FORCE WEAPON TO BLUE FORCE
170. C WEAPON DISTANCES AND RANGES GIVEN THE DISTANCES AND
180. C RANGES FROM BLUE FORCE WEAPONS TO RED FORCE WEAPONS
190. C
200. C BRRGBD(I,M,J) RANGE BANDS FROM BLUE FORCE WEAPON TYPE I IN
210. C TACTICAL MODE J=1,2 TO RED FORCE WEAPON TYPE M
220. C OF WHICH M=11,20 ARE IN TACTICAL MODE 2
230. C RBRGBD(K,N,L) RANGE BANDS FROM RED FORCE WEAPON TYPE K IN
240. C TACTICAL MODE L=1,2 TO BLUE FORCE WEAPON TYPE
250. C N OF WHICH N=11,20 ARE IN TACTICAL MODE 2
260. C DBWRWP(I,M,J) DISTANCE FROM BLUE FORCE WEAPON TYPE I IN
270. C TACTICAL MODE J=1,2 TO RED FORCE WEAPON TYPE
280. C M OF WHICH M=11,20 ARE IN TACTICAL MODE 2
290. C DRWBWP(K,N,L) DISTANCE FROM RED FORCE WEAPON TYPE K IN
300. C TACTICAL MODE L=1,2 TO BLUE FORCE WEAPON TYPE
310. C N OF WHICH N=11,20 ARE IN TACTICAL MODE 2
320. C
330. C
340. DIMENSION BRRGBD(10,20,2),RBRGBD(10,20,2),
350. 1 DBWRWP(10,20,2),DRWBWP(10,20,2)
360. C
370. C
380. I DO 10 J=1,2
390. DO 20 I=1,10
400. DO 30 L=1,2
410. DO 40 K=1,10
420. C
430. RBRGBD(K,I+(J-1)*10,L) = BRRGBD(I,K+(L-1)*10,J)
440. DRWBWP(K,I+(J-1)*10,L) = DBWRWP(I,K+(L-1)*10,J)
450. C
460. 40 CONTINUE
470. 30 CONTINUE
480. 20 CONTINUE
490. 10 CONTINUE
500. C
510. RETURN
520. DEBUG SUBCHK
530. AT 1
540. END

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N 149 IBANK 51 DBANK

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DIAMPUBLISH.SP06

R1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE SPDG *****
110. C
120. C
130. C
140. SUBROUTINE SPDG (XWDRW,YWDRW,XDFAT,XCHR,EXCLSS,EYCLSS,XARTSP,
150. 1 XMNLSS,XSPFDG,XSPMDG)
160. C
170. C THIS SUBROUTINE CALCULATES XSPFDG(I,M,J) AND XSPMDG(I,M,J),
180. C FIRE AND MOVEMENT SUPPRESSION FACTORS FOR X FORCE WEAPON
190. C TYPE I IN TACTICAL MODE J=1,2, FROM THE OPPOSING WEAPON
200. C FORCE TYPE M OF WHICH M=11,20 ARE IN TACTICAL MODE 2
210. C
220. C
230. C XWDRW INDEX FOR X FORCE: ENGAGING=1, WITHDRAWING=2
240. C YWDRW INDEX FOR Y FORCE: ENGAGING=1, WITHDRAWING=2
250. C XDFAT INDEX FOR X FORCE: DEFENDING=1, ATTACKING=2
260. C XCHR(I,4) WEAPON CATEGORY FOR X FORCE WEAPON TYPE:
270. C DISMOUNTED=1, MORTARS=2, LIGHT=3, HEAVY=4
280. C EXCLSS(I,M,J) THE EXPECTED COMMITTEE LOSSES FOR X FORCE
290. C TARGET TYPES I IN TACTICAL MODE J=1,2 FROM
300. C OPPOSING FORCE WEAPON TYPES M OF WHICH M=11,20
310. C ARE IN TACTICAL MODE 2
320. C EYCLSS(K,N,L) THE EXPECTED COMMITTEE LOSSES FOR Y FORCE
330. C TARGET TYPES K IN TACTICAL MODE L=1,2 FROM
340. C OPPOSING FORCE WEAPON TYPES N OF WHICH N=11,20
350. C ARE IN TACTICAL MODE 2
360. C XARTSP(I,J) ARTILLERY LOSSES FOR SUPPRESSION FOR X FORCE
370. C WEAPON TYPE I IN TACTICAL MODE J=1,2
380. C XMNLSS(I,J) MINEFIELD LOSSES FOR X FORCE WEAPON TYPE I IN
390. C TACTICAL MODE J=1,2
400. C TACTICAL MODE J=1,2
410. C
420. C
430. C DIMENSION XCHR(10,5),EXCLSS(10,20,2),EYCLSS(10,20,2),
440. 1 XSPFDG(10,2),XSPMDG(10,2),COEF(10,2),
450. 1 XTOTCL(10,2),XARTSP(10,2),XTOTCF(10,2),
460. 1 XMNLSS(10,2)
470. C
480. C
490. C INITIALIZE COEFFICIENTS BASED ON WEAPON CATEGORY
500. 1 DO IC 1=1,10
510. IF(XCHR(I,4).EQ.4) THEN
520. COEF(I,1) = 1
530. COEF(I,2) = 1
540. ELSE IF(XCHR(I,4).EQ.2) THEN
550. COEF(I,1) = 2.86
560. COEF(I,2) = 2.86
570. ELSE
580. COEF(I,1) = 2.86
590. COEF(I,2) = 2.86
600. END IF
610. 10 CONTINUE
620. C
630. C ZERO OUT ARRAYS
640. C VAR=0
650. CALL INIT1(XTOTCF,VAR)
660. CALL INIT1(XTOTCL,VAR)
670. C
680. C TOTAL LOSSES INFLICTED BY X FORCE WEAPON TYPES
690. C TOTAL LOSSES OF X FORCE WEAPON TYPES

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700.      DO 40 I=1,10
710.          DO 50 J=1,2
720.              DO 60 K=1,10
730.                  DO 70 L=1,2
740.                      XTOTCF(I,J) = XTOTCF(I,J) + EYCLSS(K,I*(J-1)*10,L)
750.                      XTOTCL(I,J) = XTOTCL(I,J) + EXCLSS(I,K*(L-1)*10,J)
760.      70      CONTINUE
770.      60      CONTINUE
780.      50      CONTINUE
790.      40      CONTINUE
800.      C
810.      C      ADD IN ARTILLERY LOSSES FOR SUPPRESSION AND MINE LOSSES
820.          DO 80 I=1,10
830.              DO 90 J=1,2
840.                  XTOTCL(I,J) = XTOTCL(I,J) + XARTSP(I,J) + XMNLS(I,J)
850.      90      CONTINUE
860.      80      CONTINUE
870.      C
880.      C      CALCULATE SUPPRESSION
890.          DO 100 I=1,10
900.              DO 110 J=1,2
910.                  IF(XTOTCF(I,J).GT.0) THEN
920.                      RATIO = XTOTCL(I,J) / XTOTCF(I,J)
930.                      IF(XDFA1.EQ.1) THEN
940.                          IF(XWDRW.EQ.1 .AND. YWDRW.EQ.1) THEN
950.                              FSP = COEF(I,J) * (2.06 * RATIO + 1.54) / 100
960.                          ELSE
970.                              FSP = COEF(I,J) * (1.06 * RATIO + .14) / 100
980.                          END IF
990.                      ELSE
1000.                         IF(XWDRW.EQ.1 .AND. YWDRW.EQ.1) THEN
1010.                             FSP = COEF(I,J) * (8. * RATIO**1.5 + 3.28) / 100
1020.                         ELSE
1030.                             FSP = COEF(I,J) * (2.5 * RATIO**1.5 + .5) / 100
1040.                         END IF
1050.                     END IF
1060.                     XSPFDG(I,J) = AMIN(1.8,FSP)
1080.                     XSPMDG(I,J) = AMIN(1.9,FSP)
1090.                 ELSE
1100.                     XSPFDG(I,J) = 0
1110.                     XSPMDG(I,J) = 0
1120.                 END IF
1130.      110      CONTINUE
1140.      100      CONTINUE
1150.      C
1160.      RETURN
1170.      DEBUG SUBCHK
1180.      AT 1
1190.      END

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N 493 IBANK 185 DBANK

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DIAMPUBLISH.TACUSM

R1 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE TACDSM *****
110. C
120. C
130. C
140. SUBROUTINE TACDSM(XDMV,XCHR,YCHR,XWPN,DXFXWP,DXWYWP,XTACA)
150. C
160. C THIS SUBROUTINE ALTERS THE TACTICAL MODE OF ONLY LIGHT
170. C CATEGORY WEAPON TYPES IN THE ATTACKING FORCE. WHEN
180. C A SPECIFIED OPPOSING WEAPON CATEGORY IS WITHIN A
190. C SPECIFIED DISTANCE, THE LIGHT CATEGORY CAN DISMOUNT
200. C INFANTRY.
210. C
220. C
230. C XDMV INDEX FOR X FORCE: 1=MOUNTED, 2=DISMOUNTED
240. C XCHR(I,4) CATEGORY OF X FORCE WEAPON TYPE I:
250. C J=DISMOUNTED, 2=MORTARS, 3=LIGHT, 4=HEAVY
260. C YCHR(K,4) CATEGORY OF Y FORCE WEAPON TYPE K:
270. C J=DISMOUNTED, 2=MORTARS, 3=LIGHT, 4=HEAVY
280. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
290. C MODE J=1,2
300. C DXWYWP(I,M,J) DISTANCE FROM X FORCE WEAPON TYPE I IN TACTICAL
310. C MODE J=1,2 TO Y FORCE WEAPON TYPE M OF WHICH
320. C M=11,20 ARE IN TACTICAL MODE 2
330. C XTACA(A,B) TACTICS ARRAY FOR ATTACKING FORCE X
340. C A=1 FOR LIGHT CATEGORY
350. C A=2 FOR HEAVY CATEGORY
360. C B=1 OPPOSING WEAPON CATEGORY
370. C B=2 DISTANCE BETWEEN A AND B=1
380. C B=3 PERCENTAGE OF NUMBER OF WEAPON TYPES
390. C IN TACTICAL MODE 1 THAT GO INTO TACTICAL MODE 2
400. C DXFXWP(I,J) DISTANCE FROM X FORCE CENTROID TO X FORCE
410. C WEAPON TYPE I IN TACTICAL MODE J=1,2
420. C
430. C
440. C DIMENSION XCHR(10,5),YCHR(10,5),XWPN(10,3),DXWYWP(10,20,2)
450. C 1, XTACA(2,3),DXFXWP(10,2)
460. C
470. C
480. C DO 10 I=1,10
490. C DO 20 K=1,10
500. C DO 30 L=1,2
510. C
520. C XCAT=XCHR(I,4)
530. C IF(XCAT.EQ.3) THEN
540. C IF(XTACA(I,1).EQ.YCHR(K,4)) THEN
550. C IF(XTACA(I,2).GE.ABS(DXWYWP(I,K*(L-1)*10,1))) THEN
560. C DIST = DXFXWP(I,1)
570. C
580. C DISMOUNT TROOPS
590. C DO 40 M=1,10
600. C IF(XCHR(M,4).EQ.1) THEN
610. C IF(XWPN(M,2).GT.0) THEN
620. C XWPN(M,3) = XWPN(M,2)
630. C XWPN(M,2) = 0
640. C DXFXWP(M,2) = DIST
650. C DXFXWP(M,1) = -9999999
660. C END IF
670. C END IF
680. C 40 CONTINUE

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690.  C
700.  C
710.
720.      CHANGE TROOP CARRIER MODE
730.      DO 50 N=1,10
740.          IF(XCHR(N,4).EQ.3) THEN
750.              IF(XWPN(N,3).GE.0) THEN
760.                  IF(XWPN(N,2).GT.0) THEN
770.                      XWPN(N,3) = XWPN(N,2)
780.                      XWPN(N,2) = 0
790.                      DXFXWP(N,2) = DXFXWP(N,1)
800.                      DXFXWP(N,1) = -9999999
810.                  END IF
820.              END IF
830.          END IF
840.          CONTINUE
850.          XDMV = 2
860.          RETURN
870.  C
880.      END IF
890.      END IF
900.      END IF
910.  C
920.      CONTINUE
930. 30
940. 20
950. 10
960.  C
970.  C
980.  C
990.  C
      RETURN
      DEBUG SUBCHK
      AT 1
      END

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N 340 IBANK 77 DBANK

SIFIED

SIFIED

DIAMPUBLISH.TACOVH

71 04/01/82-10:33(0,)

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100. C ***** SUBROUTINE TACOVH *****
110. C
120. C
130. C
140. SUBROUTINE TACOVH(XOVWTH,XCHR,YCHR,XWPN,DXFXWP,DXWYWP,XTACA)
150. C
160. C THIS SUBROUTINE ALTERS THE TACTICAL MODE OF ONLY HEAVY
170. C CATEGORY WEAPON TYPES IN THE ATTACKING FORCE. WHEN
180. C A SPECIFIED OPPOSING WEAPON CATEGORY IS WITHIN A
190. C SPECIFIED DISTANCE, THE HEAVY CATEGORY CAN GO INTO
200. C OVERWATCH.
210. C
220. C
23. C XOVWTH INDEX FOR X FORCE: 1=NOT IN OVERWATCH,
240. C 2=IN OVERWATCH
250. C XCHR(I,4) CATEGORY OF X FORCE WEAPON TYPE I:
260. C 1=DISMOUNTED, 2=MORTARS, 3=LIGHT, 4=HEAVY
270. C YCHR(K,4) CATEGORY OF Y FORCE WEAPON TYPE K:
280. C 1=DISMOUNTED, 2=MORTARS, 3=LIGHT, 4=HEAVY
290. C XWPN(I,J+1) NUMBER OF X FORCE WEAPON TYPE I IN TACTICAL
300. C MODE J=1,2
310. C DXWYWP(I,M,J) DISTANCE FROM X FORCE WEAPON TYPE I IN TACTICAL
320. C MODE J=1,2 TO Y FORCE WEAPON TYPE M OF WHICH
33. C M=11,20 ARE IN TACTICAL MODE 2
340. C XTACA(A,B) TACTICS ARRAY FOR ATTACKING FORCE X
35. C A=1 FOR LIGHT CATEGORY
36. C A=2 FOR HEAVY CATEGORY
370. C B=1 OPPOSING WEAPON CATEGORY
380. C B=2 DISTANCE BETWEEN A AND B=1
39. C B=3 PERCENTAGE OF NUMBER OF WEAPON TYPES
400. C IN TACTICAL MODE 1 THAT GO INTO TACTICAL MODE 2
410. C DXFXWP(I,J) DISTANCE FROM X FORCE CENTROID TO X FORCE
420. C WEAPON TYPE I IN TACTICAL MODE J=1,2
430. C
440. C
450. C DIMENSION XCHR(10,5),YCHR(10,5),XWPN(10,3),DXWYWP(10,20,2)
460. C 1, XTACA(2,3),DXFXWP(10,2)
470. C
480. C
490. C DO 10 I=1,10
500. C DO 20 K=1,10
510. C DO 30 L=1,2
520. C
530. C XCAT=XCHR(I,4)
540. C IF(XCAT.EQ.4) THEN
550. C IF(XTACA(2,1).EQ.YCHR(K,4)) THEN
560. C IF(XTACA(2,2).GE.ABS(DXWYWP(I,K+(L-1)*10,1))) THEN
570. C DIST = DXFXWP(I,1)
580. C
590. C SHIFT HEAVY WEAPONS INTO OVERWATCH
600. C DO 40 M=1,10
610. C IF(XCHR(M,4).EQ.4) THEN
620. C IF(XWPN(M,2).GT.0) THEN
630. C XWPN(M,3) = XWPN(M,2) * XTACA(2,3)
640. C XWPN(M,2) = XWPN(M,2) - XWPN(M,3)
650. C DXFXWP(M,2) = DIST
660. C END IF
670. C END IF
680. C 40 CONTINUE

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690.          XCVNTH = 2
700.          RETURN
710.          C
720.          END IF
730.          END IF
740.          END IF
750.          C
760.          30      CONTINUE
770.          20      CONTINUE
780.          10      CONTINUE
790.          C
800.          C
810.          RETURN
820.          DEBUG  SUBCHK
830.          AT 1
840.          END
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N 256 IBANK 73 DBANK

SIFIED

DIAMPUBLISH.TALLY

R1 04/01/82-10:3310,1

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100. C***** SUBROUTINE TALLY *****
110. C
120. C
130. C
140. SUBROUTINE TALLY(XWPN,EXTLSS,XARTLS,XMNLSS,XDEAD)
150. C
160. C THIS SUBROUTINE CUMULATES XDEAD(I,J), TOTAL LOSSES OF
170. C X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2. THE
180. C REMAINING X FORCE WEAPON TYPES ARE ALSO DETERMINED.
190. C
200. C XWPN(I,J+1) NUMBER OF X FORCE TYPE WEAPON TYPE I IN
210. C TACTICAL MODE J=1,2
220. C EXTLSS(I,J) TOTAL EXPECTED LOSSES FOR X FORCE WEAPON
230. C TYPE I IN TACTICAL MODE J=1,2
240. C XMNLSS(I,J) MINE LOSSES FOR X FORCE WEAPON TYPE I IN
250. C TACTICAL MODE J=1,2
260. C
270. C
280. C
290. C
300. DIMENSION XWPN(10,3),EXTLSS(10,2),XDEAD(10,2),XARTLS(10,2)
310. 1, XMNLSS(10,2)
320. C
330. C
340. 1 DO 10 J=1,2
350. DO 20 I=1,10
360. C
370. XWPN(I,J+1) = XWPN(I,J+1) - EXTLSS(I,J) - XMNLSS(I,J)
380. XDEAD(I,J) = XDEAD(I,J) + EXTLSS(I,J) + XMNLSS(I,J)
390. C
400. IF(XWPN(I,J+1).GT.0) THEN
410. IF(XARTLS(I,J).GT.XWPN(I,J+1)) THEN
420. XARTLS(I,J) = XWPN(I,J+1)
430. END IF
440. END IF
450. C
460. XWPN(I,J+1) = XWPN(I,J+1) - XARTLS(I,J)
470. XDEAD(I,J) = XDEAD(I,J) + XARTLS(I,J)
480. C
490. 20 CONTINUE
500. 10 CONTINUE
510. C
520. RETURN
530. DEBUG SUBCHK
540. AT 1
550. END

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N 318 IBANK 51 DBANK

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DIAMPUBLISH.TERIN

R1 04/01/82-10:33(0,1

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100. C ***** SUBROUTINE TERIN *****
110. C
120. C
130. C
140. SUBROUTINE TERIN(IBAT, KK25, PCRVBE, PCRVBW, PCRVVB, PCBVRE, PCBVRW,
150. * PCBWVR, DFCWC, AWDTH, BWDTH, RWDTH, DGMATT)
160. C
170. C THIS SUBROUTINE LOADS THE FOLLOWING VISIBILITY TABLES,
180. C CORRIDOR WIDTHS, WEAPON CATEGORY DISTANCE OFFSETS,
190. C AND DISENGAGEMENT CRITERIA
200. C
210. C IBAT POINTER TO GAMER SELECTED TERRAIN FILE
220. C KK25 POINTER FROM VISIBILITY FILE
230. C PCRVBE(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
240. C (1=DISMOUNTED, 2=MORTARS, 3=LIGHT,
250. C 4=HEAVY) VISIBLE TO BLUE FORCE WEAPON
260. C CATEGORY J (SEE ABOVE) IN THE KTH RANGE
270. C BAND (1=0-200, 2=200-400, 3=400-600,
280. C 4=600-800, 5=800-1000) DURING ENGAGEMENT
290. C PCBVRE(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
300. C VISIBLE TO RED FORCE WEAPON CATEGORY J
310. C IN THE KTH RANGE BAND DURING ENGAGEMENT
320. C (SEE ABOVE)
330. C PCRVBW(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
340. C VISIBLE TO BLUE FORCE WEAPON CATEGORY J
350. C IN THE KTH RANGE BAND DURING BLUE FORCE
360. C WITHDRAWAL (SEE ABOVE)
370. C PCBWVR(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
380. C VISIBLE TO RED FORCE WEAPON CATEGORY J
390. C IN THE KTH RANGE BAND DURING BLUE FORCE
400. C WITHDRAWAL (SEE ABOVE)
410. C PCRVVB(I,J,K) FRACTION OF RED FORCE WEAPON CATEGORY I
420. C VISIBLE TO BLUE FORCE WEAPON CATEGORY J
430. C IN THE KTH RANGE BAND DURING RED FORCE
440. C WITHDRAWAL (SEE ABOVE)
450. C PCBVRW(I,J,K) FRACTION OF BLUE FORCE WEAPON CATEGORY I
460. C VISIBLE TO RED FORCE WEAPON CATEGORY J
470. C IN THE KTH RANGE BAND DURING RED FORCE
480. C WITHDRAWAL (SEE ABOVE)
490. C DGMATT(A,B) DISENGAGEMENT ATTRITION FRACTIONS OF
500. C WEAPON CATEGORY A (1=DISMOUNTED,
510. C 2=MORTARS, 3=LIGHT, 4=HEAVY) AND
520. C FORCE B (1=BLUE, 2=RED)
530. C DFCWC(A,B) DISTANCE FROM B FORCE CENTROID TO WEAPON
540. C WEAPON CATEGORY CENTROID A (SEE ABOVE)
550. C ABOVE)
560. C AWDTH(A,K) CORRIDOR WIDTHS FOR ATTACKER WEAPON
570. C CATEGORY A IN RANGE BAND K (SEE ABOVE)
580. C BWDTH(A,K) CORRIDOR WIDTHS FOR WITHDRAWING BLUE
590. C WEAPON CATEGORY A IN RANGE BAND K
600. C (SEE ABOVE)
610. C RWDTH(A,K) CORRIDOR WIDTHS FOR WITHDRAWING RED
620. C WEAPON CATEGORY A IN RANGE BAND K
630. C (SEE ABOVE)
640. C
650. C
660. C DIMENSION PCRVBE(4,4,5), PCRVBW(4,4,5), PCRVVB(4,4,5),
670. C * PCBVRE(4,4,5), PCBVRW(4,4,5), PCBWVR(4,4,5),
680. C * AWDTH(4,5), BWDTH(4,5), RWDTH(4,5), DGMATT(4,2),

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690.      *          DFCWC(4,2)
700.      C
710.      C
720.      C      SET K25 BASED ON DESTRED FILE
730.          DEFINE FILE 25(220,20,U,K25)
740.      1      K25=35*(IBAT-1)+1
750.      C
760.      C      READ RED VISIBLE TO BLUE DURING ENGAGEMENT
770.          DO 10 K=1,5
780.              READ(25*K25)((PCRVBE(I,J,K),I=1,4),J=1,4)
790.      10      CONTINUE
800.      C
810.      C      READ BLUE VISIBLE TO RED DURING ENGAGEMENT
820.          DO 20 K=1,5
830.              READ(25*K25)((PCBVRE(I,J,K),I=1,4),J=1,4)
840.      20      CONTINUE
850.      C
860.      C      READ RED VISIBLE TO BLUE WITHDRAWING
870.          DO 30 K=1,5
880.              READ(25*K25)((PCRVBW(I,J,K),I=1,4),J=1,4)
890.      30      CONTINUE
900.      C
910.      C      READ BLUE WITHDRAWING VISIBLE TO RED
920.          DO 40 K=1,5
930.              READ(25*K25)((PCBVWR(I,J,K),I=1,4),J=1,4)
940.      40      CONTINUE
950.      C
960.      C      READ RED WITHDRAWING VISIBLE TO BLUE
970.          DO 50 K=1,5
980.              READ(25*K25)((PCRWVB(I,J,K),I=1,4),J=1,4)
990.      50      CONTINUE
1000.     C
1010.     C      READ BLUE VISIBLE TO RED WITHDRAWING
1020.         DO 60 K=1,5
1030.             READ (25*K25)((PCBVWR(I,J,K),I=1,4),J=1,4)
1040.     60     CONTINUE
1050.     C
1060.     C      READ OFFSET DISTANCES FOR BLUE THEN RED
1070.         READ(25*K25)((DFCWC(I,J),I=1,4),J=1,2)
1080.     C
1090.     C      READ CORRIDOR WIDTHS FOR THE ATTACKER
1100.         READ(25*K25)((AWDTH(I,J),J=1,5),I=1,4)
1110.     C
1120.     C      READ BLUE WITHDRAWAL WIDTHS
1130.         READ(25*K25)((BWDTN(I,J),J=1,5),I=1,4)
1140.     C
1150.     C      READ RED WITHDRAWAL WIDTHS
1160.         READ(25*K25)((RWDTN(I,J),J=1,5),I=1,4)
1170.     C
1180.     C      READ DISENGAGEMENT CRITERIA
1190.         READ (25*K25)((DGMATT(I,J),I=1,4),J=1,2)
1200.     C
1210.         CLOSE(25)
1220.         KK25=K25
1230.         RETURN
1240.     C      DEBUG SUBCHK
1250.     C      AT 1
1260.         END

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DIAMPUBLISH.TIMENG

R1 04/01/82-10:3310,1

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100. C ***** SUBROUTINE TIMENG *****
110. C
120. C
130. C
140. SUBROUTINE TIMENG(XQVWTH,XVPKW,XVRGBD,XCHR,YCHR,YDFAT,
150. 1 XDTCT,XTMENG)
160. C
170. C THIS SUBROUTINE CALCULATES, XTMENG(I,M,J), TIME TO ENGAGE
180. C FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2 TO ALL
190. C Y FORCE TARGET TYPE M OF WHICH M=11,20 ARE IN TACTICAL
200. C MODE 2
210. C
220. C XQVWTH INDEX FOR X FORCE: NOT IN OVERWATCH=1,
230. C IN OVERWATCH=2
240. C XDTCT(A,B,C) X FORCE DETECT TIMES BASED ON EXPOSURE
250. C A, SENSORS B, AND RANGE BAND C
260. C XVPKW(I,M,J) PROBABILITY OF KILL FOR X FORCE
270. C WEAPON TYPE I IN TACTICAL MODE J=1,2
280. C AGAINST Y FORCE TARGET TYPE M OF WHICH
290. C M=11,20 ARE IN TACTICAL MODE 2
300. C XVRGBD(I,M,J) RANGE BANDS FOR X FORCE WEAPON TYPE I
310. C IN TACTICAL MODE J=1,2 AGAINST Y FORCE
320. C TARGET TYPE M OF WHICH M=11,20 ARE IN
330. C TACTICAL MODE 2
340. C XCHR(I,1) CONTAINS SENSOR TYPE FOR X FORCE
350. C WEAPON TYPE I: EYE=1, OPTICAL=2
360. C THERMAL=3, IMAGE INTENSIFIER=4
370. C VCHR(I,4) CONTAINS CATEGORY OF Y FORCE WEAPON
380. C TYPE I: DISMOUNTED=1, MORTARS=2
390. C LIGHT=3, HEAVY=4
400. C YDFAT Y FORCE DEFEND OR ATTACK VARIABLE:
410. C DEFEND=1, ATTACK=2
420. C IEXPSR A: VEHICLE EXPOSED=1, VEHICLE IN DEFILADE=2
430. C SOLDIER EXPOSED=3, SOLDIER IN DEFILADE=4
440. C
450. C
460. C DIMENSION XVPKW(10,20,2),XVRGBD(10,20,2),XCHR(10,5)
470. C 1, VCHR(10,5),XTMENG(10,20,2),XDTCT(4,4,5)
480. C
490. C
500. 100 DO 10 J=1,2
510. DO 20 I=1,10
520. DO 30 L=1,2
530. DO 40 K=1,10
540. C
550. C ICAT=YCHR(K,4)
560. C IF(XVPKW(I,K*(L-1)*10,J).GT.0) THEN
570. C
580. C IF(ICAT.EQ.3) THEN
590. C IF(YDFAT.EQ.2) THEN
600. C IEXPSR=1
610. C ELSE
620. C IEXPSR=2
630. C END IF
640. C
650. C ELSE IF(ICAT.EQ.4) THEN
660. C IF(YDFAT.EQ.2) THEN
670. C IF(L.EQ.2) THEN
680. C IF(XQVWTH.EQ.2) THEN

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690.          IEXPSR=2
700.          ELSE
710.          IEXPSR=1
720.          END IF
730.          ELSE
740.          IEXPSR=1
750.          END IF
760.          ELSE
770.          IEXPSR=2
780.          END IF
790.  C
800.          ELSE IF (ICAT.EQ.1) THEN
810.          IF (YDFA7.EQ.2) THEN
820.          IF (IL.EQ.2) THEN
830.          IEXPSR=3
840.          ELSE
850.          IEXPSR=4
860.          END IF
870.          ELSE
880.          IEXPSR=4
890.          END IF
900.  C
910.          ELSE
920.          IEXPSR=4
930.  C
940.          END IF
950.  C
960.          XTMENG(I,K+(L-1)*10,J) =
970.          1 XDTCT(IEXPSR,XCHR(1,1),XYRGBD(I,K+(L-1)*10,J))
980.  C
990.          ELSE
1000.         XTMENG(I,K+(L-1)*10,J) = 9999999
1010.         END IF
1020.  C
1030.         IF (XTMENG(I,K+(L-1)*10,J).LE.0) THEN
1040.         XTMENG(I,K+(L-1)*10,J) = 9999999
1050.         END IF
1060.  C
1070.  40 CONTINUE
1080.  30 CONTINUE
1090.  20 CONTINUE
1100.  10 CONTINUE
1110.  C
1120.         RETURN
1130.         DEBUG SUBCHK
1140.         AT 100
1150.         END

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N 312 1BANK 75 DBANK

IFIED

DIAMPUBLISH.TMKLL

11 04/01/82-10:33(0,1)

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100. C ***** SUBROUTINE TMKLL *****
110. C
120. C
130. C
140. SUBROUTINE TMKLL(XTMENG,XCHR,XRDKLL,XVRGBD,XTMKLL)
150. C
160. C THIS SUBROUTINE CALCULATES, XTMKLL(I,M,J), THE TIME TO KILL
170. C FOR X FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2 AGAINST
180. C Y FORCE TARGET TYPES M OF WHICH M=1,20 ARE IN TACTICAL
190. C MODE 2
200. C
210. C XVRGBD(I,M,J) RANGE BANDS FROM X FORCE WEAPON TYPE I IN
220. C TACTICAL MODE J=1,2 TO Y FORCE TARGET TYPE
230. C M OF WHICH M=1,20 ARE IN TACTICAL MODE 2
240. C XTMENG(I,M,J) TIME TO ENGAGE FOR X FORCE WEAPON TYPE I IN
250. C TACTICAL MODE J=1,2 AGAINST Y FORCE TARGET
260. C TYPES M OF WHICH M=1,20 ARE TACTICAL MODE 2
270. C XCHR(I,2) CONTAINS FLIGHT TIME IN SECS/200 METER RANGE
280. C BANDS FOR X FORCE WEAPON TYPE I
290. C XCHR(I,5) CONTAINS TIME TO AIM, FIRE, AND RELOAD FOR
300. C X FORCE WEAPON TYPE I
310. C
320. C
330. DIMENSION XTMENG(10,20,2),XCHR(10,5),XRDKLL(10,20,2)
340. 1, XVRGBD(10,20,2),XTMKLL(10,20,2)
350. C
360. C
370. 1 DO 10 J=1,2
380. DO 20 I=1,10
390. DO 30 L=1,2
400. DO 40 K=1,10
410. C
420. IF (XVRGBD(I,K+(L-1)*10,J).EQ.0) THEN
430. XTMKLL(I,K+(L-1)*10,J) = 0
440. ELSE
450. XTMKLL(I,K+(L-1)*10,J) = XTMENG(I,K+(L-1)*10,J)
460. 1 * (XCHR(I,5) + XCHR(I,2) * XVRGBD(I,K+(L-1)*10,J))
470. 2 * (XRDKLL(I,K+(L-1)*10,J))
480. END IF
490. XTMKLL(I,K+(L-1)*10,J) = XTMKLL(I,K+(L-1)*10,J) / 60.
500. C
510. 40 CONTINUE
520. 30 CONTINUE
530. 20 CONTINUE
540. 10 CONTINUE
550. C
560. RETURN
570. DEBUG SUBCHK
580. AT 1
590. END

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1 260 IBANK 62 DBANK

SIFIED

DIAMPUBLISH.WPNDST

91 04/01/82-13:33 (C,)

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100. C***** SUBROUTINE WPNDST *****
110. C
120. C
130. C
140. SUBROUTINE WPNDST(DBFBWP,DRFRWP,DSTBR,BWPN,RWPN,DBWRWP,
150. 1 DSTMIN)
160. C
170. C THIS SUBROUTINE CALCULATES DBWRWP(I,M,J), THE DISTANCE
180. C FROM BLUE FORCE WEAPON TYPE I IN TACTICAL MODE J=1,2 TO RED
190. C FORCE WEAPON TYPE M OF WHICH M=1,20 ARE IN TACTICAL
200. C MODE 2
210. C DBFBWP(I,J) DISTANCE FROM BLUE FORCE CENTROID TO BLUE FORCE
220. C WEAPON TYPE I IN TACTICAL MODE J=1,2
230. C DRFRWP(K,L) DISTANCE FROM RED FORCE CENTROID TO RED FORCE
240. C WEAPON TYPE K IN TACTICAL MODE L=1,2
250. C DSTBR DISTANCE BETWEEN BLUE AND RED FORCE CENTROIDS
260. C BWPN(I,J+1) NUMBER OF BLUE WEAPON TYPE I IN TACTICAL
270. C MODE J=1,2
280. C RWPN(K,L+1) NUMBER OF RED WEAPON TYPE K IN TACTICAL
290. C MODE L=1,2
300. C DSTMIN MINIMUM DISTANCE BETWEEN OPPOSING WEAPONS
310. C
320. C
330. C DIMENSION DBFBWP(10,2),DRFRWP(10,2),BWPN(10,3)
340. C 1, RWPN(10,3),DBWRWP(10,20,2)
350. C
360. C DO 10 J=1,2
370. C DO 20 I=1,10
380. C DO 30 L=1,2
390. C DO 40 K=1,10
400. C
410. C IF(BWPN(I,J+1).GT.0 .AND. RWPN(K,L+1).GT.0) THEN
420. C DBWRWP(I,K+(L-1)*10,J) = DSTBR-DBFBWP(I,J)-DRFRWP(K,L)
430. C ELSE
440. C DBWRWP(I,K+(L-1)*10,J) = -9999999
450. C END IF
460. C
470. C 40 CONTINUE
480. C 30 CONTINUE
490. C 20 CONTINUE
500. C 10 CONTINUE
510. C
520. C DETERMINE MINIMUM DISTANCE BETWEEN OPPOSING WEAPONS
530. C DSTMIN = ABS(DBWRWP(1,1,1))
540. C DO 50 I=1,10
550. C DO 60 M=1,20
560. C DO 70 J=1,2
570. C DSTMIN = AMIN1(DSTMIN,ABS(DBWRWP(I,M,J)))
580. C 70 CONTINUE
590. C 60 CONTINUE
600. C 50 CONTINUE
610. C
620. C RETURN
630. C DEBUG SUBCHK
640. C AT 1
650. C END

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