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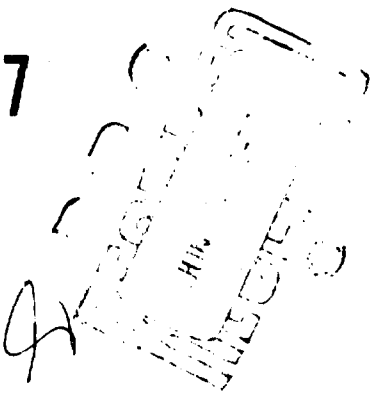
CACDA JIFFY WAR GAME
USERS MANUAL

Technical Report TR 4-77



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COMBAT OPERATIONS ANALYSIS DIRECTORATE

Technical Report TR 4-77
March 1977

Directorate of Combat Operations Analysis
US Army Combined Arms Combat Developments Activity
Fort Leavenworth, Kansas 66027

CACDA JIFFY WAR GAME USERS MANUAL

by

MAJ Francis W. O'Brien, Jr.
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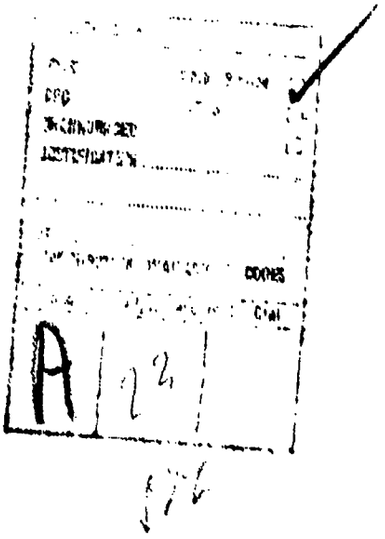
and
Mr Gerald A. Martin

ACN 21698



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This report is one of a set of three reports produced to document the combat assessment methodologies and automated features of the CACDA Jiffy war gaming process, developed to support TRADOC SCORES scenario development and force evaluation efforts. This report contains a discussion of the manual aspects and the automated features of the gaming process and exemplifies the relationships between them through a sample run. The other two reports in the set are the CACDA Jiffy War Game Technical Manual and the CACDA Jiffy War Game Programmers Manual.

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FOREWORD

The Jiffy Game has existed, as a manual war game, since the late 1960's. In its early stages, the game was completely manual; and correspondingly, its assessment methodology was simplistic, based on the firepower scores of a few key weapon systems. In late 1973, USATRADOC established the Scenario Oriented Recurring Evaluation System (SCORES), the standard scenario development process to be based on the Jiffy Game. With the advent of SCORES, it was recognized that the simplistic, firepower score-driven Jiffy Game, although responsive, was not of adequate resolution to produce the quality product expected from SCORES. Thus, the Jiffy Game underwent major methodology modifications, which allowed the gaming of the complete spectrum of conventional weapon systems and upgraded the assessment methodologies to use weapon characteristics instead of firepower scores as the basis for assessments. However, as the level of detail increased, the number of manual calculations and the amount of data required to make the calculations also increased. Finally, it became necessary to automate the assessment calculations to maintain the Jiffy Game's responsiveness. The automation process was completed in May 1975. This methodology was developed principally by MAJ Karl Lowe, assisted by LTC Tom Buff, MAJ Ken Nash, and MAJ Bob Riddick, and was documented in July 1975 with the publishing of the USACACDA, SCORES "JIFFY" War Gaming Methodology.

In the fall of 1975, as a quality assurance measure, the Jiffy Game methodology was subjected to sensitivity analysis. A Jiffy Game improvement program was initiated as a result of the analysis. The improvement program consisted basically of three tasks. First, the assessment methodology needed further modification and improvement in certain areas. Second, the capability to maintain on computer files a hierarchy of units consistent with the overall gaming methodology was to be added to the Jiffy Game. Finally, detailed documentation of the revised methodology and all supporting computer programs was to be published. This report was produced as a result of the improvement program as a portion of the Jiffy Game documentation.

The authors of this report wish to acknowledge the SCORES war gaming staff of the Combined Arms Combat Developments Activity (CACDA) who served as consultants during the preparation of this report. Special thanks are given to Mrs Elizabeth Etheridge, who served as technical editor for this report, and Miss Laura B. Weishaar, who typed the report.

ABSTRACT

This manual is one of a set of three produced to document the automated features of the Combined Arms Combat Developments Activity (CACDA) "Jiffy" war gaming process. This process was developed to support the USATRADOC Scenario Oriented Recurring Evaluation System (SCORES) scenario development and force evaluation efforts. This report contains a discussion of the manual aspects and the automated features of the gaming process and exemplifies the relationships between them through a sample run. The other two reports in the set are the CACDA Jiffy War Game Technical Manual and the CACDA Jiffy War Game Programmers Manual. The technical manual consists of two parts. Part 1 contains the methodologies used in the automated routines of the Jiffy Game, the computer model run in support of the CACDA "Jiffy" war gaming process, and an unclassified data base. Part 2 contains all classified data and its sources used in the Jiffy Game during secure production runs. The programmer's manual consists of descriptions, logic flow diagrams, and the FORTRAN code of all the programs and routines associated with the Jiffy Game.

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CACDA JIFFY WAR GAME USERS MANUAL

1. PURPOSE AND SCOPE. The purpose of this manual is to provide a clear, concise explanation of "how to game Jiffy." It is intended to provide information to personnel familiar with war gaming but not familiar with specific Jiffy procedures. Although the SCORES "Jiffy" war gaming procedure at Fort Leavenworth incorporates Air Force operations, the Air Force operations are not described in this manual. This is not to imply that Air Force considerations should not be taken into account in gaming, but rather that the TACCOM model (reference 1) now runs separately from the Jiffy Game and is integrated into gaming outside the model.

2. JIFFY DESCRIPTIONS.

a. General. Jiffy is a two-sided, computer-assisted, open war game. Players manipulate forces, using maps and performance indicators to simulate ground combat. Jiffy is an interactive war game capable of addressing indirect fire, armor/antiarmor, armed helicopter/air defense, dismounted infantry, and minefield play. (If the security condition warrants Jiffy can be run in a batch mode; however, some delay in response must be expected.) Resolution is to the level required, normally battalion for Blue and regiment for Red. A rate of advance routine determines time to advance over terrain or the distance advanced in a given time. This rate influences the attrition routines by defining the duration of combat along specific terrain features.

b. The Critical Incident. Jiffy divides a day of battle into critical incidents (CI). The time length of a CI is variable; it should be long enough to permit evaluation of selected parameters of battle, yet not so long as to lose the significance of major actions. A good rule of thumb is to have CIs 4 to 6 hours long. This length gives a good period of time for battles to take place, yet allows the gamer to influence the overall battle with his decisions. If the action is light longer CIs may be used in order to decrease the real time to battle time ratio. The greater the influence of gamer judgement, the shorter will be the CI and the larger the real time to battle time ratio. Critical incidents should not be so short (less than 2 hours) as to imply that Jiffy is a high resolution game, which it is not designed to be. From experience, a 6-hour critical incident for a corps level battle allows gamers to influence the battle but still utilizes the computational ability of Jiffy for a relatively quick turnaround. If a division or lower

is to be investigated CIs might be slightly shorter. The concept of a CI is important to Jiffy since the entire game is basically a sequence of critical incidents. The setup of each critical incident follows the same procedures, as outlined below.

3. PERSONNEL REQUIREMENTS AND RESPONSIBILITIES.

a. General.

(1) A Jiffy Game requires about six personnel, at least four of whom should be military. If a game is extremely detailed, additional manpower may be required. Personnel are required in two main categories, control team and gamer teams, as follows:

(a) Control team.

1. Chief Controller (military).

2. Assessment Officer (military).

(b) Blue gamer team.

1. Chief gamer (military).

2. Assistant gamer.

(c) Red gamer team.

1. Chief gamer (military).

2. Assistant gamer.

(2) It must be emphasized that this gaming staff is only that required to play the game interactively. Analytical support, computer programming support, and secretarial support are not considered here. Likewise, if a particular field of military expertise is needed, it must be provided from an outside source.

b. Chief Controller. The chief controller should be the senior person on the gaming staff. It is his responsibility to insure that the gaming maintains a logical flow. Since Jiffy is primarily an open game, the controller must impose constraints on the Blue and Red gamers to insure their actions are correct in a military sense, given the intelligence information they could expect to possess. Additionally, the chief controller

must insure that actions not computerized within Jiffy are played logically. For example, a unit that has been heavily attrited cannot be brought up to strength immediately and committed because some organizational time is needed. It is the chief controller's responsibility to insure that the game produces the data and results that are needed by analytical personnel involved in a particular study. The chief controller has overall responsibility for the performance of the entire gaming staff to insure proper preparation, gaming, and reporting.

c. Assessment Officer. The assessment officer is the person who actually plays the interactive Jiffy Game on the terminal. He must know both the logic of the Jiffy Game and the tactical feasibility of the maneuvers. He works closely with both the chief controller and the gamers to insure the correctness of all actions. During the course of a critical incident, he works directly with the Red and Blue gamers on the map to define sectors and forces in that sector. It is the assessment officer who determines what opposing forces face each other in the Jiffy model. He then inputs the forces and various parameters for each sector in Jiffy. The assessment officer must be capable of making the decisions, such as disengagement criteria, that are called for during the interactive mode. He is responsible for working closely with Red and Blue gamers to insure the teams receive the proper effects from combat and that the effectiveness of units is properly maintained. The assessment officer provides a written narrative describing the action that takes place in each critical incident. The chief controller is responsible for the data and results, but it is the assessment officer who maintains the actual liaison with any analytical staff to insure the game is accomplishing its objectives.

d. Chief Gamer (Red or Blue). The chief gamer is responsible for organizing and employing his forces. His position is that of commander of his forces down to the resolution required. He must be able to maintain data on unit effectiveness. The chief gamer develops the concepts and provides the rationale for all maneuvers. He insures the map situation is current. With the assessment officer he determines the sectors to be used in each CI. The chief gamer provides a written narrative of his concept of operation and the rationale behind his concept. He should have a thorough knowledge of the tactical doctrine used by his forces.

e. The Assistant Gamer. The assistant gamer is concerned primarily with following the status of forces on his side. He assists the assessment officer with the initial force file creation for the game. He insures the forces in each sector are at proper strength and all necessary forces are

included in a sector. He keeps his chief gamer informed of unit effectiveness and assists in maintaining the map board. He is responsible for close coordination with the assessment officer concerning the attrition of his forces during a critical incident. The assistant gamer coordinates the replacement policies of each side. In other matters he assists the chief gamer as directed.

4. METHODOLOGY.

a. General. The methodology for playing a Jiffy Game may be considered in three major phases: preparation, critical incident gaming, and reports and results. It is essential to maintain a proper perspective throughout this procedure to insure Jiffy is not used for an investigation beyond its capability. The decisions made by the commanders are a major portion of the entire process and must be reflected effectively in each critical incident. The overall sequence of events is summarized in figure 1.

b. Preparation Phase.

(1) The preparation phase has two parts: the selection and implementation of the general scenario, and the preparation for the specific game. The general scenario part, although it is a prerequisite for any Jiffy Game, is usually done outside the gaming staff. It includes Blue and Red posture at the start of the game, time frame, area of operations, weather, and objectives of the game. The actual preparation by the gamers starts with the receipt of the general scenario and objectives of the game. In the initial preparation step the gamers prepare the map, conduct a terrain analysis, and array the opposing forces on the map as they would be positioned at the start of the game. While the chief Blue and Red gamers are developing their general concepts, the assistant gamers under the direction of the assessment officer create the TOE force structure files on the terminal. This step entails creation of four files:

(a) Standard reference code (SRC) file. In this file weapons are grouped under an SRC. These SRCs are the basic building block for the entire force. They may be platoon, company, or battalion size depending on the resolution required. A library of SRCs has been built and is available for use, if appropriate.

(b) Unit file. In this file units are built based upon one or more SRCs. The units will generally be an organizational level below the resolution desired. This gives the gamer the ability to play part of a unit separate from the parent unit.

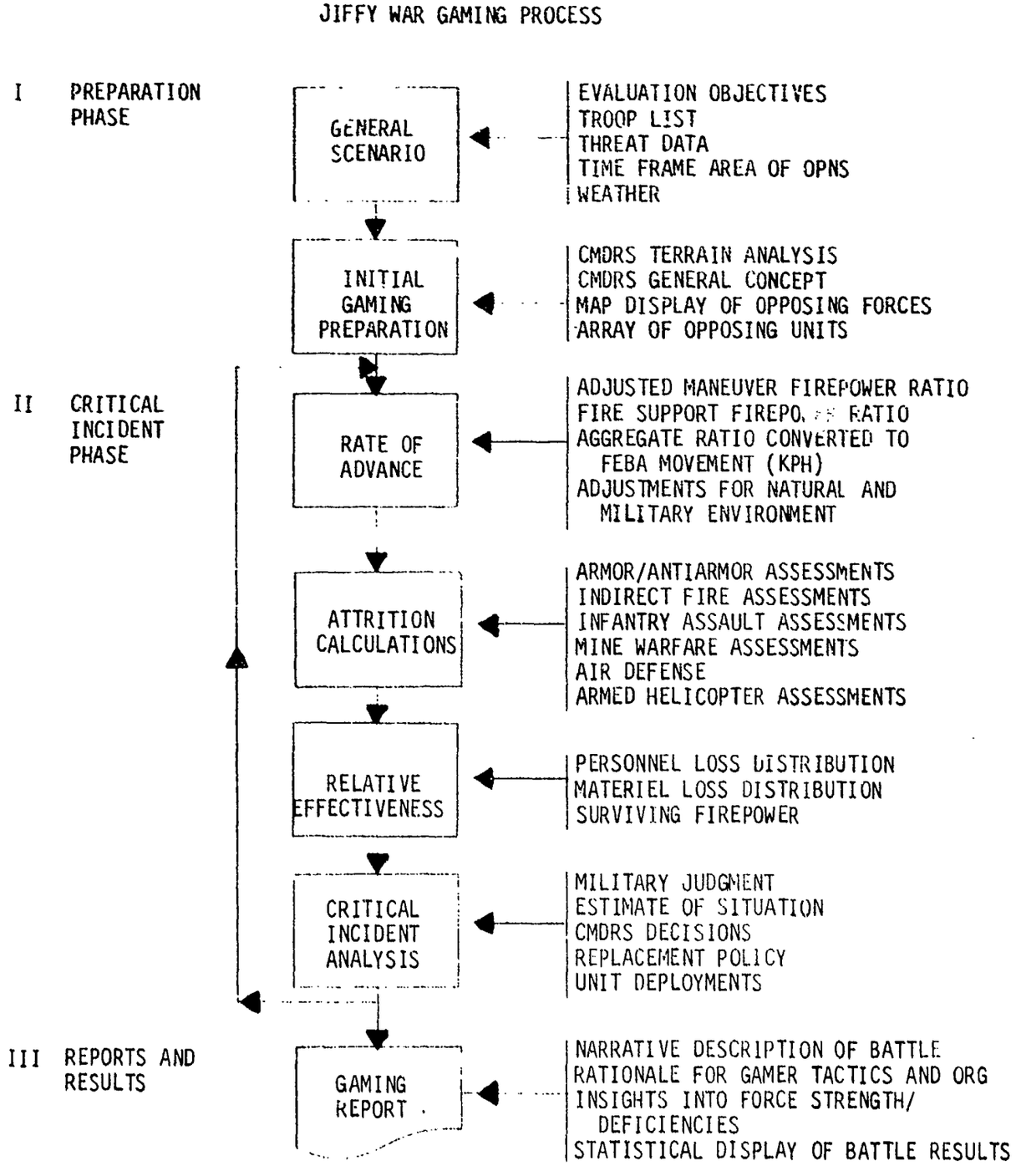

Figure 1. Jiffy war gaming process.

(c) Parent unit file. In this file, parent units are built based upon one or more units. This parent unit will be the organization at the level of resolution desired (usually battalion for Blue and regiment for Red).

(d) Force file. The force file is a consolidation of the first three files. This file is processed by the Jiffy game during the gaming of a CI. It contains the designation of each unit and the parent unit, the last CI the unit was involved in and its sector, and the status of all the weapon systems at the end of its last CI. Additionally, the current effectiveness of each unit is maintained in this file.

(2) A detailed example of how to create these files is contained in appendix A. The force file is the file from which optional displays of parent units, units, and their strengths are derived. When the loading of the starting forces is completed, the actual dynamic gaming of Jiffy may take place.

c. Critical Incident Phase. The critical incident phase of Jiffy is the major portion of the dynamic gaming process. Reference is again made to figure 1. The CI phase is an interactive process involving the four main steps indicated in figure 1: rate of advance, attrition calculations, relative effectiveness, and CI analysis. The critical incident analysis and the overall concept of the operation determine if another CI should be run. This procedure continues until the game reaches some predetermined termination point. The gaming usually starts with a meeting of the entire gaming staff in a gaming room, with the map and overlays showing starting positions. At this time background information and general concepts are briefed for both sides. The remainder of this subparagraph describes the steps taken each time a critical incident is run.

(1) Sectors defined. The chief gamers and assessment officer determine from the map board and the commanders' intentions where battles take place and what forces are involved. This process in essence defines a sector. The entire FEBA may be subdivided into sectors, or sectors may be designated only in areas where some action is to take place. The CI is played in Jiffy sector by sector with no interaction between sectors. The sectors may vary in size and number from one CI to the next. Once the sectors have been defined by the assessment officer and chief gamers, the assistant gamers coordinate with the assessment officer in loading the forces for that sector. Any forces that would affect the battle and are employed in that sector must be identified to include infantry, armor, artillery, aviation, and air defense systems. Specifically, the assistant

gamer from each side must insure that the forces in the force file are true and correct as a result of any replacements that might have arrived since the end of the last CI. If not he must access the force file and bring a particular unit up to strength. This is accomplished interactively utilizing the file handling features of the Jiffy Game. This force file update should be done prior to loading forces into a sector to save time.

(2) Force loads. After the terminal has been logged in, and the Jiffy Game accessed (see appendix B for this procedure), the gamer reaches the DECISION POINT. The interactive game centers around the DECISION POINT. Nine options are available to the gamer:

- Load forces into a sector.
- Calculate rate of advance.
- Assess combat.
- Apportion combat losses to units.
- Display battle statistics.
- Display weapon arrays.
- Add SRCs to the TOE file.
- Restart at a previously gamed CI.
- End game and/or update HISTORY file.

Forces may be assigned to a sector by assigning the parent unit (in which case all units in that parent will be assigned) or by assigning specific units from a parent unit. The ability to assign part of a parent unit to one sector and part to another satisfies the condition of a parent unit being engaged by more than one opposing unit, which allows it to be engaged at different intensities of combat.

(3) Rate of advance computed. After the forces are loaded into a sector the rate of advance must be computed next. The questions that the assessment officer must answer are listed in figure B-4 of the example in appendix B. This routine must be completed prior to running any assessment routines. Basically, the rate of advance routine calculates a total firepower ratio, then enters a table for the given posture of opposing forces. If time is held constant, then distance advanced is computed; if distance is held constant, then time is computed. This routine is essential since it gives the closure rate of ground combat for the attrition routines. A detailed explanation of the logic and equations used in the rate of advance is found in the CACDA Jiffy War Game Technical Manual (reference 2).

(4) Attrition calculated. The assessment officer is concerned with five major attrition routines when playing the Jiffy Game: indirect fire, armor/antiarmor, mine warfare, attack helicopter/air defense and infantry assault. A detailed rationale and explanation of each of these assessments

routines may be found in the CACDA Jiffy War Game Technical Manual. The descriptions here are limited to an explanation of the interface that takes place between the assessment officer and the program. After the rate of advance has been calculated, the program returns to the DECISION POINT. In order to run the assessment routines a "3" must be entered from the terminal. The program then cycles through the assessment routines in the following order:

- Indirect fire.
- Minefields.
- Armor/antiarmor.
- Dismounted infantry.
- Attack helicopter/air defense.

The program asks the gamer if he wants to process each specific routine. If the response is no, that routine is skipped. If the response is yes, further questions are asked by the program. In each case the questions require the input of parameters that influence the attrition routines. At the end of each attrition routine there is the option of deleting the losses from the weapon system array in that sector. If everything has progressed satisfactorily the losses may be subtracted, and the program advanced to the next assessment routine. If for some reason the assessment officer wishes to replay that specific attrition routine, he would not subtract the forces. He must then return to the beginning of the cycle, not playing those assessment routines already satisfactorily played, until he again reaches the routine he wished to replay and continue from there. A detailed example of the assessment questions is included in appendix B. This process is the heart of the interactive games. The assessment officer must insure that the parameters put into the game accurately reflect the terrain, posture, and tactics of the force involved. His military judgement and coordination with both team chiefs is needed to make such decisions as when to pull out of a defensive position, or what intensity of artillery is being fired. Close coordination between the assessment officer and chief controller may be required here to insure that reality is represented as closely as possible.

(5) Losses apportioned. Once the attrition routines have been played, the game returns to the DECISION POINT. In order to apportion the combat losses from the sector to the proper forces in the force file, a "4" must be entered. After the "4" has been entered, the combat intensity must be entered for each unit. This combat intensity determines the amount of losses apportioned to each unit. If one unit was in combat less than another during the CI, it incurs a smaller proportion of losses. The specific entries for given conditions of combat are as shown in table 1. The routine distributes the losses to the units, and the gamer has the option of seeing the new force file at the completion of the routine. An example of this routine is in figure B-11 of appendix B.

Table 1. Combat intensity entries for apportionment routines.

ENTER	FOR THIS STATUS
0	Uncommitted units
1	Units outside of direct fire
2	Reserve units committed late
3	Units on perimeter of MBA
4	Units in Main Battle Area
5	Units Hit by TACAIR

(6) Unit effectiveness determined. During the loss apportionment, the new relative unit effectiveness of each unit is computed. Simply, the unit effectiveness of a unit is the ratio of its present firepower score to the firepower score the unit started with. This computation, output on the Unit Status portion of the STATS file (see appendix C), combined with the gamer's knowledge of the task organizations should be sufficient to provide a base for the military judgment used in decisions made during the analysis of the CI.

d. Reports and Results Phase. The final phase of the Jiffy War Gaming process is the results presented and the reports produced from those results.

(1) Results. For each sector there are two types of information recorded. First, each unit gamed in that sector has a record of losses and current remaining status of weapons. These unit displays also include the relative effectiveness of each unit. Each unit is reported separately and the aggregated status of the parent unit is reported also. Second, each sector has statistical tables showing loss by source of loss, loss and damage distribution, ammunition expenditure, and killer victim tables. Additionally, these tables are aggregated for an entire critical incident. A detailed description of the output from Jiffy is given in appendix C.

(2) Reports. The content of the game report must by its very nature vary depending upon the objective of any game. However, there are certain areas that the report should contain as a minimum. There should be a narrative description of the game as it developed. This is usually the assessment officer's portion of the report. The rationale for gamer tactics and organizations is input by the chief gamers. Finally, insights into force structures (strength and deficiencies) should be reported. This last area may be expanded or contracted depending upon the purpose of the game.

REFERENCES

1. USAF Tactical Fighter Weapons Center, Tactical Air Computer Model (TACCOM), 1 October 1976.

2. USACACDA, TR 2-77, CACDA Jiffy War Game Technical Manual, Part 1: Methodology, 1 March 1977.

APPENDIX A

SAMPLE RUN OF FORCE FILE GENERATION PROCESS

APPENDIX A

SAMPLE RUN OF FORCE FILE GENERATION PROCESS

A-1. PURPOSE AND SCOPE. The purpose of this appendix is to provide the gamer and the assessment officer a step by step procedure for the creation of a file of forces suitable for processing by the Jiffy Game. An example of each of the programs used to generate such a force file is presented and discussed, in turn, below.

A-2. GENERAL. Basically three files are created to define units, and one file is created on which the data of the other three files are consolidated. The SRC (standard reference code) file, the UNIT file, and the PARENT file are the three files used to define the weapons of SRCs, build units from SRCs and develop higher echelon parent units. The FORCE file is the file that contains all the information of the three files formatted for processing in the Jiffy Game. Initially, some empty files are created and given names. In the example presented here, the files are SRCFILE, UNITFILE, PARENTFILE, and FORCEFILE. To facilitate processing, interactive "call" files have been created that contain the control cards necessary to attach the proper files and execute the programs. In the following sample runs, the alpha-character responses input by the gamers are smaller than the letters in questions displayed by the Jiffy Game program. Note, however, that there is no difference between a gamer response and a computer display for numerals.

A-3. "CALL" FILES. The sample runs presented in the following paragraphs are initiated by the use of "call" files. Listings of the five "call" files used for processing the runs in this document are given in figure A-1. Each of these files contains control statements that accomplish three basic requirements for running one of the programs. The requirements are: 1) connects input and output as required for interactive processing, 2) attaches the program and all the files the program operates on (a data file must be attached as CLDATA before the "call" files for the FORCE program or the Jiffy Games are executed), and 3) executes the program. The commands contained in the "call" files can be entered individually from the console. It should be noted, in fact, that some operating systems may not allow "call" files, in which case the commands would have to be input separately. All commands and I-O procedures demonstrated in this document are for the SCOPE 3.4.4 operating system presently in use on the Control Data Corporation (CDC) 6400/6500 multiprocessor computer at Fort Leavenworth, Kansas. One point to be emphasized is that the local file names for the force-type files must be exactly as shown in figure A-1 when one of the programs is being run. For example, to run the Jiffy Game program, the FORCEFILE must be attached as TAPE55, the SRCFILE as TAPE9, and the HISTORYFILE as TAPE8.

```
  RUNSRC FILE
CONNECT,INPUT,OUTPUT.
ATTACH,LGO,SRCBIN,ID=SCORES,SN=SYS2,MR=1.
ATTACH,TAPE9,SRCFILE,ID=SCORES,SN=JIFPF.
LGO.


  RUNUNIT FILE
CONNECT,INPUT,OUTPUT.
ATTACH,LGO,UNITBIN,ID=SCORES,SN=SYS2,MR=1.
ATTACH,TAPE9,SRCFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE10,UNITFILE,ID=SCORES,SN=JIFPF.
LGO.


  RUNPARENT FILE
CONNECT,INPUT,OUTPUT.
ATTACH,LGO,PARENTBIN,ID=SCORES,SN=SYS2,MR=1.
ATTACH,TAPE11,PARENTFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE10,UNITFILE,ID=SCORES,SN=JIFPF.
LGO.


  RUNFORCE FILE
CONNECT,INPUT,OUTPUT.
ATTACH,LGO,FORCEBIN,ID=SCORES,SN=SYS2,MR=1.
ATTACH,TAPE6,PARENTFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE7,UNITFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE8,SRCFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE9,FORCEFILE,ID=SCORES,SN=JIFPF.
LGO.


  RUNJIFFY FILE
CONNECT,INPUT,OUTPUT.
ATTACH,JIFFY,JIFBIN,ID=SCORES,MR=1,SN=JIFPF.
ATTACH,TAPE9,SRCFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE55,FORCEFILE,ID=SCORES,SN=JIFPF.
ATTACH,TAPE8,HISTORYFILE,ID=SCORES,SN=JIFPF.
JIFFY.
```

Figure A-1. "Call" files for programs of the Jiffy Game.

A-4. CREATION OF SRC FILE. The SRC file is intended to be developed in a manner consistent with the US Army's concept of Tables of Organization and Equipment (TOE). Each record consists of a name (SRC) and the type and quantity of weapons in the corresponding organization. A maximum of 22 different types of weapons can be entered in a given SRC. An example of a run of the SRC program is presented in figure A-2. In this example, consider item code 1 to be personnel, item code 2 to be tanks, and item code 3 to be APCs. As shown in figure A-2, the run is initiated by the gamer through the entry of the "call" command. This attaches cycle 1 of two files (SRCFILE and SRCBIN, a binary file of the compiled SRC program) and executes the program. Next, as shown in figure A-2, an "x" is entered to display all valid action codes. After this, a Blue tank platoon is entered onto the SRC file by entering an "a" action code, entering the name (1 to 10-character alphanumerics) for the Blue tank platoon SRC (BTANKPLT), and entering the type and quantity of each weapon in the Blue tank platoon. In this instance, 20 personnel, 5 tanks, and 1 APC are entered. Figure A-2 also contains examples of the other actions available to the gamer. The review action simply displays the type and quantity of weapons in a specific SRC. The change action allows the gamer to modify the quantities of one or more of the weapons in a given SRC. The delete option removes either an entire SRC from the SRC file or specific weapons from a given SRC. The list action displays all the SRCs with their weapons on the SRC file. The run is terminated by specifying an "e" action. For the sample run of other programs, which follows, the following SRCs have been put onto the SRC file with the proper Jiffy Game item codes:

a. BAHCO - Blue attack helicopter company.

b. BARTYBAT - Blue artillery battery.

c. BARTYBNHQ - Blue artillery battalion headquarters.

d. BMECHPLT - Blue mech platoon.

e. BTANKPLT - Blue tank platoon.

f. BTANKCOHQ Blue tank company headquarters.

g. RARTYBN - Red artillery battalion.

h. RMECHCO - Red mech company.

i. RTANKBNCP - Red tank battalion command post.

j. RTANKCO - Red tank company.

```
CALL'RUNSRC'ID=SCORES

 IT CYCLE NO. = 001
 IT CYCLE NO. = 001
ENTER ACTION TYPE( X FOR LIST)-        X

FOLLOWING ACTIONS CAN BE EXECUTED
R= READ (REVIEW) A RECORD
A= ADD A NEW SRC
C= CHANGE/ADD WPN ID'S/QTY'S WITHIN AN EXISTING SRC
D= DELETE AN SRC AND/OR WPN SYS ID WITHIN THE SRC
L= LIST ALL SRC'S ON FILE
E= END THE PROGRAM



ENTER ACTION TYPE( X FOR LIST)-        A

ADD-ENTER NEW SRC(END TO EXIT)--       BTANKPLT

ENTER WPN ID,QTY--0,0 IF DONE          1,20

NEXT-  2,5

NEXT-       3,1

NEXT-  0,0

ADD-ENTER NEW SRC(END TO EXIT)--       END



ENTER ACTION TYPE( X FOR LIST)-        R

READ-ENTER SRC(END TO EXIT)-           BTANKPLT

SRC: BTANKPLT              ID   QTY
                            1    20.
                            2     5.
                            3     1.
READ-ENTER SRC(END TO EXIT)-           END
```

Figure A-2. Sample run of SRC program.
(Continued next page.)

```
ENTER ACTION TYPE( X FOR LIST)-          C

CHANGE-ENTER SRC(END TO EXIT)--          BTANKPLT

ENTER TOTAL NO. OF WPN SYS IDS
      1

ENTER WPN ID,QTY,ID,QTY,---
      1,23

CHANGE-ENTER SRC(END TO EXIT)--          END




ENTER ACTION TYPE( X FOR LIST)-          L

SRC=BTANKPLT            ID  QTY
                         1   23.
                         2    5.
                         3    1.



ENTER ACTION TYPE( X FOR LIST)-          D

DELETE-ENTER SRC(END TO EXIT)--          BTANKPLT

ENTER TOTAL NO. OF WPN SYSTEMS TO BE DELETED-ENTER 0 IF ALL          0

DELETE-ENTER SRC(END TO EXIT)--          END

[illegible] [illegible] TYPE( X FOR LIST)-          R

READ-ENTER SRC(END TO EXIT)-          BTANKPLT

[illegible] BTANKPLT   NOT ON [illegible]
[illegible] (END TO EXIT)          [illegible]

[illegible] X FOR LIST)-          E

[illegible] FORCE STRUCTURES TO BE UPDATED?
     N

[illegible] DONE   [illegible] HAS ENDED
     STOP
      [illegible] SECONDS [illegible] TIME
```

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Figure A-2. Sample run of SRC program (concluded).

A-5. UNIT FILE CREATION. Once the gamer has specified all the SRCs necessary to initialize the scenario, a file of the combat units may be built. This is accomplished through the execution of the UNIT program. A sample run of the UNIT program is presented in figure A-3. As can be seen from the sample run, the process to build units from SRCs is similar to that of the SRC program. Again, the gamer initiates the run through the interactive "call" command, which attaches three files (SRCFILE, UNITFILE, and UNITBIN, the UNIT program compiled binary file) and executes the program. The "x" action code entry, as before, displays the valid action codes available to the gamer. The sample run demonstrates the addition of two units to the UNIT file: a Blue armor company team consisting of two tank platoons, a mech platoon, and a tank company headquarters; and a reinforced Red tank battalion consisting of three tank companies, a mechanized rifle company, and a tank battalion command post. The other actions of the UNIT program are virtually identical to those of the SRC program exemplified in figure A-2. A listing of all units on the UNITFILE (action type 1) has been included in figure A-3.

```
                                                CALL,RUNUNIT,ID=SCORES

ENTER ACTION TYPE( X FOR LIST)--
 FT CYCLE NO. = 001
 IF CYCLE NO. = 001
 FF CYCLE NO. = 002X

FOLLOWING ACTIONS CAN BE EXECUTED
R=READ(REVIEW) A RECORD
A=ADD A NEW UNIT
C=ADD SRC,S WITHIN AN EXISTING UNIT
D=DELETE A UNIT AND/OR SRC,S WITHIN THE UNIT
L=LIST ALL UNITS ON FILE
E=END THE PROGRAM
ENTER ACTION TYPE( X FOR LIST)--       A

ADD-ENTER NEW UNIT ID(END TO EXIT)-- BA/1-1A

ENTER SRC(0 IF DONE)-       BTANKPLT

NEXT-  BTANKPLT

NEXT-  BMECHPLT

NEXT-  BTANKCOHQ

NEXT-  0

ADD-ENTER NEW UNIT ID(END TO EXIT)-- A5-6A

ENTER SRC(0 IF DONE)-       RTANKCO

NEXT-  RTANKCO

NEXT-  RTANKCO

NEXT-  RMECHCO

NEXT-  RTANKCONCP

NEXT-  0

ADD-ENTER NEW UNIT ID(END TO EXIT)--
[illegible]   SCORES PFN=UNITFILE
[illegible] 002  00000704 WORDS.:END
```

Figure A-3. Sample run of UNIT program (continued next page).

```
ENTER ACTION TYPE( X FOR LIST)--      L

UNIT=B3-11FA          SRC
                   BAPTYBAT
                   BARTYBAT
                   BHRTYBAT
UNIT=B7AUHCO          SRC
                   BAHCO
UNIT=BA/1-1A          SRC
                   BTANKPLT
                   BTANKPLT
                   BMECHPLT
                   BTANKCOHQ
UNIT=BB/1-1A          SRC
                   BTANKPLT
                   BTANKPLT
                   BMECHPLT
                   BTANKCOHQ
UNIT=BC/1-1A          SRC
                   BTANKPLT
                   BTANKPLT
                   BMECHPLT
                   BTANKCOHQ
UNIT=R1-2FA           SRC
                   RARYTBN
UNIT=R2-2FA           SRC
                   RARYTBN
UNIT=R3-2FA           SRC
                   RARYTBN
UNIT=R5-6A            SRC
                   RTANKCO
                   RTANKCO
                   RTANKCO
                   RMECHCO
                   RTANKBNCP
UNIT=R6-6A            SRC
                   RTANKCO
                   RTANKCO
                   RMECHCO
                   RMECHCO
                   RTANKBNCP
UNIT=R7-6A            SRC
                   RTANKCO
                   RTANKCO
                   RTANKCO
                   RTANKCO
                   RTANKBNCP
ENTER ACTION TYPE( X FOR LIST)--      E

ANY MORE FORCE STRUCTURES TO BE UPDATED
       N

 ALL DONE JOB HAS ENDED
      STOP
```

Figure A-3. Sample run of UNIT program (concluded).

A-6. PARENT UNIT FILE CREATION. The PARENTFILE is a file on which the units defined on the UNITFILE are grouped, if desired, into higher echelon organizations. A sample run of the PARENT program is given in figure A-4. As before, the "call" command is entered to attach the UNITFILE, PARENTFILE, and PARENTBIN (the binary compiled file of the PARENT program) and to execute the program. An "x" action type entry displays the valid action codes. The sample run demonstrates the entries of two common variations of parent unit groupings. The first parent unit entered was for B1-1A. In this example, the parent unit, a battalion, is composed of the companies: BA/1-1A, BB/1-1A, and BC/1-1A. The second example is for B7AVN, which has only one subordinate unit in it. A "l" action listing of the parent unit organizations is also provided in figure A-4. As in the UNIT program, the other valid action types are similar to those of the SRC program, and example runs may be found in figure A-2.

```
COMMAND- CALL:RUN" .

 IF CYCLE NO. = 000
 FF CYCLE NO. = 002
 FF CYCLE NO. = 002
ENTER ACTION TYPE( X FOR LIST)--      X

FOLLOWING ACTIONS CAN BE EXECUTED
R=READ(REVIEW) A RECORD
A=ADD A NEW FORCE
C=ADD UNIT,S WITHIN AN EXISTING FORCE
=DELETE A FORCE AND/OR UNIT,S WITH N THE FORCE
!=LIST ALL FORCES ON FILE
=END THE PROGRAM
NTER ACTION TYPE( X FOR LIST)--      A

 DD-ENTER NEW FORCE ID(END TO EXIT)--B1-1A

 NTER UNIT(0 IF DONE)-      BA/1-1A

 EXT-  BB/1-1A

 EXT-  BC/1-1A

NEXT-  0

ADD-ENTER NEW FORCE ID(END TO EXIT)--B7AVN

ENTER UNIT(0 IF DONE)-      B7AVNCO

NEXT-  0

ADD-ENTER NEW FORCE ID(END TO EXIT)--
 EX ID=   SCORES PFN=
 CX CY= 002  0000070
```

Figure A-4. Sample run of PARENT program (continued next page).

```
FI..R ACTION TYPE( X FOR L

....C-B1-1A            UNIT
                  BA-1-1A
                  B2-1-1A
                  B3-1-1A
....CE-B3-11FA         UNIT
                  B3-11FA
..RCE=B7AVN            UNIT
                  B7AVNCO
 .RCE=R2FA             UNIT
                  R1-2FA
                  R2-2FA
                  R3-2FA
..RCE=R6A              UNIT
                  R5-6A
                  R6-6A
                  R7-6A
 ..ER ACTION TYPE( X FOR LIST)--      E

 .Y MORE FORCE STRUCTURES TO BE UPDATED?
      N

 ALL DONE JOB HAS ENDED
     STOP
       .758 CP SECONDS EXECUTION TIME
COMMAND-
```

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Figure A-4. Sample run of PARENT program (concluded).

A-7. FORCE FILE CREATION. The FORCEFILE is actually a consolidation of the information contained on the other three files in a format suitable for processing in the Jiffy Game. A sample run of the FORCE program is presented in figure A-5. The interactive "call" command, which for the FORCE program attaches five files (SRCFILE, UNITFILE, PARENTFILE, FORCEFILE, and FORCEBIN, the FORCE program compiled binary file) and executes the program, is preceded by an attach of the Jiffy Game random access data base, which is the unclassified version for this example. The first entry in the FORCE program identifies the force into which the parent units are to be initialized. The force entry must be either "b", denoting the Blue force, or "r" denoting the Red force. After the force type specification, the valid actions are displayed with an "x" action entry. Next, since a "b" was entered for force type, all parent units entered are for Blue. Following the entry of each parent unit, the user assigns a unit effectiveness to every subordinate unit within the designated parent. (Normally the entry is 100; however, if a game is being started with the assumption that some previous attrition has taken place, then the unit effectiveness may be less.) This procedure initializes the units onto the FORCEFILE. Note that during this process, the computer displayed some extraneous information in the sample run after the relative (unit) effectiveness specifications for BC/1-1A and B3-11FA. This information is displayed each time one of the indexed-sequential files is automatically extended by the computer's operating system. After the initialization of the Blue force onto the FORCEFILE, an "l" option is entered to display all the units and parent units with their associated weapon systems. As shown in the display in figure A-5, all the units are in sector 0 of an undefined critical incident. These game variables are set during the actual processing of the Jiffy Game. The "l" action automatically ends the Blue (or Red) session of the FORCE program and returns it to the point in the program that defines the type force, otherwise the session is ended with the "e" action. The Red session is initiated with an "r" force specification. The Red units are defined and listed the same as the Blue forces. The FORCE program is terminated through the specification of an "e" action.

```
NNNND- ATTACH,CLDATA,UNDATA,ID=SCORE
 
 CYCLE NO. = 002
NNNND- CALL,RUNFORCE,ID=SCORES

 IFY TYPE FORCE--
  CYCLE NO. = 001
 F CYCLE NO. = 002
 F CYCLE NO. = 002
 F CYCLE NO. = 001
 F CYCLE NO. = 002

 TER ACTION TYPE( X FOR LIST)--        X

 LLOWING ACTIONS CAN BE EXECUTED
A=ADD NEW FORCES
C=CHANGE A UNIT'S EFFECTIVENESS
D=DELETE A FORCE(PARENT UNIT)
R=READ(REVIEW) PARENTS
L=LIST ALL PARENTS
E=END THE PROGRAM
ENTER ACTION TYPE( X FOR LIST)--       A

ENTER MAJOR FORCE(0 IF DONE)-          B1-1A

ENTER RELATIVE EFFECTIVENESS OF BA/1-1A          100

ENTER RELATIVE EFFECTIVENESS OF BB/1-1A          100

 TER RELATIVE EFFECTIVENESS OF BC/1-1A           100

   SCORES PFN FORCEFILE
 002  00001152 WORDS.
 
 ER RELATIVE EFFECTIVENESS OF B3-11FA            100

   SCORES PFN=FORCEFILE
 002  00001344 WORDS.

 ER RELATIVE EFFECTIVENESS OF B7A
```

Figure A-5. Sample run of FORCE program (continued next page).

```
NTER ACTION TYPE( % FOR LIST)--        6

TYPE FORCE= B
FORCE ID= B1-1A
    UNIT ID:   BA/1-1A    ;  LAST CI:  :::::::::::;   SECTOR:  0.
                             WPN
                       ID       QTY
                            2          79.
                            3          30.
                           11          10.
                           16          12.
                           25           5.
                           26           3.
EFFECTIVENESS OF BA/1-1A     = 100.
    UNIT ID:   BB/1-1A    ;  LAST CI:  :::::::::::;   SECTOR:  0.
                             WPN
                       ID       QTY
                            2          79.
                            3          30.
                           11          10.
                           16          12.
                           25           5.
                           26           3.
EFFECTIVENESS OF BB/1-1A     = 100.
    UNIT ID:   BC/1-1A    ;  LAST CI:  :::::::::::;   SECTOR:  0.
                             WPN
                       ID       QTY
                            2          79.
                            3          30.
                           11          10.
                           16          12.
                           25           5.
                           26           3.
EFFECTIVENESS OF BC/1-1A     = 100.
AVERAGE EFFECTIVENESS OF B1-1A        = 100.

FORCE ID= B3-11FA
    UNIT ID:   B3-11FA    ;  LAST CI:  :::::::::::;   SECTOR:  0.
                             WPN
                       ID       QTY
                            2         180.
                           50          18.
EFFECTIVENESS OF B3-11FA     = 100.
AVERAGE EFFECTIVENESS OF B3-11FA      = 100.

FORCE ID= B7AVN
    UNIT ID:   B7AVNCO    ;  LAST CI:  :::::::::::;   SECTOR:  0.
                             WPN
                       ID       QTY
                            2          40.
                           62          15.
                           63           5.
EFFECTIVENESS OF B7AVNCO     =  90.
AVERAGE EFFECTIVENESS OF B7AVN        =  90.
```

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Figure A-5. Sample run of FORCE program (continued).

```
IDENTIFY TYPE FORCE--        R

ENTER ACTION TYPE( X FOR LIST)-

ENTER MAJOR FORCE(0 IF DONE)-           R2FA

ENTER RELATIVE EFFECTIVENESS OF R1-2FA          95

ENTER RELATIVE EFFECTIVENESS OF R2-2FA          91

ENTER RELATIVE EFFECTIVENESS OF R3-2FA          97

 :
 : ID=    SCORES PFN=FORCEFILE
 : CY= 002  00001536 WORDS.:R6A

ENTER RELATIVE EFFECTIVENESS OF R5-6A           75

ENTER RELATIVE EFFECTIVENESS OF R6-6A           80

ENTER RELATIVE EFFECTIVENESS OF R7-6A           90

NEXT-
 CT ID=    SCORES PFN=FORCEFILE
 CT CY= 002  00001920 WORDS.:0

ENTER ACTION TYPE( X FOR LIST)--       L

TYPE FORCE= R
FORCE ID= R2FA
     UNIT ID:  R1-2FA     ;  LAST CI:  :::::::::::;  SECTOR:  0.
                                 NPN
                        ID        QTY
                               1        21.
                               2       211.
                              25         3.
                              [illegible]  17.
 EFFECTIVENESS OF R1-2FA      .  95.
     UNIT ID:  R2-2FA     ;  LAST CI:  :::::::::::;  SECTOR:  0.
                                 NPN
                        ID        QTY
                               1        20.
                                       202.
                              25         3.
                                         [illegible]
  EFFECTIVENESS OF R2-2FA        91.
     UNIT ID:  [illegible]    .  LAST CI:  :::::::::::;  SECTOR:  0.
                                 NPN
                                  QTY
                               1        [illegible]
                                       215.
                                        [illegible]
                                        [illegible]
  EFFECTIVENESS OF [illegible]     .
  [illegible] EFFECTIVENESS OF [illegible]          [illegible]
```


Figure A-5. Sample run of FORCE program (continued).

```
 APPL ID: R6A
    UNIT ID:  R5-6A      ;  LAST CI:                                   0.
                             WPN
                        ID        QTY
                              1        9.
                              2      106.
                              3       60.
                             17       23.
                             21        8.
                             25        2.
                             26        2.
                             31        2.
                             37        8.
EFFECTIVENESS OF R5-6A        =   75.
    UNIT ID:  R6-6A      ;  LAST CI:  :::::::::::;  SECTOR:  0.
                             WPN
                        ID        QTY
                              1       10.
                              2      105.
                              3      128.
                             17       17.
                             21       16.
                             25        2.
                             26        2.
                             31        2.
                             37       16.
EFFECTIVENESS OF R6-6A        =   80.
    UNIT ID:  R7-6A      ;  LAST CI:  :::::::::::;  SECTOR:  0.
                             WPN
                        ID        QTY
                              1       11.
                              2      136.
                             17       37.
                             25        1.
                             26        3.
                             31        4.
 FECTIVENESS OF R7-6A          =   90.
 ERAGE EFFECTIVENESS OF R6A            =   82.

 DENTIFY TYPE FORCE--          B

 TER ACTION TYPE( X FOR LIST)---        E

 ACTION COMPLETE
 DO YOU WANT TO END THE PROGRAM        Y

 LL DONE***JOB HAS ENDED
      STOP
       ..503 CP SECONDS EXECUTION TIME
```

Figure A-5. Sample run of FORCE program (concluded).

APPENDIX B

SAMPLE RUN OF THE JIFFY GAME

APPENDIX B

SAMPLE RUN OF THE JIFFY GAME

B-1. PURPOSE AND SCOPE. The purpose of this appendix is to provide the user a step by step procedure for playing the interactive Jiffy Game. Due to the security classification of a portion of the Jiffy Game data base (CLDATA), the program has been developed with the capability to be run both interactively and batch for secure processing. The example presented in this appendix is for an unclassified interactive run. The modifications necessary for batch processing are presented in appendix D.

B-2. GENERAL. The computer performs, basically, two major tasks in the "Jiffy" war gaming process. First, it is used for bookkeeping in the sense that it keeps track of the units being gamed and updates their status for attrition suffered in combat and other changes to their status, which may be entered manually. Second, the computer is used to perform the attrition calculations and keep a record of vital combat statistics.

B-3. INITIATION OF THE GAME. After all the units to be entered into combat have been initialized on the FORCEFILE (see appendix A), and an empty history file (HISTORYFILE) has been created, the user is ready to begin processing the Jiffy Game. Once again, to reduce the number of control cards and to ensure that the proper files are attached, a "call" file (RUNJIFFY) has been prepared. Execution of the "call" file attaches four files (FORCEFILE, SRCFILE, HISTORYFILE, and JIFBIN, the binary compiled file of the Jiffy Game program) and executes the program. Before the "call" file is entered by the user, however, the data file (CLDATA) must be attached. Figure B-1 contains an example of this process and the initial user responses necessary to process the game. In this example, the unclassified data base (UNDATA) has been attached as CLDATA. The game begins by asking the user if he wishes to see instructions. Any response other than "n" to this question displays the user instructions shown in figure B-1. After the instructions have been displayed, or not as the case may be, the user is asked to specify the purpose of the run. The entry of '"T"', reveals that this user response, to specify the purpose of the run, selects the mode (batch or interactive) under which the game is to be run. Since this example is to be of an interactive run, a "2" is entered. This brings the program logic to the DECISION POINT. The entry of '"T"' displays all the alternative courses of action available to the user at this point as depicted in figure B-1.

```
ATTACH,CLDATA,UNDATA,ID=SCORES,CY=2,MR=1,SN=SYS
HAND- CALL,RUNJIFFY,ID=SCORES

                    C H L D A   J I F F Y   W A R   G A M E
DO YOU WISH TO SEE INSTRUCTIONS? (YES/NO)
FF CYCLE NO. = 001
FF CYCLE NO. = 001
FF CYCLE NO. = 001
FF CYCLE NO. = 001                             N

ALL USER RESPONSES WILL BE OF TWO GENERAL TYPES:
    1. YES/NO RESPONSES
       A. Y FOR YES
       B. N FOR NO
    2. DATA ENTRY RESPONSES
       A. VALID RESPONSES DISPLAYED FOR SELECTION BY USER
       B. FRACTIONAL RESPONSES (BETWEEN 0 AND 1)
       C. NUMERIC RESPONSES WITHIN SPECIFIED LIMITS

TO REDUCE INPUT/OUTPUT RESPONSE TIMES, VALID DATA ENTRY RESPONSES
(2.A. ABOVE) ARE NOT DISPLAYED UNLESS REQUESTED

TO REQUEST ADDITIONAL INFO, IF EXISTING, THE USER MUST ENTER A "T"
 (WITH DOUBLE-QUOTES)
 SPECIFY PURPOSE OF THIS RUN         "T"

 ENTER 1 = TO CREATE INPUT FILE OF ANSWERS FOR BATCH JOB
 ENTER 2   TO GET OUTPUT OF RESULTS INTERACTIVELY
 SPECIFY PURPOSE OF THIS RUN          2

          **** D E C I S I O N   P O I N T          ******

ENTER 1 TO LOAD FORCES INTO A SECTOR
      2 TO CALCULATE RATE-OF-ADVANCE
      3 TO ASSESS COMBAT
      4 TO APPORTION CBT LOSSES TO UNITS
      5 TO DISPLAY BATTLE STATISTICS
      6 TO DISPLAY WEAPON ARRAYS
      7 TO ADD SPC'S TO TOE FILE
      8 TO RESTART AT A PREVIOUSLY GAMED CI
      9 TO END GAME AND OR UPDATE HISTORY F...
```

Figure B-1. Initiation of sample Jiffy Game run.

B-4. FORCEFILE MANIPULATION. Other than performing the basic file handling features of the Jiffy Game, which are the restart capability and the HISTORYFILE update (DECISION POINTS 8 and 9, respectively), the units involved in the combat to be gamed must be loaded into their respective sectors before any Jiffy Game assessments can be processed. The units on the FORCEFILE are loaded into sectors by the procedures available to the user through DECISION POINT 1. Figure B-2 contains examples of these file manipulation options. After entering a "1" at the DECISION POINT, the user is asked to input the critical incident mnemonic identifier (1 to 10 alphanumeric characters) and the sector number to be gamed. In the example, these are entered as "TEST1" and "1", respectively. As seen in figure B-2, a '"T"' entered at OPTION displays the force file manipulation options available to the user.

a. Since at this point, the user may wish to see the units on the FORCEFILE, the display option is chosen (OPTION 6). A '"T"' entered for the type of display lists for the user the four types of displays for units on the FORCEFILE. For reasons stated above, a "1" is entered, and the indicated type of display is presented.

b. As seen from the display, the units defined in the processes presented in appendix A are present at the unit effectiveness (EFF) initialized, with the addition of an extra unit (INITIAL). This unit is actually an extraneous record written on the FORCEFILE at its creation and may be deleted from the FORCEFILE, as shown, by exercising OPTION 7. The "all" entry under this option performs the deletion of all records on the FORCEFILE whose parent unit is INITIAL.

c. The display, printed by the display option above, shows that the actual units are still in sector 0 of an unspecified critical incident. Any of these units may be loaded into the specified critical incident (TEST1) and sector (1) through OPTION 1. The example unit loads in figure B-2 illustrate several variations of the load option. The load for B1-1A specifies that all units attached to B1-1A are to be loaded into the specified critical incident and sector. "ALL" is specified in this instance to load all three companies of B1-1A with one entry. Another way of accomplishing a similar load would be to load each company separately. An example of this type of load is illustrated by the load for B7AVN. Only one unit (B7AVNCO) is attached to B7AVN. However, in this case, the actual subordinate unit designation is specified instead of "all".

d. After all the unit loads, an example of OPTION 2, the remove option, is presented. This option allows the user to remove a unit from a sector into which it was loaded. When a unit is removed from a sector, it is loaded into sector 0 of the specified critical incident.

e. An example of the option that enables the user to create units during the game is also included in the sample run. The create option, OPTION 3, provides two ways of creating units. First, the user is allowed to use SRCs, which exist on the SRCFILE, to define the subunit organizations of the unit being created. An example of this procedure has not been included in the sample run, because it is similar to the procedures presented in appendix A, paragraph A-4. Second, the user is allowed to create a unit through the specification of the types and quantities of weapon systems contained in the unit. An example of this type of create is included in figure B-2.

f. An example of OPTION 4, the option that provides the user the capability to adjust (add or subtract) weapons systems in a unit, is also presented, which changes the quantity of weapon type 2 from 14 to 23 in unit B A/1-23A.

g. An example of OPTION 5 is also included. This option is used to attach a subordinate unit to a new parent unit.

h. After the above operations are performed, the FORCEFILE is once again displayed. As can be seen from the display in figure B-2, the INITIAL record is gone and all the units, with the exception of B1-1A, are in sector 1 of critical incident TEST1. B1-1A appears not to be loaded because only three of its four units were loaded, and the unit not loaded happened to be the last logical unit on the FORCEFILE for B1-1A. Since a type 1 display only prints the parent unit, the sector and critical incident in which it is located is taken to be that of its last unit. A type 3 display, as shown in the example, confirms that three of the units of B1-1A were loaded as specified.

i. The options of DECISION POINT 1 are always concluded with the specification of OPTION 0. This option fills the weapon system arrays, which are used in the Jiffy Game assessment routines, with the weapons of the units that have been loaded into the sector and critical incident being gamed.

```
[illegible]

[illegible]

ENTER SECTOR NUMBER          1

??? O P T I O N ???          "1"

ENTER 0 TO PROCEDE WITH ASSESSMENTS
      1 TO LOAD UNITS INTO SECTOR
      2 TO REMOVE UNITS FROM SECTOR
      3 TO CREATE A NEW UNIT
      4 TO ADJUST WPNS IN A UNIT
      5 TO ATTACH A UNIT TO A NEW PARENT
      6 TO DISPLAY A UNIT
      7 TO DELETE A UNIT FROM FORCE FILE
??? O P T I O N ???          6

ENTER TYPE OF DISPLAY -      "1"

ENTER 1 TO DISPLAY ALL PARENT UNITS IN FORCEFILE
      2 TO DISPLAY ALL PARENT UNITS IN SECTOR   1. IN CI TEST1
      3 TO DISPLAY UNITS IN A SPECIFIC PARENT
      4 TO DISPLAY WEAPONS IN A UNIT
ENTER TYPE OF DISPLAY -      1


 URCE     ID          EFF   SECT   CI
  1      S1-1A        100.    0.

  1      B3-11FA      100.    0.

  1      07AVH         90.    0.

  0      INITIAL      999.    0.   INITIAL
         R2FA          94.    0.

  [illegible]  R6A     32.    0.


ANOTHER DISPLAY? N
```

Figure B-2. Options for FORCEFILE manipulation (Continued next page).

```
ENTER PARENT OF UNIT(S) TO BE DELETED -          INITIAL
ENTER UNIT ID (OR ALL) -    ALL
ANOTHER UNIT TO DELETE?     N
  [illegible] ??             1
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         B1-1A
ENTER UNIT ID (OR ALL) -    ALL
LOAD ANOTHER UNIT?          Y
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         B3-11FA
ENTER UNIT ID (OR ALL) -    ALL
LOAD ANOTHER UNIT?          Y
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         B7AVN
ENTER UNIT ID (OR ALL) -    B7AVNCO
LOAD ANOTHER UNIT?          Y
ENTER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         R6A
ENTER UNIT ID (OR ALL) -    ALL
LOAD ANOTHER UNIT?          Y
   ER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         R2FA
   ER UNIT ID (OR ALL) -    R1-2FA
   D ANOTHER UNIT?          Y
   ER PARENT OF UNIT(S) TO BE LOADED INTO SECTOR -         R2FA
   ER UNIT ID (OR ALL) -    R3-2FA
   D ANOTHER UNIT?          N
```

Figure B-2. Options for FORCEFILE manipulation (continued).

2

... PARENT OF UNIT(S) TO BE REMOVED - B1-1A

ENTER UNIT ID (OR ALL) - BC/1-1A

REMOVE ANOTHER UNIT? N

??? O P T I O N ??? 3

ARE THERE ANY BLUE UNITS TO CREATE? Y

ENTER PARENT UNIT ID - BA/1-23A

ENTER UNIT ID - BA/1-23A

CREATE BY SRC'S? N

ENTER WPN ID,QTY--0,0 WHEN DONE 2,14

NEXT - 3,30

NEXT - 22,10

NEXT - 0,0

ENTER RELATIVE EFFECTIVENESS - 100

CREATE ANOTHER UNIT FOR THIS FORCE?
ID= SCORES PFN=FORCEFILE
CY= 002 00002112 WORDS.:N

THERE ANY RED UNITS TO CREATE? N

O P T I O N ??? 4

... PARENT OF UNIT TO BE ADJUSTED -BA/1-23A

...R UNIT ID- BA/1-23A

...R WPN ID,NEW QTY--0,0 WHEN DONE 2,23

... 0,0

...MORE UNITS TO CHANGE? N

Figure B-2. Options for FORCEFILE manipulation (continued).

```
* * O P T I O N ???          5

ENTER PARENT ID OF UNIT BEING ATTACHED          DA/1-23A

[illegible]          DA/1-23A

ENTER NEW PARENT ID -          B1-1A

ATTACH ANOTHER UNIT?
 ID=    SCOPES PFN=FORCEFILE
 EX CY= 002   00002304 WORDS.*N

* * O P T I O N ???          6

ENTER TYPE OF DISPLAY -      1


FORCE      ID            EFF   SECT   CI
  1     B1-1A          100.     0.   TEST1
  1     B3-11FA        100.     1.   TEST1
  1     B7AVN           90.     1.   TEST1
  2     R2FA            94.     1.   TEST1
  2     R6A             82.     1.   TEST1

ANOTHER DISPLAY? Y

ENTER TYPE OF DISPLAY -      3

ENTER PARENT ID -B1-1A


FORCE   PARENT        UNIT           EFF   SECT   CI
  1     B1-1A         BA/1-1A       100.    1.   TEST1
                      DA/1-23A      100.    1.   TEST1
                      EB/1-1A       100.    1.   TEST1
                      DC/1-1A       100.    0.   TEST1

ANOTHER DISPLAY? N

  * O P T I O N ???          0

  YOU WISH TO SEE UNITS LOADED INTO SECTOR?    Y

  ITS LOADED INTO SECTOR   1. FOR CI TEST1

  RCE       PARENT          UNIT
  1          B1-1A           BA 1-1A
  1          B1-1A           DA 1-23A
  1          B1-1A           [illegible] 1-1A
  1          B3-11FA         B3-11FA
  1          B7AVN           B7AVN[illegible]
  [illegible] [illegible]    [illegible]
  [illegible] [illegible]    [illegible]
  [illegible] [illegible]    [illegible]
  [illegible] [illegible]    [illegible]
  [illegible] [illegible]    [illegible]
```

Figure B-2. Options for FORCEFILE manipulation (concluded).

B-5. RATE OF ADVANCE. After all units for each force have been loaded into a sector, the rate of advance and, subsequently, the combat assessments for that sector can be processed. It should be noted here that neither rate of advance nor combat assessments need be done immediately after the units have been loaded in a sector. Most users of the Jiffy Game to date have found that it is more efficient to load the units into all sectors for a particular critical incident (CI) prior to running any rate of advance or assessment routines.

a. The example given in figure B-2 demonstrated the loading of units into sector 1 of a CI identified as TEST1. The weapon system array created by selecting OPTION 0 (zero) is displayed by entering a "6" at DECISION POINT as shown in figure B-3. This array is used in the rate of advance calculations; the FORCEFILE itself is not operated on during this portion of the Jiffy Game.

b. Figure B-4 is a sample run of the rate of advance routine, which is initiated by entering a "2" at DECISION POINT. Where appropriate, a '"T"' has been entered to display the input options available to the user. The responses given in this example are not intended to portray realistically any particular battlefield situation but have been selected in such a way that all possible inputs that might be required are shown. Input of an attacker posture, for example, is not asked for whenever a "1" (meeting engagement), a "2" (delay), or a "3" (withdraw) is entered for the type of engagement. Some inputs in rate of advance set parameters that determine input requirements or limitations in the combat assessment portion of the game. The minefield employment response given in this routine, for instance, determines whether or not minefield assessments can be made. The inputs made in this routine serve primarily to represent the environmental and military conditions of the battlefield. The meaning and significance of these parameters to the Jiffy Game methodology are documented in the Jiffy Game Technical Manual (reference 2). Not demonstrated in the sample run is the result of entering the rate of advance routine when the defending force has no weapons in the array. Should this occur, an error message is displayed just after the Blue air threat input is made, and the program returns immediately to the DECISION POINT during an interactive run. (In a batch processing mode, execution of the program is terminated.)

D E C I S I O N P O I . . .

ELEMENT	BLUE	RED
1	0.	72.
2	415.	773.
3	90.	188.
11	20.	0.
16	24.	0.
17	0.	77.
21	0.	24.
22	10.	0.
25	10.	11.
26	6.	7.
31	0.	7.
37	0.	24.
48	0.	35.
	8.	0.
	15.	0.
	5.	0.

Figure B-3. Initial weapon system array for sample runs.

```
[illegible]                                    [illegible]

IS BLUE ATTACKING RED?      N

ENTER TYPE OF ENGAGEMENT    "I"

     FOR MEETING ENGAGEMENT..........ENTER 1
         DELAY.......................ENTER 2
         WITHDRAW....................ENTER 3
         DEFEND FORTIFIED POSITION...ENTER 4
         DEFEND PREPARED POSITION....ENTER 5
         DEFEND HASTY POSITION.......ENTER 6
ENTER TYPE OF ENGAGEMENT    5

ENTER ATTACKER POSTURE      "I"

     FOR FRONTAL ATTACK.....ENTER 1
         SINGLE ENVELOPMENT.ENTER 2
         DOUBLE ENVELOPMENT.ENTER 3
ENTER ATTACKER POSTURE      2

IS THERE A SIGNIFICANT RED  AIR THREAT?        N

IS THERE A SIGNIFICANT BLUE AIR THREAT?        Y

ENTER TERRAIN TYPE          "I"

     FOR OPEN TERRAIN........ENTER 1
         ROLLING TERRAIN.....ENTER 2
         HILLY TERRAIN.......ENTER 3
         MOUNTAINOUS TERRAIN.ENTER 4
ENTER TERRAIN TYPE          2

ENTER VISIBILITY FACTOR     "I"

     FOR VISIBILITY OF 100%, ENTER 1
                       [illegible]%, ENTER 2
                       [illegible]%, ENTER 3
                       [illegible]%, ENTER 4
                       [illegible]%, ENTER 5
ENTER VISIBILITY FACTOR     1

IS ATTACKER MOUNTED         Y

ENTER FRACTION OF SECTOR ATTACK [illegible]          [illegible]
```

Figure B-4. Sample run of rate of advance. (Continued next page.)

```
                    ED IN THIS SECTOR     4

                     DISTANCE BE HELD CONSTANT        "1"

     FOR CONSTANT TIME.....ENTER 1
        CONSTANT DISTANCE.ENTER 2
SHOULD TIME OR DISTANCE BE HELD CONSTANT        1

ENTER ATTACK TIME IN HOURS (MAX 24)  5


*-------------------RATE OF ADVANCE---------------------------*
I                                                             I
I    MANEUVER FP SCORE........................  11520.   4695.I
I    FIRE SUPPORT FP SCORE....................   3877.   3069.I
I    TOTAL FP SCORE...........................  15397.   7764.I
I    FP RATIO IN SECTOR'S MAIN ATTACK AREA..... 2.1           I
I    TOTAL FP RATIO............................ 2.0           I
I    MANEUVER FP RATIO......................... 2.5           I
I    FIRE SUPPORT FP RATIO..................... 1.3           I
I                                                             I
I    RATE OF ADVANCE (KPH)....................  .72           I
I    DURATION OF ATTACK (HR)..................  5.0           I
I    DISTANCE ADVANCED (KM)...................  3.6           I
I                                                             I
*-------------------------------------------------------------*
```

Figure B-4. Sample run of rate of advance (concluded).

B-6. COMBAT ASSESSMENTS. Following a successful run of the rate of advance routine, the combat assessments can be initiated by entering a "3" at the DECISION POINT. Losses can be determined for six different types of combat in the Jiffy Game. These combat types, in the order processed, are: 1) TACAIR, 2) indirect fire, 3) mines, 4) armor/antiarmor, 5) infantry, and 6) attack helicopter/air defense. As in the rate of advance calculations, all combat losses assessments are based on the weapon system array displayed in figure B-3. A sample run of each combat assessment is presented and discussed in the following subparagraphs.

a. TACAIR. When a "3" is input for the DECISION POINT, the first combat losses to be addressed are TACAIR. The Jiffy Game does not make the actual attrition calculations for TACAIR combat; a model called TACCOM (see reference 1), developed and run by the US Air Force, is used to determine TACAIR combat losses. The Jiffy Game simply accepts as direct input the cumulative losses, by weapon type, output from the TACCOM model as illustrated in figure B-5. The net result of this sample run is the loss (subtraction) of one weapon type 22 from the Blue force. Incorrect entries have been input to demonstrate more clearly the correct form of responses needed. When all TACAIR losses have been entered, the program proceeds to a subsequent combat assessment routine with no intervening DECISION POINT.

b. Indirect Fire. After the TACAIR losses, if any, have been entered, the program proceeds to checking the weapon system array for indirect fire weapons. If none are found, the program proceeds to a subsequent assessment; should either force contain any indirect fire weapons, the indirect fire combat assessment routine is entered. A sample run of this routine is given in figure B-6. As with all combat assessments, the first input determines whether or not the type of combat being considered is to be processed. In the example of figure B-6, the indirect fire assessments are to be processed and the program proceeds to request inputs needed to calculate losses. Again, all possible inputs have been illustrated in this example although some might not be asked for at times. For example, if the response to "ENTER # MINUTES OF PREP FIRE (0-60)" is "0" (zero), the next entry specifying minutes of counterprep fire, would not be asked. Also, the question "WILL ATTACKER DISMOUNT INFANTRY DURING THIS CI?" is omitted whenever it is specified in the rate of advance routine that the attacker's infantry forces are not mounted (see figure B-4). Finally, the entry of the number of CLGP missions to fire, requested just after the display of "PREP/C-PREP ASSESSMENTS", is only required when the Blue weapon system array contains the appropriate indirect fire weapons. There are only two indirect fire weapons capable of firing CLGP missions; in this example, one of these systems was included

in the Blue force array. If both were in the weapon array, two separate inputs would have been required. After all the different type assessments have been displayed, the user must indicate whether the losses, as displayed, should be subtracted from the force. This option, which is presented at the end of each assessment routine, allows the user to disregard a "bad" run (e.g., an incorrect input may have been entered), and the routine can then be processed again at a later time.

c. Mines. Following the indirect fire assessment, the program checks whether mines are employed in the CI being gamed as specified in rate of advance (see figure B-4). If so, the minefield assessment routine is entered for processing. A sample run of this routine is given in figure B-7. Inputs for both a conventional and a FASCAM minefield assessment are demonstrated. For the conventional case, the example specifies that the Blue force does have the capability to employ mechanical mine planters. If mechanical planters are not used, the entries for the number of platoons and for the number of hours are not made. In their place, three different inputs are required for the following: 1) "ENTER NUMBER OF MEN USED TO EMPLACE MINES (MAX=1000)", 2) "ENTER HOURS AVAILABLE FOR EMPLACEMENT OF MINES (MAX=300)", and 3) "SELECT MINEFIELD DENSITY". For minefield density, a selection is made from five different specified values, which range from .0013 to .0200 mines/sq meter. For the FASCAM assessment, the input requirements are always as shown in the sample run regardless of the type delivery specified. The method of delivery entered for FASCAM causes the program to access the correct data (e.g., casualty rates) in making the loss calculations. It should be noted that only the defending force can emplace minefields. In this example, the Blue force has been designated as the defender in rate of advance (see figure B-4); therefore, the attacker losses displayed in figure B-7 are to the Red force. Another point to emphasize is that the minefield routine is not exited until a "0" (zero) is entered for "SELECT TYPE OF MINE EMPLOYMENT".

d. Armor/Antiarmor. Following the minefield assessment, if either force contains tanks (armor) or antitank weapon systems, the armor/antiarmor assessment routine is entered. As shown in figure B-8, this routine requires minimal inputs from the user. The primary requirement is to enter a range index between attacker and defender. Multiple assessments can be made by entering another non-zero range index each time the program returns to that input point; assessments are not stopped until a "0" is entered for the range index. The '"T"' input in figure B-8 shows that one of six different specified range bands can be entered for the range index (excluding zero). The maximum range between attacker and defender

(3,000 meters) corresponds to the greatest distance at which the opposing forces would engage in direct fire combat under ideal conditions of visibility. The visibility level for the combat assessments is specified by the user in the rate of advance and has been set to 100 percent for this sample run (see figure B-4). Under less than ideal visibility conditions, the maximum range for armor/antiarmor engagement is decreased. For instance, when the visibility factor is set to 85 percent, the largest range index that can be entered here is a "5" (i.e., maximum range of 2,500 meters). Under the poorest visibility conditions allowed (30 percent), a "1" is the only non-zero input accepted.

e. Infantry. When the armor/antiarmor assessments are finished, the program proceeds to the infantry combat routine. Infantry assessments can be processed only if both forces contain infantry personnel in the weapon system array; otherwise, it is bypassed. The sample run of this routine is given in figure B-9. The input requirements are straightforward; the only variation in the user responses shown occurs when ambush tactics are not employed, in which case the question "IS BLUE AMBUSHING RED" is omitted. There is no multiple assessment capability for infantry combat. The inputs set the necessary parameters for the entire infantry battle being gamed, the losses are calculated and displayed, and the routine is ended.

f. Attack Helicopter/Air Defense. The last type of combat to be addressed for assessments is attack helicopter/air defense. This routine is entered following completion of the infantry combat processing if either force contains attack helicopters. The sample run in figure B-10 demonstrates the input requirements for completing the helicopter and air defense assessments. In this example, the Red force, as indicated, contains no attack helicopters; if it does, the user is first given an opportunity to game Blue ADA and Red A/C. However, the same inputs, from setting the AD weapon control factor to specifying whether another cell of A/C is to be flown, are required in both cases. All possible user responses are demonstrated in figure B-10. It should be noted that two different cells of Blue helicopters are flown; the second cell flown illustrates the capability of the user to abort a helicopter mission before its completion if losses incurred exceed 30 percent. In the case presented here, that mission was continued for one additional popup, then aborted. In the first mission flown, the mission is assessed to its normal completion since losses to the helicopter cell remain below 30 percent. The cycle of defining and assessing helicopter cells can be continued until all sorties have been depleted or all the helicopters killed. The user determines when the assessments for each helicopter/air defense combination are terminated. Upon completion of this routine, the program returns to the DECISION POINT.

```
                              I N    P A I N
  YOU WISH TO INCLUDE ANY LOSSES DUE TO TACAIR FOR APPORTIONMENT? Y

 BLUE LOSSES?

 WPN ID,# LOST (0,0 WHEN DONE)--          22,-1

 LOST MUST BE ENTERED AS A POSITIVE NUMBER.
 T ENTRY IGNORED
 T--              22,15

           ONLY  10. OF WEAPON  22 REMAIN IN THE BLUE FORCE FOR THIS
 CTOR.
 T ENTRY IGNOR
 T-               22,1

                  0,0

  LOSSES?                N
```

Figure B-5. Sample run of TACAIR losses.

```
DO YOU WISH TO                                    UNITS?        Y

IS DUAL PURPOSE ICM BEING USED?       Y

ENTER LEVEL OF BLUE ARTY SUPPORT -    "?"

ENTER: 1 FOR LIGHT INTERMITTENT FIRES
       2 FOR FIRES BASED ON 2/3 BASIC LOAD
       3 FOR FIRES BASED ON TOTAL BASIC LOAD
       4 FOR FIRES BASED ON 2/3 DAILY RESUPPLY RATE
       5 FOR FIRES BASED ON TOTAL DAILY RESUPPLY RATE
       6 FOR APPROX. SUSTAINED RATE OF FIRE
ENTER LEVEL OF BLUE ARTY SUPPORT -    4

ENTER LEVEL OF RED  ARTY SUPPORT -    3

ENTER # HOURS OF ARTY SUPPORT (0-5.) 5.5

 INCORRECT ENTRY - TRY AGAIN
ENTER # HOURS OF ARTY SUPPORT (0-5.) 4.5

 ENTER # MINUTES OF PREP FIRE (0-60)  30

ENTER # MINUTES OF COUNTER-PREP FIRES (0-60)   20

  ENTER # MINUTES OF FINAL PROTECTIVE FIRE (0-60)12

  ILL ATTACKER DISMOUNT INFANTRY DURING THIS CI?Y

 SPECIFY THE TYPES OF IDF MISSIONS THE BLUE FORCE WILL FIRE
COUNTER-BATTERY? Y

CLOSE SUPPORT ?   Y

NO SUPPRESSION ?  Y

SPECIFY THE TYPES OF IDF MISSIONS THE RED  FORCE WILL FIRE
COUNTER-BATTERY? Y

CLOSE SUPPORT ?   Y

NO SUPPRESSION ?
```


Figure B-6. Sample run of indirect fire assessments (continued next page).

FREP/C-PREP ASSESSMENTS

RED LOSSES TO BLUE

ITEM	# LOST	CREW LOST
1	1.9	
2	13.3	
3	6.1	
17	1.4	4.2
21	.5	1.0
25	.3	.6
26	.2	.4
31	.2	.6
48	.9	6.3

BLUE LOSSES TO RED

ITEM	# LOST	CREW LOST
2	1.0	
3	3.6	
11	.1	
25	.3	.6
26	.2	.4

[illegible] TO FIRE (MAX=19) - 10

Figure B-6. Sample run of indirect fire assessments (continued).

IDF MISSION A[illegible]

RED LOSSES TO BLUE

ITEM	# LOST	CREW LOST
1	2.2	
2	78.7	
3	37.8	
17	11.2	33.6
21	3.7	7.4
25	1.7	3.4
26	1.3	2.6
31	1.1	4.4
48	3.9	27.3

BLUE LOSSES TO RED

ITEM	# LOST	CREW LOST
2	4.6	
3	17.2	
11	.8	
25	1.4	2.8
26	.9	1.8

FPF ASSESSMENTS

RED LOSSES TO BLUE

ITEM	# LOST	CREW LOST
2	16.8	
3	5.4	
17	5.0	15.0
25	.9	1.8

Figure B-6. Sample run of indirect fire assessments. (continued).

DIRECT FIRE ASSESSMEN.

RED LOSSES TO BLUE

ITEM	# LOST	CREW LOST
	4.1	
2	108.8	
3	49.3	
17	17.6	52.8
21	4.2	8.4
25	2.9	5.8
26	1.5	3.0
31	1.3	5.2
48	4.8	33.6

BLUE LOSSES TO RED

ITEM	# LOST	CREW LOST
2	5.6	
3	10.8	
11	.9	
25	1.7	3.4
26	1.1	2.2

FACT LOSSES FROM FOR

Figure B-6. Sample run of indirect fire assessments. (Concluded).

```
                          MINE ASSESSMENTS?

                      PLOYMENT           "T"

FOR CONVENTIONAL MINES...........ENTER 1
    FASCAM MINES.................ENTER 2
    ***TO END***.................ENTER 0
SELECT TYPE OF MINE EMPLOYMENT        1

ARE MINES LAID PRIOR TO COMMENCEMENT OF HOSTILITIES?      Y

WILL BLUE HAVE THE CAPABILITY TO EMPLOY MECHANICAL MINE PLANTERS?  Y

ENTER NUMBER OF MECHANICAL MINE PLANTER PLATOONS (MAX 30)3

ENTER NUMBER OF AVAILABLE MINE PLANTER HOURS (MAX 300)   24

POTENTIAL MINEFIELD FRONTAGE IS   21600.

ENTER ACTUAL MF FRONTAGE (MAX=POTENTIAL)        1500

ENTER FRACTION OF MINE FIELD NOT BYPASSED BY ATTACKER (MAX=1.0)    .6

ENTER AMOUNT OF TRAFFICABLE TERRAIN (    900.-100000. M) 7000

ENTER AP MINE DENSITY(SQ METER) - (MIN=.013-MAX=.160)     .1

ENTER PERCENT(DECIMAL) OF FORCES ENTERING MF(MAX=.5)      .25


*--------------------MINEFIELD ASSESSMENTS------------------*
I                                                          I
I                    ATTACKER LOSSES                       I
I             ITEM     # LOST    CREW LOST                 I
I                                                          I
I               2        3.0                               I
I               3        1.8                               I
I              17         .6         1.8                   I
I              21         .2          .4                   I
I              25         .1          .2                   I
I              26         .1          .2                   I
I              31         .1          .4                   I
*                                                          *
                     ===========================           *
```

Figure B-7. Sample run of minefield assessments (continued next page).

```
 ? TYPE OF MINE EMPLOYMENT

 ?T TYPE OF FASCAM DELIVERY        "T"

   ARTILLERY.....................ENTER 1
   GEMMS.........................ENTER 2
   SLUMINES......................ENTER 3
 LECT TYPE OF FASCAM DELIVERY        2

 .TER MINEFIELD FRONTAGE (MAX= 100000)          1500

ENTER FRACTION OF MF NOT BYPASSED BY ATTACKER (MAX=1.)    .6

ENTER AMOUNT OF TRAFFICABLE TERRAIN (    900.-100000. M) 7600

ENTER PERCENT(DECIMAL) OF FORCE ENTERING MF (MAX=.5)      .25
```

FASCAM ASSESSMENTS

ITEM	ATTACKER LOSSES # LOST	CREW LOST
2	6.9	
3	4.2	
17	1.5	4.5
21	.5	1.0
25	.2	.4
26	.1	.2
31	.2	.8

```
 ? TYPE OF MINE EMPLOYMENT        0

 ISH TO SUBTRACT LOSSES FROM ? ???          ???
```

Figure B-7. Sample run of minefield assessments (concluded).

```
DO YOU WISH TO PROCESS ARMOR/ANTIARMOR ASSESSMENTS?          Y

          ARMOR/ANTIARMOR ASSESSMENTS
IS THIS INITIAL COMBAT FOR THIS SECTOR?          Y

ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER  "T"

     IF RANGE IS BETWEEN:
        3000 & 2501 ENTER 6
        2500 & 2001 ENTER 5
        2000 & 1501 ENTER 4
        1500 & 1001 ENTER 3
        1000 &  501 ENTER 2
         500 &    0 ENTER 1
        **TO STOP** ENTER 0
ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER  4


          BLUE LOSSES TO THIS POINT
               ITEM      # LOST
                 2        10.2
                 3          .2
                11          .2
                16         2.4
                22          .6
                25          .6

          RED  LOSSES TO THIS POINT
               ITEM      # LOST
                 2         8.1
                 3         3.6
                17         2.1
                21          .5
                25          .1
                26          .1
                31          .1
ENTER RANGE INDEX BETWEEN ATTACKER & DEFENDER  0
```

Figure B-8. Sample run of armor/antiarmor assessments. (Continued next page.)

ARMOR ASSESSM...

TOTAL RED LOSSES

ITEM	% LOST	CREW LOST
2	3.1	
3	3.6	
4	2.1	6.3
21	.5	1.0
25	.1	.2
26	.1	.2
31	.1	.4

TOTAL BLUE LOSSES

ITEM	# LOST	CREW LOST
2	00.2	
3	.2	
11	.2	
16	2.4	7.2
22	.5	1.5
23	.5	1.2

...H TO SUBTRACT LOSSES FROM ...

Figure B-8. Sample run of armor/antiarmor assessments (concluded).

```
DO YOU WISH TO PROCESS INFANTRY ASSESSMENTS ?  Y

          INFANTRY ASSESSMENTS

ENTER THE FRACTION OF MANEUVER FORCES COMMITTED (MAX 1.) .8

DO TANKS SUPPORT THE DISMOUNTED INFANTRY IN THIS SECTOR  Y

ENTER # HOURS OF INFANTRY ATTACK (MAX = 6.).   2.5

ARE AMBUSH TACTICS BEING EMPLOYED     Y

IS BLUE AMBUSHING RED       Y

*------------------INFANTRY ASSESSMENTS----------------*
I                                                      I
I                    RED  INFANTRY LOSSES              I
I                     ITEM        #LOST                I
I                       3         24.8                 I
I                      11          1.2                 I
I                                                      I
I                    BLUE INFANTRY LOSSES              I
I                     ITEM        #LOST                I
I                       1           .2                 I
I                       3         13.3                 I
I                                                      I
*------------------------------------------------------*
DO YOU WISH TO SUBTRACT LOSSES FROM THIS SECTOR ?
```

Figure B-9. Sample run of infantry assessments.

```
...SH TO PROCESS AIR DEFENSE/ARMED HEL...                    Y

          ...OR DEFENSE/ARMED HELICOPTER ASSESSMENTS
THE RED  FORCE HAS NO HEL...TERS
DO YOU WISH TO GAME RED  ...DA AND BLUE A/C?     Y


...E FOLLOWING SETS PARAMETERS FOR RED  AD WEAPONS

ENTER RED  WEAPON CONTROL (STATUS) FACTOR       "T"

          FOR WEAPON FREE.....ENTER 1
              WEAPON TIGHT.....ENTER 2
              WEAPON HOLD.....ENTER 3
ENTER RED  WEAPON CONTROL (STATUS) FACTOR       1

ENTER ECM ENVIRONMENT FOR RED  DEPLOYED SYSTEMS.          "T"

          FOR CLEAN.....ENTER 1
              COUNTERMEASURES.....ENTER 2
ENTER ECM ENVIRONMENT FOR RED  DEPLOYED SYSTEMS.          2

ENTER NUMBER OF AVENUES OF APPROACH (MAX=5).   2

ENTER PRIORITY WEIGHTING FACTOR FOR RED  ADA TARGETS (MAX=10).     5


...E FOLLOWING SETS PARAMETERS FOR BLUE HELICOPTERS

...ER TOTAL FLYING TIME FOR BLUE A/C THIS CI (MAX=  5.0 HOURS)
     ?

...ER ...T FIRE PER HOUR FOR THE FOLLOWING BLUE H... (MAX=3.)
...E ...:

...E ...:                    ? 5
```


Figure B-10. Sample run of attack helicopter/air defense assessments. (Continued next page.)

```
                    LLS OF BLUE A/C TO FLY AGAINST RED  GROUND FORCES

TOTAL BLUE A/C AND SORTIES AVAILABLE THIS CI
     A/C TYPE      # A/C      # SORTIES
        62          12.          49.
        63           3.          21.
ENTER A/C ELMT #,NO. ADDED(+ OR -) TO CELL--0,0 TO STOP  62,6

NEXT ENTRY        63,3

NEXT ENTRY        0,0

WILL THIS CELL PENETRATE FEBA?        Y

SORTIE COMPLETED
DO YOU WISH TO SEE LOSSES? Y


BLUE HELICOPTERS KILLED
  TYPE         # KILLED
   62             1.0
   63              .5


RED  GROUND FORCES KILLED
  TYPE          # KILLED
   17              12.0
                    4.2
                    .3
```

Figure 8-10. Sample run of attack helicopter/air defense assessments (continued).

```
                0 FLY ANOTHER CELL OF BLUE A/C

     .. L AND SORTIES REMAINING THIS CI
     A/C TYPE      # A/C      # SORTIES
        62           11.          93.
        63            2.          18.
ENTER A/C ELMT #,NO. ADDED(+ OR -) TO CELL--0,0 TO STOP  62,1

NEXT ENTRY       63,2

NEXT ENTRY       0,0

WILL THIS CELL PENETRATE FEBA?       Y

LOSSES EXCEED 30% AFTER 7 POPUPS
DO YOU WISH TO SEE LOSSES? Y


BLUE HELICOPTERS KILLED
  TYPE        # KILLED
   62             .4
   63             .7


RED  GROUND FORCES KILLED
  TYPE         # KILLED
   17             1.4
DO YOU WISH TO ABORT THIS SORTIE?    N

LOSSES EXCEED 30% AFTER 8 POPUPS
DO YOU WISH TO SEE LOSSES? N

DO YOU WISH TO ABORT THIS SORTIE?    Y

   YOU WISH TO FLY ANOTHER CELL OF BLUE A/C   N
```


Figure B-10. Sample run of attack helicopter/air defense assessments (continued).

ARMED HELICOPTER ASSESSMENTS

TOTAL RED LOSSES

ITEM	# LOST	CREW LOST
2	54.4	
3	19.4	
17	13.6	40.7
21	3.2	6.5
31	1.8	7.3

FOR GROUND FORCES KILLED BY HELICOPTERS:
DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

AIR DEFENSE ASSESSMENTS

TOTAL BLUE LOSSES

ITEM	# LOST	CREW KILLED
2	5.4	
62	1.4	4.3
63	1.3	4.6

FOR HELICOPTERS KILLED BY AIR DEFENSE:
DO YOU WISH TO SUBTRACT LOSSES FROM FORCE STRUCTURES?

Figure B-10. Sample run of attack helicopter/air defense assessments (concluded).

B-7. LOSS APPORTIONMENT AND BATTLE STATISTICS. After all the combat has been assessed in the Jiffy Game, the losses that resulted must be apportioned into the units that were loaded into sector "1" and critical incident "TEST1". The user accomplishes the loss apportionment through DECISION POINT 4. Figure B-11 contains the sample run of the loss apportionment. The user is asked to indicate the level of combat intensity in which each unit loaded into sector 1 has been engaged. As shown in the sample run, there are six combat intensity levels (0-5). After the combat intensity level entry for R7-6A, two apportionment messages are displayed, which indicate that there is an insufficient number of Blue type 1 weapons and Red type 11 weapons to be properly apportioned. The apportionment of these types of weapons must be ignored. This situation occurs generally to small arms and other dismounted infantry systems. The assessment of these weapons is based on infantry casualties and not the number of weapons actually engaged in combat. At this point, each unit is subjected to the loss apportionment algorithm, and its resulting unit effectiveness is displayed as shown in figure B-11. At the same time a more comprehensive output of each unit, the number and type of weapons it lost, and the number and type of weapons remaining in the unit is written on the STATS file, a detailed file of the combat statistics. This portion of the STATS file is known as the UNIT STATUS (see appendix C). After the losses have been apportioned to all units gamed, the user has the capability to display any unit and the weapons that remain in it. After the loss apportionment is completed, the user should always exercise DECISION POINT 5, which outputs to the STATS file the remainder of the battle statistics as discussed in appendix C.

```
????????????  D E C I S I O N   P O I N T  ?????????????4

 ENTER CBT INTENSITY FOR BA/1-1A    -   "r"

 COMBAT INTENSITY LEVELS
 ENTER 0 FOR UNCOMMITTED UNITS
       1 FOR UNITS OUTSIDE OF DIRECT FIRE
       2 FOR RESERVE UNITS COMMITTED LATE
       3 FOR UNITS ON PERIMETER OF MBA
       4 FOR UNITS IN MAIN BATTLE AREA
       5 FOR UNITS HIT BY TACAIR
ENTER CBT INTENSITY FOR BA/1-1A    -  4

ENTER CBT INTENSITY FOR BA/1-23A   -  5

ENTER CBT INTENSITY FOR BB/1-1A    -  4

ENTER CBT INTENSITY FOR B3-11FA    -  2

ENTER CBT INTENSITY FOR B7AUNCO    -  4

ENTER CBT INTENSITY FOR R1-2FA     -  1

ENTER CBT INTENSITY FOR R3-2FA     -  1

ENTER CBT INTENSITY FOR R5-6A      -  4

ENTER CBT INTENSITY FOR R6-6A      -  4

ENTER CBT INTENSITY FOR R7-6A      -  4

APPORTIONMENT OF ITEM  1 LOSSES TO BLUE FORCE CANNOT BE MADE
APPORTIONMENT OF ITEM 11 LOSSES TO RED  FORCE CANNOT BE MADE
EFFECTIVENESS OF BA/1-1A    = 88.
EFFECTIVENESS OF BA/1-23A   = 82.
EFFECTIVENESS OF BB/1-1A    = 88.
CUMMULATIVE EFFECTIVENESS OF B1-1A       = 87.
EFFECTIVENESS OF B3-11FA    =100.
CUMMULATIVE EFFECTIVENESS OF B3-11FA    =100.
EFFECTIVENESS OF B7AUNCO    = 81.
CUMMULATIVE EFFECTIVENESS OF B7AUN       = 81.
EFFECTIVENESS OF R1-2FA     = 82.
EFFECTIVENESS OF R3-2FA     = 84.
CUMMULATIVE EFFECTIVENESS OF R2FA        = 83.
EFFECTIVENESS OF R5-6A      = 43.
EFFECTIVENESS OF R6-6A      = 47.
EFFECTIVENESS OF R7-6A      = 49.
CUMMULATIVE EFFECTIVENESS OF R6A         = 46.
DISPLAY A UNIT?
 ID=    SCORES  LFN=HISTORYFILE
 CY= 005  000156880 WORDS.

????????????  D E C I S I O N   P O I N
```

Figure 8-11. Sample run of loss apportionment.

B-8. TERMINATION. The Jiffy Game is ended through DECISION POINT 9. Figure B-12 is an example of typical termination procedures. In this case, the weapon system arrays remaining in both forces are first displayed through the entry of DECISION POINT 6, then DECISION POINT 9 is entered. At this time, the user is given a chance to update the HISTORYFILE. The user is asked if all sectors have been gamed. A negative response ends the program immediately. However, an affirmative reply first outputs the cumulative battle statistics (see appendix C) to the STATS file, then asks the user if the FORCEFILE should be added to the HISTORYFILE. Once again, an "N" (no) immediately ends the program, and a "Y" (yes) copies the entire FORCEFILE to the HISTORYFILE. It should be noted that all units on the FORCEFILE, whether loaded into a sector in the critical incident being added or not (in this instance TEST1), are added to the HISTORYFILE. If a unit on the FORCEFILE has not been loaded into a sector of TEST1, it is automatically loaded into sector 0 of TEST1 before it is added to the HISTORYFILE. After the program is ended, the STATS file should be batched to a high-speed line printer. Note that after the termination of the run the message "FILE QUOTA EXCEEDED" is displayed. This is due to a local maximum file limit in existence on the Fort Leavenworth computer. It merely means that more than 20 files are attached to the terminal.

```
             D E C I S I O N   P O I [illegible]

               [illegible]CTURES
ELEMENT      [illegible]       FED
  [illegible]        0.        [illegible]
  [illegible]       [illegible]       [illegible]
  [illegible]       [illegible]       [illegible]
  [illegible]       [illegible]       [illegible]
  1[illegible]        22.        0.
  1[illegible]        0.       42.
  21          0.       15.
  22          8.        0.
  25          9.        7.
  26          5.        6.
  31          0.        4.
  37          0.       24.
  46          0.       30.
  50         18.        0.
  62         14.        0.
  [illegible]          3.        0.
????????????? D E C I S I O N   P O I N T  ?????????????

HAS THE LAST SECTOR BEEN GAMED FOR CI TEST1      ?        Y

SHOULD FORCE FILE BE ADDED TO HISTORY FILE?     Y

 E[illegible] ID=    SCORES PFN=HISTORYFILE
 EX CY= 005  00017216 WORDS.:
      STOP  1
       6.746 CP SECONDS EXECUTION TIME
FILE QUOTA EXCEEDED
COMMAND-
COMMAND- [illegible]
```

Best Available Copy

Figure B-12. Termination of the sample run.

APPENDIX C

OUTPUT FROM JIFFY GAME SAMPLE RUN

APPENDIX C

OUTPUT FROM JIFFY GAME SAMPLE RUN

C-1. PURPOSE AND SCOPE. This appendix provides an example and discussion of the hard copy results obtained following a complete run of the Jiffy Game.

C-2. GENERAL. During execution of some portions of the Jiffy Game, the program creates a file containing detailed results of the combat being gamed. This information is not displayed on the console screen by the program but is stored in the local file area of the terminal and can be printed out on a high speed printer after the program is exited. For each sector of combat assessed, two major types of information are made available to the user by this process. One is a unit status file of the forces in the sector, and the other is a series of tables giving detailed combat loss data resulting from the assessments. Also, at the end of a critical incident, another series of tables giving cumulative loss statistics for all sectors in the CI is created. The name of the local file containing these data is STATS. This file should be either printed out or saved as a permanent file immediately after the Jiffy Game program is ended. This information, if lost, can only be recreated by rerunning an entire sector of combat.

C-3. UNIT STATUS. The input of a "4" at the DECISION POINT in the Jiffy Game initiates the apportioning of combat assessment losses to the individual units that were loaded into a sector as demonstrated in figure B-11. As this approtionment is being made, the program writes the current status of each unit and each parent unit to the STATS file. Figure C-1 is an example of this output for those units loaded into the sector played in the Jiffy Game sample run of appendix B.

C-4. SECTOR LOSS STATISTICS. The execution of a "5" at the DECISION POINT creates an output of tabulated combat loss statistics, which is written onto the STATS file. A copy of the information printed out at the conclusion of the sample run documented in appendix B is given in figure C-2. The content and format of these tables have been developed to provide meaningful data for analysis of the battle being gamed. With the exception of the ammunition expenditure table, all the statistics in this output are derived directly from the loss array created during the combat assessment routines of the Jiffy Game.

C-5. CI LOSS STATISTICS. When a "9" is entered for DECISION POINT in the Jiffy Game, the question "HAS THE LAST SECTOR BEEN GAMED FOR CI (name)?" is asked. If a "Y" is entered at this point, the program writes to the

STATS file the combat loss statistics cumulated over all sectors for that CI. Figure C-3 provides an example of this output for the CI called TEST1 that was gamed in the Jiffy Game sample run for appendix B. Note that the format and content of the tables are identical to those for the sector loss statistics in figure C-2. In fact, since only one sector was played in the sample run for CI TEST1, even the numbers contained in the figures C-2 and C-3 are the same.

```
UNIT STATUS FILE FOR SECTOR 1.      : SECTOR 1.

PARENT=P1-1A        UNIT=PA/1-1A

                        ELMTS   LOST  REMAIN
                            7   11.6    18.4
                           11     .5     9.5
                           16    1.2    10.8
                           21    1.1     3.9
                           24     .5     2.5
                            2    6.8    72.2
EFFECTIVENESS OF PA/1-1A   = 86.

PARENT=P1-1B        UNIT=PB/1-23A

                        ELMTS   LOST  REMAIN
                            7   11.6    18.4
                           22    1.6     5.4
                            2    1.8    35.2
EFFECTIVENESS OF PB/1-23A  = 78.

PARENT=P1-1C        UNIT=PC/1-1B

                        ELMTS   LOST  REMAIN
                            7   11.6    18.4
                           11     .5     9.5
                           16    1.2    10.8
                           21    1.1     3.9
                           24     .5     2.5
                            2    6.8    72.2
EFFECTIVENESS OF PC/1-1B   = 86.

PARENT=P3-11FA      UNIT=P3-11FA

                        ELMTS   LOST  REMAIN
                           50     0.0    18.0
                            2     0.0   180.0
EFFECTIVENESS OF P3-11FA   =100.
```

```
PARENT=P1-1A

    ELMTS   LOST  REMAIN
        2   15.4   179.6
        7   34.8    55.2
       11    1.0    19.0
       16    2.4    21.6
       22    1.6     4.4
       25    2.2     7.8
       26    1.0     5.0
EFFECTIVENESS OF P1-1A     = 87.

PARENT=P3-11FA

    ELMTS   LOST  REMAIN
        2    0.0   180.0
       50    0.0    18.0
EFFECTIVENESS OF P3-11FA   =100.
```

Figure C-1. Unit status file (Continued next page).

```
PARENT=[illegible]          UNIT=[illegible]

                                 ELMTS   LOST  REMAIN
                                   62     1.4   13.9
                                   63     1.3    3.2
                                    2     5.4   34.2
EFFECTIVENESS OF 7ZAVN          = 81.

                                                    PARENT=7ZAVN

                                                         ELMTS   LOST  REMAIN
                                                            2     5.4   34.2
                                                           62     1.4   13.9
                                                           63     1.3    3.2
                                                    EFFECTIVENESS OF 7ZAVN      = 81.

PARENT=E2FA                 UNIT=81-2FA

                                 ELMTS   LOST  REMAIN
                                    1      .5   29.4
                                   25      .3    2.6
                                   4[illegible]     2.4   14.7
                                    2    17.4  193.5
EFFECTIVENESS OF 81-2FA         = 92.

PARENT=E2FA                 UNIT=83-2FA

                                 ELMTS   LOST  REMAIN
                                    1      .5   22.8
                                   25      .3    2.6
                                   46     2.4   15.1
                                    2    17.4  197.9
EFFECTIVENESS OF 83-2FA         = 94.

                                                    PARENT=E2FA

                                                         ELMTS   LOST  REMAIN
                                                            1     1.0   41.2
                                                            2    34.8  331.4
                                                           25      .6    5.2
                                                           48     4.8   23.8
                                                    EFFECTIVENESS OF E2FA       = 83.

PARENT=E6A                  UNIT=65-6A

                                 ELMTS   LOST  REMAIN
                                    1     1.8    8.3
                                    3    32.9   27.1
                                   17    10.7   12.6
                                   21     7.7    4.9
                                   23      .8     .7
                                   24      .6    1.7
                                   31     1.1    1.2
                                   37     0.3    7.5
                                    2    44.7   61.5
EFFECTIVENESS OF 65-6A          = 43.

PARENT=E6A                  UNIT=66-6A

                                 ELMTS   LOST  REMAIN
                                    1     1.[illegible]    8.6
                                    [illegible]    70.2   67.4
                                   17     7.7    9.1
                                   21     [illegible]   10.1
                                   23     1.3    1.1
                                   24      .6    1.8
                                   31      .4     .8
                                   37     0.0   14.9
                                    [illegible]    41.9   52.9
```

Figure C-1. Unit status file (continued).

EFFECTIVENESS OF FB-2A = 47.

PARENT=F52 UNIT=27-6A

ELMTS	LOST	REMAIN
1	1.2	9.6
17	17.0	19.9
25	.5	.4
26	.7	2.0
31	1.7	1.9
2	50.2	77.7

EFFECTIVENESS OF 27-6A = 46.

PCRENT=P6A

ELMTS	LOST	REMAIN
1	3.2	25.2
2	146.8	199.7
3	133.1	34.9
17	35.4	41.6
21	5.6	14.9
25	2.6	2.2
26	1.9	5.5
31	3.6	3.9
37	3.0	23.5

EFFECTIVENESS OF P6A = 46.

Figure C-1. Unit status file (concluded).

**********BATTLE STATISTICS**********

BLUE LOSS & DAMAGE DISTRIBUTION

TYPE	DAMAGE/ LOSSES	WEFCV	FECV	EXCEED THEATER REPAIR	COSCOM REPAIR	DIV REPAIR
2	22.	22.	0.	0.	0.	0.
4	35.	35.	0.	0.	0.	0.
11	1.	1.	0.	0.	0.	0.
16	3.	1.	2.	1.	1.	0.
22	2.	0.	2.	1.	1.	0.
25	3.	1.	2.	1.	1.	0.
26	1.	0.	1.	1.	0.	0.
62	2.	2.	0.	0.	0.	0.
63	2.	2.	0.	0.	0.	0.

Figure C-2. Battle statistics (continued next page).

			BLUE LOSSES BY SOURCE OF LOSS							
TYPE	INF CRT	IND	FIRE	TANK	ATGM	ADA	MINES	A/HEL	TACAIR	TOTAL
2	2.		6.	0.	2.	6.	0.	0.	0.	22.
3	14.		21.	0.	2.	0.	0.	0.	0.	35.
11	0.		1.	0.	0.	0.	0.	0.	0.	1.
16	0.		0.	2.	1.	0.	0.	0.	0.	3.
22	0.		0.	1.	1.	0.	0.	0.	1.	2.
25	0.		2.	1.	0.	0.	0.	1.	0.	3.
26	0.		1.	0.	0.	0.	0.	0.	0.	1.
62	0.		0.	0.	0.	2.	0.	0.	0.	2.
63	0.		0.	0.	1.	2.	0.	0.	0.	2.

Figure C-2. Battle statistics (continued).

RED LOSS & DAMAGE DISTRIBUTION

TYPE	DAMAGE/ LOSSES	NOREPAIR	TOTAL REPAIRED	REPAIRABLE 2 DAYS	5 DAYS	10 DAYS
1	6.	6.	0.	0.	0.	0.
2	181.	181.	0.	0.	0.	0.
3	179.	179.	0.	0.	0.	0.
11	1.	1.	0.	0.	0.	0.
17	96.	64.	32.	14.	11.	7.
21	8.	1.	7.	3.	2.	2.
29	4.	1.	3.	1.	1.	1.
26	2.	0.	2.	1.	1.	0.
31	3.	0.	3.	1.	1.	1.
44	5.	0.	5.	2.	2.	1.

Figure C-2. Battle statistics (continued).

TYPE	INF	CPT	REG INF	LOSSES BY SOURCE OF LOSS FIRE	TANK	ATGM	ACR	MINES	A/HEL	TACAIR	TOTAL
1		1.		4.	0.	3.	0.	0.	0.	0.	4.
2		0.		169.	7.	1.	0.	10.	54.	0.	101.
3		27.		49.	3.	1.	0.	5.	19.	0.	103.
11		1.		0.	0.	1.	0.	0.	0.	0.	1.
17		0.		10.	2.	1.	0.	2.	14.	0.	36.
21		0.		4.	0.	1.	0.	1.	3.	0.	0.
25		0.		3.	0.	0.	0.	0.	0.	0.	3.
26		0.		2.	0.	1.	0.	0.	0.	0.	2.
33		0.		1.	0.	1.	0.	0.	2.	0.	3.
48		0.		5.	0.	0.	0.	0.	0.	0.	5.

Figure C-2. Battle statistics (continued).

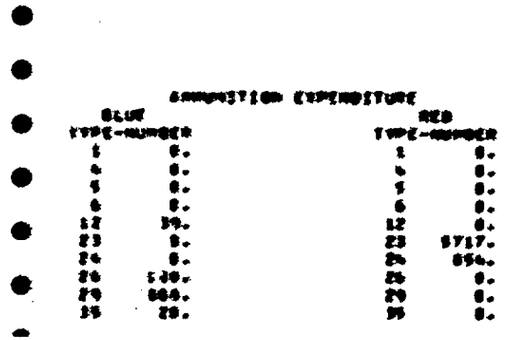


Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	KILLER	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	*	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	.7	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	*	0.0	0.0	0.0	0.0	0.0	0.0	.9	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	*	0.0	0.0	0.0	0.0	0.0	0.0	.9	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	BLUE ARMOR KILLER																			
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-2. Battle statistics (continued).

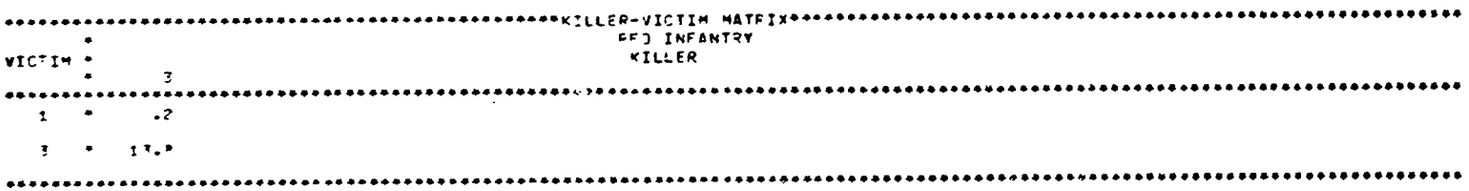


Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

BLUE INFANTRY
KILLER

VICTIM	%
3	24.8
11	1.2

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	BLUE MINES KILLER
	E
17	2.1
21	.7
25	.3
26	.2

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	KILLER 43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
								PEO ARTILLERY								
7	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	28.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

BLUE ARTILLERY

VICTIM \ KILLER	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	108.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	BLUE HELICOPTER KILLER 60	61	62	63	64	65
2	0.0	0.0	0.0	54.4	0.0	0.0	0.0
5	0.0	0.0	0.0	19.4	0.0	0.0	0.0
17	0.0	0.0	0.0	13.6	0.0	0.0	0.0
21	0.0	0.0	0.0	3.2	0.0	0.0	0.0
31	0.0	0.0	0.0	1.9	0.0	0.0	0.0

Figure C-2. Battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	KILLER 31	32	33	34	35	36	37	RED ACA KILLER 38	39	40	41	42
62	.7	0.0	0.0	0.3	0.0	0.0	.7	0.0	0.0	0.0	0.0	0.0
63	.6	0.0	0.0	0.3	0.0	0.0	.7	0.0	0.0	0.0	0.0	0.0

Figure C-2. Battle statistics (concluded).

CUMULATIVE STATISTICS FOR CI TEST1

Figure C-3. Cumulative battle statistics (continued next page).

**********BATTLE STATISTICS**********

BLUE LOSS & DAMAGE DISTRIBUTION

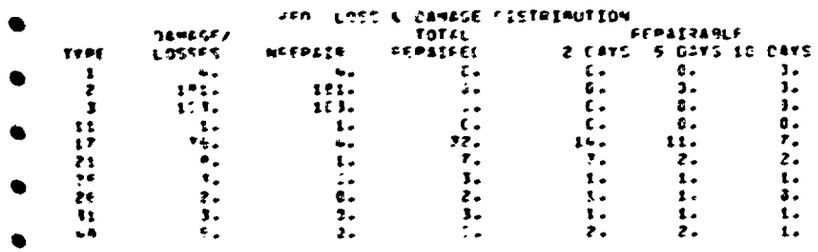
TYPE	DAMAGE/ LOSSES	NFECV	-ECV	EXCEED THEATER REPAIR	COSCOM REPAIR	DIV REPAIR
2	22.	22.	0.	0.	0.	0.
3	35.	35.	0.	0.	0.	0.
11	1.	1.	0.	0.	0.	0.
16	3.	1.	2.	1.	1.	0.
22	2.	0.	2.	1.	1.	0.
25	3.	1.	2.	1.	1.	0.
26	1.	0.	1.	1.	0.	0.
62	2.	2.	0.	0.	0.	0.
63	2.	2.	0.	0.	0.	0.

Figure C-3. Cumulative battle statistics (continued).

PLUE LOSSES BY SOURCE OF LOSS

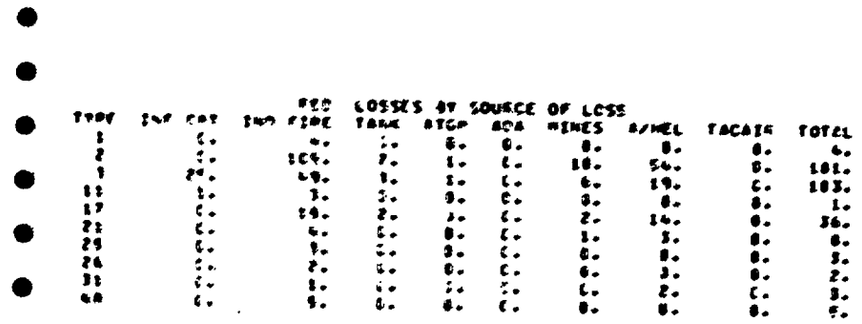
TYPE	INF CBT	IND FIRE	TANK	ATGM	ADA	MINES	A/HEL	TACAIR	TOTAL
2	8.	6.	8.	2.	6.	0.	0.	0.	22.
3	14.	21.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	35.
11	0.	1.	0.	0.	0.	0.	0.	0.	1.
16	[illegible]	0.	2.	1.	[illegible]	0.	0.	0.	3.
22	[illegible]	0.	1.	1.	0.	0.	0.	1.	2.
25	[illegible]	2.	1.	[illegible]	[illegible]	[illegible]	0.	0.	3.
26	[illegible]	1.	[illegible]	0.	0.	[illegible]	0.	0.	1.
62	[illegible]	0.	[illegible]	0.	2.	0.	0.	0.	2.
63	[illegible]	0.	2.	0.	2.	0.	0.	0.	2.

Figure C-3. Cumulative battle statistics (continued).



TYPE	DAMAGE/ LOSSES	REPAIR	TOTAL REPAIRED	REPAIRABLE 2 DAYS	5 DAYS	10 DAYS
1	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
2	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
3	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
11	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
17	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
21	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
24	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
26	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
31	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].
44	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].	[illegible].

Figure C-3. Cumulative battle statistics (continued).



TYPE	INF	CAV	IND	FED FIRE	LOSSES BY SOURCE OF LOSS TANK	ATGM	ADA	MINES	A/HEL	TACAIR	TOTAL
1		0.		0.	1.	6.	0.	0.	0.	0.	6.
2		1.		100.	7.	1.	0.	18.	54.	0.	181.
9		24.		49.	8.	1.	1.	6.	19.	0.	103.
11		1.		3.	1.	0.	0.	0.	0.	0.	1.
17		0.		14.	2.	1.	0.	2.	14.	0.	36.
21		0.		6.	0.	0.	0.	1.	1.	0.	0.
25		0.		0.	0.	0.	0.	0.	0.	0.	0.
26		0.		2.	0.	0.	0.	0.	3.	0.	3.
31		0.		1.	0.	0.	0.	0.	2.	0.	2.
48		0.		0.	0.	0.	0.	0.	0.	0.	0.

Figure C-3. Cumulative battle statistics (continued).

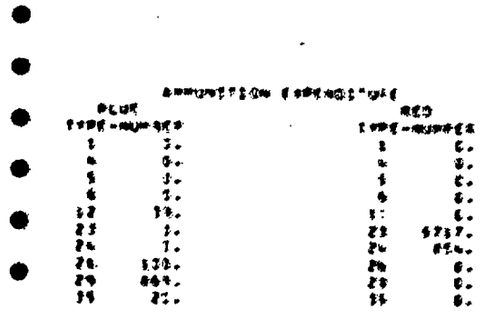


Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	RED ARMOR KILLER 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	.5	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	.5	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	BLUE ARMOR KILLER 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	KILLER FED INFANTRY 3
1	.2
3	13.8

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	BLUE INFANTRY KILLER
	3
3	24.8
11	1.2

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

BLUE MINES
KILLER

VICTIM	
17	2.1
21	.7
25	.3
26	.2

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

RED ARTILLERY KILLER

VICTIM	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
2	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

BLUE ARTILLERY KILLER

VICTIM	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	108.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

BLUE HELICOPTER KILLER

VICTIM	59	60	61	62	63	64	65
2	0.0	0.0	0.0	54.4	0.0	0.0	0.0
3	3.0	0.0	0.0	19.4	0.0	3.0	0.0
17	3.0	0.0	0.0	13.5	0.0	0.0	0.0
21	3.0	0.0	0.0	3.2	0.0	0.0	0.0
31	3.0	0.0	0.0	1.9	0.0	0.0	0.0

Figure C-3. Cumulative battle statistics (continued).

KILLER-VICTIM MATRIX

VICTIM	RED ACA KILLER 31	32	33	34	35	36	37	38	39	40	41	42
42	.7	0.0	0.0	0.3	0.0	0.0	.7	0.0	0.0	0.0	1.0	0.0
41	.6	0.0	0.0	0.3	0.0	0.0	.7	0.0	0.0	0.0	1.0	0.0

Figure C-3. Cumulative battle statistics (concluded).

APPENDIX D

RUN MODIFICATION FOR BATCH PROCESSING

APPENDIX D

RUN MODIFICATIONS FOR BATCH PROCESSING

D-1. PURPOSE AND SCOPE. This appendix addresses the requirements for processing the Jiffy Game programs in a batch operating mode. Necessary program modifications and procedures for completing a batch run are described.

D-2. GENERAL. Designed to be an interactive computer model, the Jiffy Game and all its associated programs require many inputs during execution. Ideally, inputs are entered by the user from a remote interactive terminal as the program is being run. However, there are several calssified data arrays, stored in the computer external to any of the coded programs, which must be accessed; and security restrictions prevent access of this data from most of the remote terminals currently available to Jiffy Game users. To overcome this problem, a capability has been developed for processing the Jiffy Game in a batch operating mode without entirely sacrificing the interaction between the user and the game. The processes involved are diagrammed in figure D-1. The force file building process is impacted only minimally when the classified data are not accessible.

D-3. DATA REQUIREMENTS. It is only the requirement to access a classified data file that prevents interactive processing of the Jiffy Game programs on a nonsecure terminal. None of the coded programs contain classified information, nor do they create any classified files or output. Since it is the numbers in the data arrays that are classified, it has been possible to create an "unclassified" data file; that is, a file containing meaningless data values but paralleling the real data file in every other respect. The CACDA Jiffy War Game Technical Manual documents both sets of data. With this unclassified file (UNDATA), the entire Jiffy Game can be processed interactively from any remote terminal. Obviously, the results obtained by doing so are meaningless, but this capability plays a key role in creating a batch run.

D-4. FORCE FILE CREATION. The force file building procedure discussed in appendix A requires processing of four programs. Of these, only one, the FORCE program, requires access to the classified data file (CLDATA). The SRCFILE, the UNITFILE, and the PARENTFILE all can be constructed interactively from any remote terminal. The FORCEFILE can also be built, using the unclassified data file, at a nonsecure terminal. Even when the FORCEFILE is developed with unclassified data, the unit records created

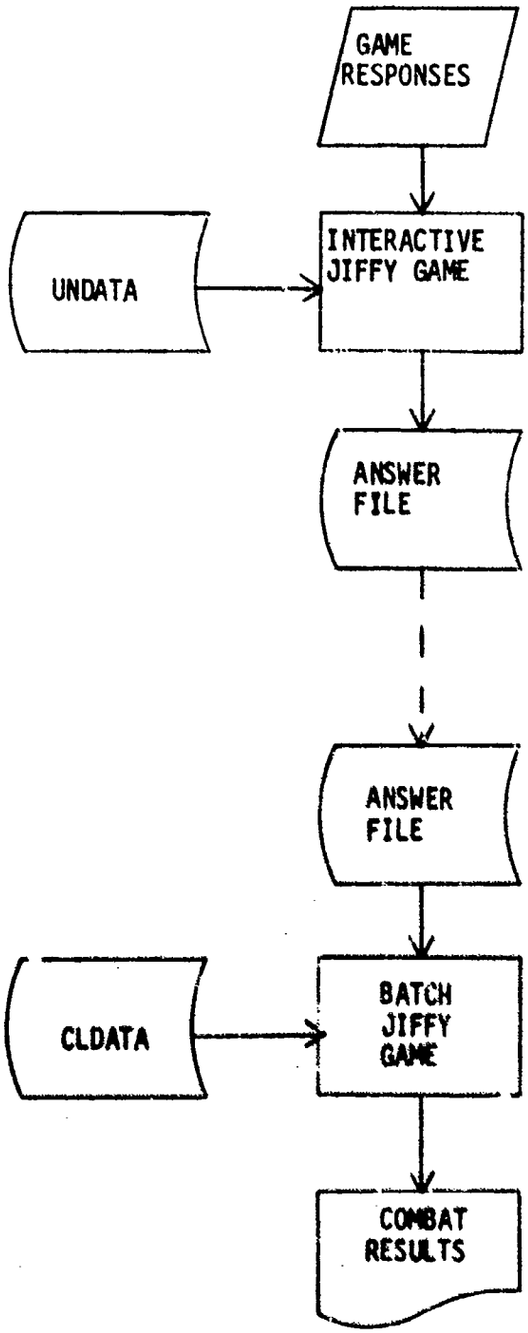


Figure D-1. Jiffy game batch processing.

are essentially correct; the only consequence of doing so is that the unit effectiveness values computed for a unit must be reset with classified data. A separate program, called RESET, is used to make this one-time correction during the batch processing as described below.

D-5. ANSWER FILE. As indicated in figure D-1, it is necessary to create a file containing the "answers," or inputs, required during execution of the Jiffy Game program. This ANSWER file is created by running the Jiffy Game interactively from a remote terminal and inputing a "1" when asked to "SPECIFY PURPOSE OF THIS RUN". This causes the program to write each response, as it is entered at the terminal, onto a local file called ANSWER. During this type of run, the user makes essentially the same inputs demonstrated by the sample run in appendix B. Some differences may occur in the combat assessment routines (paragraph B-6). Since most of the classified data are used in the combat assessment calculations, the losses computed during an unclassified run (i.e., using the unclassified data file) have no meaning. Therefore, the displays of rate of advance statistics and combat losses shown in figures B-4 through B-10 are suppressed during an ANSWER file creation run. Also, any inputs based on losses previously calculated either are not made or are automatically adjusted during the batch run. An example of an input that cannot be made during batch processing is found in the attack helicopter/air defense routine (see figure B-10). Here, the sortie abort input is made only when helicopter losses reach a certain level. Since the helicopter losses during the unclassified interactive run differ from those during the classified batch run, aborting a helicopter mission is automatically done by the program in all cases when losses exceed 30 percent. While some inputs affected by calculations made in the program cannot be deleted (e.g., the number of A/C entered into an attack helicopter cell as in figure B-10, or specifying the number of CLGP missions to fire as in figure B-6), provisions have been made in the program to adjust them automatically, if necessary, during a batch run. After the program has been ended, the ANSWER file that is created in the local file area must be catalogued into a permanent file.

D-6. BATCH RUN. The actual batch run of the Jiffy Game requires punching a job deck and delivering it to the central computer site for processing. A sample card deck showing the commands necessary to complete the run is given in figure D-2. Note that the commands used in this job deck are basically the same as those used to initiate an interactive run in the RUNJIFFY "Call" file (figure A-1). Here, however, the ANSWER file created by the user must be attached, and the command "JIFFY, ANSWER" not only executes the program but also directs it to read the inputs from the ANSWER file. The output from this job includes everything found in the sample runs and outputs of appendixes B and C.

1. Job card...
2. Task card...
3. ATTACH, TAPE55, (force file)...
4. ATTACH, CLDATA, (classified data file)...
*5. ATTACH, RESET, (source code file)...
*6. FTN, I=RESET, L=0.
*7. LGO.
8. ATTACH, TAPE8, (history file)...
9. ATTACH, TAPE9, (SRC file)...
10. ATTACH, ANSWER,(answer file)...
11. ATTACH, JIFFY, (Jiffy Game binary file)...
12. JIFFY, ANSWER.
13. REWIND, STATS.
14. COPY, STATS, OUTPUT.
15. End of file card

*Required only if the Force File has not been reset or initially built with classified data.

Figure D-2. Sample batch run job deck.

APPENDIX E

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Deputy Commander USAMSAA ATTN: AMXSY-T Aberdeen Proving Ground, MD 21005	1
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Commander USA Concepts Analysis Agency ATTN: MOCA-WGR (MAJ R. J. Hill) 8120 Woodmont Avenue Bethesda, MD 20014	1