ARI Contractor Report 96-82

Battle Command Training Program Database Development

William E. Walsh, Jack A. Briscoe,
Terry P. Bartkoski, and Brad J. Gill
BDM Federal, Inc.

DTIC QUALITY INSPECTED 8

19961031 053

This report is published to meet legal and contractual requirements and may not meet ARI's scientific or professional standards for publication.

September 1996

United States Army Research Institute for the Behavioral and Social Sciences

Approved for pulbic release; distribution is unlimited

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency Under the Jurisdiction
of the Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Director

NOTICES

DISTRIBUTION: This report has been cleared for release to the Defense Technical Information Center (DTIC) to comply with regulatory requirements. It has been given no primary distribution other than to DTIC and will be available only through DTIC or the National Technical Information Service (NTIS).

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The views, opinions and findings in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other authorized documents.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information

1. AGENCY USE ONLY (*Leave blank*)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	September 1996	Final Jun 93 - Nov 95

4. TITLE AND SUBTITLE
Battle Command Training Program Database Development

5. FUNDING NUMBERS
MDA903-92-D-0075
623007
A793
1122
C02

6. AUTHOR(S)
Walsh, William E., Brisco, Jack A., Bartkoski, Terry P., Gill, Brad J.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
BDM Federal, Inc.
1801 Randolph Street, SE
Albuquerque, NM 87106

8. PERFORMING ORGANIZATION REPORT NUMBER
—

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Research Institute for the Behavioral and Social Sciences
ATTN: PERI-RK
5001 Eisenhower Avenue
Alexandria, VA 22333-5600

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
Contractor Report 96-82

11. SUPPLEMENTARY NOTES
Contracting Officer's Representative, Michael R. McCluskey. This report is published to meet legal and contractual requirements and may not meet ARI's scientific or professional standards for publication.

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release;
distribution is unlimited.

12b. DISTRIBUTION CODE
—

13. ABSTRACT (*Maximum 200 words*)

The primary objective of this BCTP Database Development effort was to provide a prototype database system encompassing corps, division, and brigade echelon operations conducted during BCTP training. The intent of the database is to increase the utility and accessibility of BCTP data for all users by extending development work on the prototype to provide for wide area access. The prototype BCTPdb contains nearly complete data from two BCTP WFXs and Final Exercise Reports from six WFXs. In contrast to the legacy databases for the maneuver CTCs, the BCTPdb, through three users' tests, has demonstrated the functionality necessary for a database common to all the CTCs. It is the intention of the Center for Army Lessons Learned that the BCTPdb become the cornerstone of a CTC Common database to be developed on an enterprise architecture plan which will provide for global access. This report contains The Final Report, Data Dictionary, User's Guide, Loading Procedures Guide, Converted Data Structures description, and the PowerBuilder User Interface description.

14. SUBJECT TERMS	15. NUMBER OF PAGES
Database Lessons learned Performance measurement BCTP Battle Command	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF THIS ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

CONTRACT #: MDA 903-92-D-0075
DELIVERABLE #: 0018-0018AM
NOVEMBER 29, 1994

FINAL REPORT: BATTLE COMMAND TRAINING PROGRAM DATABASE DEVELOPMENT

William E. Walsh
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Jack Hiller, Director
Training Research Laboratory

Mr. Michael R. McCluskey, Contracting Officer's Representative



December 20, 1994

U.S. Army Research Institute

FINAL REPORT:
BATTLE COMMAND TRAINING PROGRAM DATABASE DEVELOPMENT

Page

I. INTRODUCTION 1
A. Trace Changes in Division Training Practices 1
B. Uncover Common Themes 2

II. OBJECTIVE 2

III. PROJECT SUMMARY 3

IV. BCTP DATABASE ENHANCEMENTS 6

V. PROJECT DELIVERABLES 7

VI. DATA LOADING COST ANALYSIS 8
A. Summary of the Previous Five Tables 11
B. Data Tables That Will Require Data to be Collected 11
C. Efficiency and Reliability Suggestions: 12

VII. REFERENCES 14

FINAL REPORT: BATTLE COMMAND TRAINING PROGRAM DATABASE DEVELOPMENT

I. INTRODUCTION

The need to improve command and control functioning, particularly at echelons above brigade, is a recognized concern of long standing within the Army. The Battle Command Training Program (BCTP) is an important training program established by the Army to improve command and control of combined arms forces. The U.S. Army established the BCTP in 1987 to train division and corps commanding generals and their staffs. The BCTP is a Chief of Staff initiative that applies computer technology as a tool to train the war planning, war fighting and decision making skills at the division and corps levels.

A BCTP cycle begins with reading material sent to the training unit, followed by a five-day Battle Seminar, in which the unit commander, primary staff, and subordinate commanders all engage in decision exercises and workshops on AirLand Battle doctrine. From three weeks to seven months after the Battle Seminar, the BCTP conducts a week-long, computer-driven WarFighter Exercise (WFX) using the unit's organic equipment. The BCTP cycle, and in particular the WFX, features extensive observation and critique in the form of After Action Reviews (AARs).

The BCTP provides a superb training experience and an excellent source of feedback to the training unit. The long term assessment of the BCTP will be based on how it provides feedback to improve unit performance and how it contributes to the Army's development of doctrine and battlefield operating procedures. The feedback will be based on the data generated by the BCTP WarFighter Exercises and the database used to store Warfighter data. The BCTP Database has the potential to provide a rich source of information for studying both short and long term Army higher-echelon command and control issues. Potential uses for this database include:

A. Trace Changes in Division Training Practices

The performance areas to sustain and improve that are identified during the AARs and the discussion of lessons learned that characterizes the unit commander's AAR at the end of the exercise provide information that can be used to construct a well-formulated list of unit training objectives.

B. Uncover Common Themes

The information provided by the BCTP has a value beyond feedback to individual divisions and corps. Analyzing WarFighter data from several BCTP cycles can produce evidence pointing to systematic strengths and weaknesses in higher-echelon command and control doctrine and training. The use of a database derived from the BCTP experience can bring home lessons learned in a more formal and perhaps more accurate way.

The development of a BCTP database has occurred over several years and produced several research products. A BCTP Requirements Analysis was performed to determine what issues, within each Battlefield Operating System (BOS), were of greatest interest to the potential community of users of a BCTP database. This analysis was conducted by soliciting input from Army Organizations having an interest in data derived from the WFXs conducted by BCTP. The BCTP Front End Analysis provided the specifications for the BCTP research database. It summarized the BCTP operational environment, specific duties and responsibilities of BCTP and contract staff, the Battle Command Seminar, the WarFighter Exercise, and the data produced during BCTP exercises. The BCTP Database Specification document described how the data from rotations at BCTP could be integrated into the Combat Training Center (CTC) Archive databases. The BCTP Database Concept presented a comparison of BCTP data and CTC Archive data along with a concept for the organization of BCTP data within the framework of the CTC Archive concept.

The primary objective of the current BCTP Database Development effort is to provide a prototype database system encompassing corps, division, and brigade echelon operations conducted during BCTP training. The intent of the database is to increase the utility and accessibility of BCTP data for all users. Development of the prototype database was based upon work performed during Delivery Order 1 (BCTP Database - Front End Analysis, Requirements, and Specifications). The current database implementation process has followed an iterative approach with several prototype versions of the database serving as milestones along the way. The final prototype version of the database within this delivery order will serve as the basis for a later operational version which will be integrated into the CTC Warrior Information Network.

II. OBJECTIVE

The purpose of this report is to document the incremental development of the prototype Battle Command Training Program (BCTP) research database. This database implementation effort started in June 1993 and included a seventeen month period of performance. Four versions of the prototype database were developed during this project. This report will include a chronological project summary, BCTP database enhancements, descriptions of the project deliverables, and a data loading cost analysis.

III. PROJECT SUMMARY

We initiated the project by preparing a comprehensive work plan to guide the effort during the period of performance. Our plan clearly defined the objective of the project and the intended purposes of the prototype research database. Within the plan we provided a technical overview to describe the problem and our technical approach to the solution. Our approach to developing the BCTP database, as described in our work plan, was designed to be iterative in nature. Building on the Front End Analysis and Requirements Specification developed during Delivery Order 1, we set out to create and test four versions of the prototype. Our plan called for various data types to be incorporated into the database as data structures were developed to accommodate the different data types. The organization of the BCTP data, as described in the work plan, was to be based on TRADOC PAM 11-9, the Blueprint of the Battlefield.

The following section outlines the progression of BCTP database developmental efforts during Delivery Order 18:

PROTOTYPE VERSION 1.0 - DECEMBER 1993

User Interface: Provided access mechanisms for Unit Performance and Unit Generated Data

Data Sources: Final Exercise Reports and Unit Operations Orders

Notes:

1. Attended the 4ID Warfighter Exercise at Ft. Carson.

2. Received and inventoried 4ID, 6ID, 35ID, and 38ID WarFighter data.

3. Developed a Draft Data Collection Strategy for the customer.

4. Established initial data archiving procedures at Ft. Leavenworth in preparation for the loading of the database.

5. Demonstrated the initial user interface with access mechanisms to ARI on 9 December 1993.

6. Conducted the informal tryout test of the prototype with users at Ft. Leavenworth and POM in December 1993.

7. As a result of the demonstration and user test we focused our implementation efforts in the following areas:

- Expanding the list of data sources

- Implementing a multi-window environment
- Improving the display of graphics
- Incorporating statistical operations

PROTOTYPE VERSION 2.0 - FEBRUARY 1994

User Interface: Added access mechanisms for Automated Journal System (AJS) Reports, Battle Description Data, Objective Data, and Unit Rotational Data

Data Sources: Added Battlefield Intel Collection Model Data, Objective Data and Battle Summary Data

Tools/Functionality:

- Incorporated capability to view After Action Review video
- Modified graphics viewing by incorporating PaintShop Pro
- Added Quattro Pro spreadsheet capability to enhance the use of Objective Data
- Expanded rotational data window by including the capability to review White Cell Data
- Activated the Battle Description Button which presents AJS and Battle Summary Data
- Extended the user interface to accommodate the new data types that were entered into the database
- Revised Unit Generated Data access mechanisms by adding pop-up windows for Operation Orders, FRAGOs, and reports.

Notes:

1. The database loading priorities for the second prototype were the 4ID and 35ID WFX rotations.
2. Investigated the use of the Media Support Center for scanning and OCR
3. Conducted the Initial Tryout Test of the prototype in February 1994.

PROTOTYPE VERSION 3.0 - AUGUST 1994

User Interface: Added access mechanisms for the OPFOR, Good Ideas, Trends and ACCES components of the prototype; expanded access mechanism for Objective Data

Data Sources: Added Corps Battle Simulation (CBS) Data, Intel Journal System (IJS) Data, OPFOR Data, ACCES Data

Tools/Functionality:

- Added the capability to explore effective unit training practices (Good Ideas) and common operational procedures (Trends)
- Improved word search tool
- Activated the analyst notebook feature
- Tested the BCTP Database within the network at Ft. Leavenworth

Notes:

1. Requested that the following data sources be provided for entry into the database:

   Senior Observer Notes
   White Cell Directives
   O/C Raw Notes
   Analyst Generated Data

2. Conducted a User Tryout Test in August 1994.

PROTOTYPE VERSION 4.0 - NOVEMBER 1994

User Interface: Modified BCTP Database user interface to accommodate digitized video

Data Sources: Final Exercise Reports, Unit Generated Data, and ACCES Data

Tools/Functionality:

- Implemented the digitized AAR capability, created CD-ROM containing AAR video

- Developed a Windows-style user help system
- Implemented the battle replay tool using SUN shots
- Developed the WarFighter Reporting System (WRS) Journal review function
- Created a user tracking system

Notes:

1. Delivered the final versions of the User's Guide, Data Dictionary, and Loading Procedures Guide.

2. Delivered documentation and source code for the Functional BCTP Database.

3. An executable version of the software has been created and delivered to the Center for Army Lessons Learned (CALL) to support further network testing.

4. An identical copy of the prototype is installed on the development PC at ARI/POM.

5. The BCTP prototype contains data from the following units: 2AD94, 4ID93, 4ID94, 6ID93, 25ID93, and 35ID93.

6. The Good Ideas component of the database contains BDA data extracted from 4ID93 WarFighter data sources.

IV. BCTP DATABASE ENHANCEMENTS

The continued development of the BCTP relational database during fiscal year 1995 and beyond will involve the transfer of the database prototype from its current development environment (FoxPro) and the integration of the BCTP database into the client/server configuration of the CTC Warrior Information Network (WIN) Database with Informix serving as the database back end. The CTC WIN Database will reside on UNIX servers with a PowerBuilder front end providing access to all CTC data. The WIN functional design will incorporate and link the BCTP Database and the CTC Legacy Database (initially only the NTC) in a CTC relational database that will integrate existing data structures, user interfaces, data sources, and environments in order to provide powerful new capabilities for using and sharing CTC training data. The BCTP database and the other WIN databases will be linked to and supported by the Automated Historical Archives System (AHAS) with its powerful document imaging and retrieval capabilities. The continued development of the BCTP database will also involve an increase in the inherent functionality of the current BCTP

Database prototype.

The integration of the BCTP Database into the Army Knowledge Network will be a major enhancement to the functionality of the prototype and will provide powerful new ways for sharing CTC training data. In addition, there are several functional areas of the BCTP Database prototype that we recommend for improvement during fiscal year 1995 and beyond. The following list identifies several potential areas of enhancement for the current BCTP prototype:

- Continue loading of the database with a loading interface (to include historical WFX data)
- A data collection methodology for WFX data
- Add BCBST and OOTW data to the database
- Fully developed video digitization capability
- Access to position/location data generated by the CBS model
- Access to WFX terrain
- Add a database reference library
- Expand objective trend and good ideas capabilities

V. PROJECT DELIVERABLES

The major products that were produced during the development of the BCTP Database prototype are described below. During the period of performance for this project we developed, delivered and demonstrated four versions of the prototype database.

- The **Loading Procedures Guide** documents all processes required to load the BCTP Relational Database Prototype. It describes the pre-processing procedures that are required to handle all of the available data types. The loading procedures are arranged by BCTP data type and provide the instructions for loading the database tables.

- The **Data Dictionary** describes the format of the data structures. It is organized by the individual FoxPro tables and includes explicit descriptions of the data by type. It contains a summary of all tables that have been created, and provides information

concerning data element names and types, number of records per rotation, size, and element description.

- The **User's Guide** provides detailed instructions for accessing the prototype database. It contains a guided tour of the user interface and a complete description of the prototype research tools and techniques. The guide provides the user with graphic screen displays and step-by-step examples of database access procedures.

- The **Test Reports** document how users responded to the prototype database in terms of usefulness, completeness of data, ease of access, and relevance to actual issues.

- The **Prototype Database** is a hardware/software set which allows users to examine the kinds of data available from the BCTP. The prototype is a database system which makes use of a graphical user interface (GUI) in the Microsoft Windows environment. The prototype has been implemented as a FoxPro/Windows (version 2.6) application that runs under Microsoft Windows 3.1. The prototype requires the following external Windows applications:

  Quattro Pro for Windows, version 5.0, Novell
  Paint Shop Pro, version 2.01, JASC, Inc.
  Norton Desktop Editor, version 2.2, Symantec
  BCTP Replay Program, version 1.0, written in Visual Basic 3.0

The system has been tested in a stand-alone configuration on a 66Mhz 486 computer with 8MB of RAM at Ft. Leavenworth and at POM.

VI. DATA LOADING COST ANALYSIS

This section provides an estimate of the cost, in terms of time, of updating and maintaining the BCTP Database in the future. The following tables contain the average times required to load specific data types into the prototype database. The tables also identify the number of documents, by data type, that should be expected for each rotation. An asterisk identifies a data type for which a loading time estimate is not currently available.

Unit Generated Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
OPORDs CORP DIV BDE's	6 total 1 1 4	36 Hrs total 12 Hrs 12 Hrs 3 Hrs ea	Loader with Guidance from the Analyst
FRAGOs CORP DIV BDE's	140 total 30 50 60	28 Hrs total 6.5 Min ea 12.5 min ea 14 min ea	Loader with Guidance from the Analyst
Reports & Requests	50	11 Hrs total 13 min ea	Loader with Guidance from the Analyst
OPFOR Orders, Reports, etc	18	7 Hrs total	Loader with Guidance from the Analyst

Unit Performance Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
FER	1	15 Hrs	Loader with Guidance from the Analyst
O/C Orders X-Walk	1	3 Hrs	Loader with Guidance from the Analyst
AAR Videos	3	18 Hrs for 3 6 Hrs ea	Analyst
ACCESS	1	4 Hrs	Loader with Guidance from the Analyst

Rotational Information Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
White Cell Data	20	7 Hrs total	Loader with Guidance from the Analyst

Battle Description Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
Overview	N/A	N/A	Already loaded in Unit Performance
Video Narrative	N/A	N/A	Already loaded in Unit Performance
Time Line	1	2.5 Hrs	Analyst
* WRS Journal	?	?	Programmer at present. In the future, will probably be loaded by the Loader with Guidance from the Analyst and Programmer
* Battle Replay	?	?	Programmer at present. In the future, will probably be loaded by the Loader with Guidance from the Analyst and Programmer

Objective Battle Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
* WAARS Reports	?	?	Programmer at present. In the future, will probably be loaded by loader with Guidance from the Analyst and Programmer

Trends Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
Trends By BOS	1	4 Hrs	Analyst
Trends By BOB	1	4 Hrs	Analyst
* Objective Data	?	?	Programmer at present. In the future, will probably be loaded by loader with Guidance from the Analyst and Programmer

A. Summary of the Previous Five Tables

- It will cost an average of 139.5 Loader and Analyst man-hours or 17.5 days to load a WFX. This figure does not include the time cost for:

  - Programmer time
  - Loading WRS Journals
  - Loading Battle Replay
  - Loading Objective Battle Data
  - Loading Objective Data Trends
  - Loading Good Ideas

- Of the 139.5 man-hours:

  - 41.5 are Analyst hours as follows:

    ~ 28.5 hours are for Analyst loading
    ~ It will require approximately 13 analyst hours to help the loader determine proper loading procedures.

  - 98 hours are Loader hours

- Approximately 30 % (42 hours or 5.25 days) of loading time is spent in scanning hard copy documents

- AAR Video time requirements will change if the Videos are digitalized

- Data Collection efforts and standardization will directly affect loading times

- Data types that are currently under development will have a minimal impact on loading time requirements

B. Data Tables That Will Require Data to be Collected

The two tables below are provided for future planning. It should not take over 5 minutes to load a Good idea document, assuming that it is provided as a finished product ready for loading. The Player Unit Profile table will be defined during the follow-on work, after the Data Collection Strategy is developed and implemented by the Army.

Good Ideas Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
Good Ideas	?	5 Min ea	Loader with Guidance from Analyst

Player Unit Profile Data			
Data Type	**Number of items**	**Time per Item**	**Loading Task performed by:**
TBD	TBD	TBD	Loader with Guidance from Analyst

C. Efficiency and Reliability Suggestions:

• **Scanning Efficiency:** Because the scanning of hard copy documents is costly, methods to improve cost effectiveness should be further explored. The following information provides an outline of our actions and findings with regard to the evaluation of the scanning process:

- Test of the Defense Printing Services' high speed scanner. Results were unsatisfactory because:

1. The current BCTP Database software cannot read the graphic files produced by the scanner.

2. The scanner can only produce black and white graphics.

3. The current cost of the scanner is very high. (An average FER would cost 4.6 man-hours of labor; cost of the scanner at the current rate of 46.5 cents per page is $90.00). The high speed scanner cost must be reduced to be competitive.

- A second test is pending to evaluate the scanners ability to scan and produce text files in a usable format for the BCTP Database.

- The data collectors are attempting to collect as much data as possible in both digital and hard copy formats.

• **Loading Reliability:** The BCTP prototype is a complex database with many loading variables. The use of a loading interface would reduce the number of loading errors

and increase the reliability of the database loading process by guiding the loader through a series of prescribed loading procedures.

VII. REFERENCES

Briscoe, J.A. and Burkett, J. Battle Command Training Program (BCTP) Database Concept. Monterey, CA: U.S. Army Research Institute, 1993.

Briscoe, J.A. Keesling, J.W. Battle Command Training Program (BCTP) Requirements Analysis. Monterey, CA: U.S. Army Research Institute, 1993.

Burkett, J. and Briscoe, J.A. Battle Command Training Program (BCTP) Front End Analysis. Monterey, CA: U.S. Army Research Institute, 1993.

Keesling, J.W. and Briscoe, J.A. Battle Command Training Program (BCTP) Database Specification. Monterey, CA: U.S. Army Research Institute, 1993.

CONTRACT #: MDA 903-92-D-0075
DELIVERABLE #: 0018-0018AJ
October 29, 1994

BCTP DB USER'S GUIDE

Brad Gill
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Jack Hiller, Director
Training Research Laboratory

Mr. Michael R. McCluskey, Contracting Officer's Representative



November 10, 1994

U.S. Army Research Institute

BCTP DB USER'S GUIDE

Page

SECTION 1 - INTRODUCTION 1
I. How to Use This Guide 1
II. Components 2
III. Conventions 4

SECTION 2 - GUIDED TOUR 8
I. Starting Up 8
II. The BCTP db Startup Screet 8
III. The BCTP db Research Dialog 9
IV. Data Retrieval Dialogues 11

SECTION 3 - RESEARCH TOOLS AND TECHNIQUES ILLUSTRATED 16
I. Basic Database Concept 16
II. Conducting Research 16
III. Using the Analyst's Notebook 27
IV. Viewing Graphics 28
V. Viewing Video 29
VI. Saving and Printing Your Work 31

APPENDIX A - REFERENCES A-1

APPENDIX B - TROUBLE SHOOTING B-1

APPENDIX C - BCTP DB DATA TYPES AND MEDIA C-1

APPENDIX D - BCTP DB SEARCH LOGIC D-1

GLOSSARY GLOS-1

SECTION 1

INTRODUCTION

The purpose of the BCTP db User's Guide is to provide a user a BCTP db system reference. The guide provides basic information in regard to the database and the data. Methods are suggested which the user may use to analyze the data resident within the database.

Disclaimer: The data contained within the BCTP db system are the results of training simulations. These data must be used in context only and should not be used to evaluate actual system performance or unit capabilities and readiness. Additionally, use of unit names within any research product or output is prohibited.

I. How to Use This Guide

This User's Guide consists of the following sections:

- **Introduction.** This section provides you with a brief overview of the BCTP db system.
- **Guided Tour.** Go through Section 2 for a short description of BCTP db system capabilities and functions.
- **Research Tools and Techniques Illustrated.** Section 3 illustrates research methods and data analysis methods; searching the database, viewing data records, using the analytic tools, viewing the battle replays, using the Analyst's Notepad; saving to disk; and printing data. Refer to this section when preparing for an important issue investigation or analysis, or simply for improving your use of the BCTP db.

- **Appendices.** The appendices contain everything else you might need to know, including how to get technical support.

- **Glossary.** Acronyms are defined here.

II. Components

The components of the BCTP db System are:

- Application Software
- Hardware
- Data Files
- BCTP db User's Guide
- Password
- Telecommunications Hardware and Software
- Video Replay Hardware and Software

The BCTP db was created using Microsoft® FoxPro®. FoxPro® is a popular commercial relational database. It is known for its access speed and the level of flexibility when creating custom databases. The BCTP db FoxPro® application works in conjunction with several other commercial and custom programs. The BCTP db FoxPro® application calls the other applications for execution of unique functions, such as video tape control, graphics display, and spreadsheets. The BCTP db is used in combination with several commercial off-the-shelf (COTS) applications. They are Quattro Pro®, PaintShop Pro®, and the Windows™ Notepad. These applications must be loaded to have complete functionality.

The BCTP db database is run on any IBM® compatible 386 or 486 computer with adequate RAM and ROM storage. Microsoft® DOS/Windows™ is required. Recommended minimum configuration is a 486 33MHZ with 8 Megabytes of RAM. Hard drives in the 500 Megabyte range adequately support the BCTP db software and three to four WFX sets of data. Storage for additional WFX data sets is highly recommended for remote users that do not have access to the CALL BCTP db server.

The classified portion of the database will be distributed via CD ROM.

The BCTP db uses the call server as a file server. Future plans exist that will use a client/server approach. A client/server approach will provide increased system performance.

The BCTP db data files fall into two categories. The first category are those files which work with the FoxPro® application to define: the relationships between the data; window layouts; and dialog boxes. These files are updated when required to provide additional functionality to the database or to correct software problems. The second category of files are those associated with the BCTP data. These files are loaded into the CALL BCTP db server by the BCTP db Operations Staff. These files are organized by WFX rotation and are entered iteratively; after the data ~~is~~ are received, archived, and processed for loading.

Two user's guides are provided to each BCTP db site at installation setup. Additionally, one user's guide is provided to each individual that receives BCTP db training. Updates to the BCTP db User's Guide will be provided in conjunction with software version upgrades.

Forward recommended changes and requests for replacement copies to the BCTP db Database Administrator at ARI-FLVN or ARI-POM.

Access password's are used to maintain operational security in regard to unit training readiness and to avoid potential misuse of BCTP data. Personnel who are not aware of the context in which the data ~~is~~ are produced are not capable of using BCTP data without forming faulty conclusions. Therefore, it is imperative that all potential users receive BCTP db training from ARI or CALL. Password's will only be provided to individuals who have received training. Password's will not be provided to organizations for general use. The BCTP db Database Administrator at CALL maintains the password roster and associated logs of database use.

If you lose your password, contact the BCTP db Database Administrator at the Center for Army Lessons Learned - (913) 684-3035.

The BCTP db system accommodates remote access. The BCTP db network server at

CALL is accessible through the Army Knowledge Network. Authorized remote users have the runtime version of the BCTP db application and access to the data files through the Army Knowledge Network. Users accessing the BCTP db may experience slow system performance at times.

Currently, video is available (AAR tapes) through serial connection with a computer controlled VCR and monitor. The prototype system will only support the use of video by those users accessing the system from ARI-FLVN. Future enhancements include the storage capacity (CD CAROUSEL) and video capture software/hardware to digitize all available video data. Network distribution of video files is currently under assessment.

III. Conventions

Before you start using the BCTP db system, it's important to understand the unique terms and typographical conventions used in the documentation. All standard Windows™ conventions are complied with. Users should have a working knowledge of Windows™ to operate the BCTP db system.

General Conventions

For explanations of specialized terms used in the documentation, see Section 2, "Guided Tour." The following kinds of formatting in the text identify special information.

Formatting Convention	Type of Information
Triangular bullet (>)	Step-by-step procedures. You can complete procedural instructions by using either the mouse or the keyboard. To choose a command from a menu you can use the mouse or press shortcut keys.
Bold type	Words or characters you type. For example, if the guide instructs you to type cd bcdb you type the lowercase letters **"cd"** followed by a space and the lowercase letters **"bcdb"** What you type is always shown in lowercase letters, unless it must be typed in uppercase letters to work properly.
Italic type	Specialized terms. Titles of other BCTP db documents. Placeholders for items you must supply, such as filenames. For example, when the guide says to type *cd bcdb_name* you type the letters **"cd"** followed by a space and then the name of a directory. OR Used for either notes and tips to the user or for interim/draft user guide text and user notes.
`Monospaced font`	Examples of field syntax and macro listings — for example, Sub MAIN.

Keyboard Conventions

All key names are shown in small capital letters. For example, the Control key is shown as CTRL, and the Escape key is shown as ESC.

Keys	Comments
Shortcut keys	Keys are frequently used in combinations or sequences as shortcut keys. For example, SHIFT+F1 means to hold down the SHIFT key while pressing F1, and ALT, F, A means to press and release each of these keys in order.
RETURN key and ENTER key	These keys usually perform the same action. "Press ENTER" means that you can press either ENTER or RETURN unless specifically instructed otherwise.

Mouse Conventions

You can use either a single-button or a multiple-button mouse with the BCTP db system. Version 4.0 does not use the right mouse button for any internal BCTP db functions. PaintShop Pro® uses the right mouse button to zoom in and out. Descriptions of mouse use are characterized by the terms: point, click, and drag.

- *Point* means to position the mouse pointer until the tip of the pointer rests on whatever you want to select on the screen.

- *Click* means to press and then immediately release the mouse button without moving the mouse.

- *Drag* means to point and then hold down the mouse button as you move the mouse.

SECTION 2

GUIDED TOUR

I. Starting Up

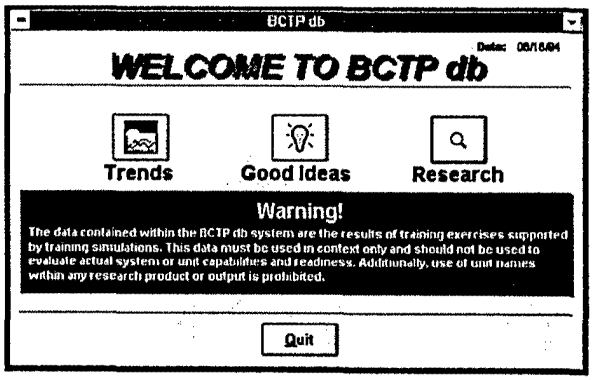
Currently, to start the BCTP db program double click upon the BCTP db custom icon within your Windows™ main screen.

Contact the BCTP db system Administrator for detailed installation procedures.

> If for some reason this icon is not present you can restore the icon by clicking and dragging the bcdb.app or bcdb.exe file out of the file manager window and release it on the desktop where you want the icon to appear.

II. The BCTP db Startup Screen

The BCTP db startup screen is the first of several dialog boxes that may be used to access BCTP data. From this dialog box the user may choose to review BCTP Trends, Good Ideas identified during WFXs, or may choose to conduct original research and analysis on raw BCTP data.



BCTP Trends

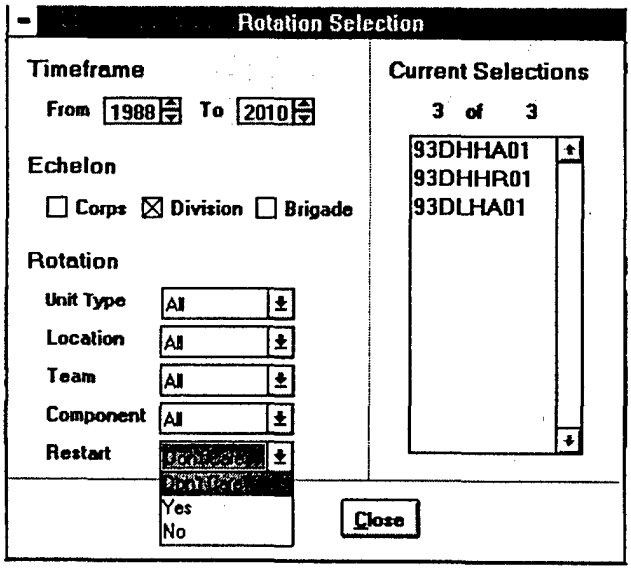
After selection of Trends from the BCTP db startup screen, the user should see a new dialog that allows the analyst to select the types of BCTP exercises (unit type and echelon, location, component, and year) that trend information is needed for. The user must also select one of three types of trends. The first trend type are those trends resulting from the compilation of AAR BOS comments. The second trend type are those trends resulting from

the compilation of positive, neutral and negative comments concerning specific Blueprint of the Battlefield sub-BOS areas. The third trend type are those trends identified from the compilation of computer derived data from a WFXs and commonly used by military analysts to evaluate major BOS areas. Each trend type uses an additional dialog(s) to identify the specific area(s) of trend analysis that the user desires e.g. BOS.

Good Ideas

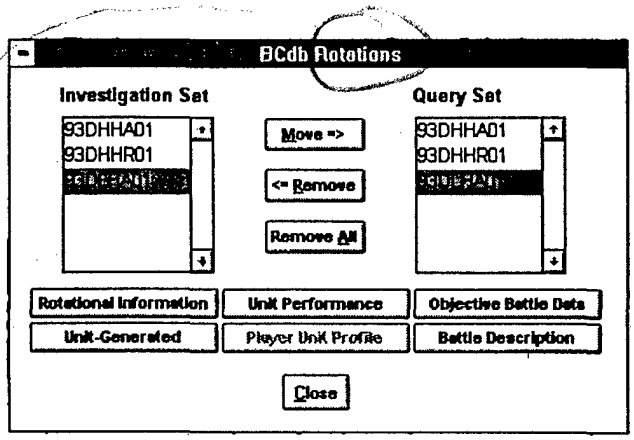
Selection of the Good Ideas screen will allow the user access to the BCTP O/C identified areas of high value performance by units training during WFX. After selection of Good Ideas from the BCTP db startup screen, the user should see a new dialog that allows the analyst to select the applicable BOS and echelon of good ideas that they are looking for. The next screen is the standard BCTP db Data Display. This display allows the user to view a list of all the good ideas, navigate to any of them, and view selected Good Ideas in whatever media form it is, text, graphics, or both.

III. The BCTP db Research Dialog



After selection of Research from the BCTP db startup screen, the user should see a new dialog that allows the analyst to select an investigatory set of BCTP rotations for their research project. This set is intended to be the data set for their investigation. The analyst may select from several variables to narrow their research focus. Rotations can be selected for: timeframe, echelon, unit type, simulation location, BCTP team, component, and if their was a restart. The analyst may then review the list of applicable rotations, change selection parameters, or continue on to the main research dialog.

The user should consider, at this time, checking out the supporting videos for his or her "Rotation Set"



The next screen, the BCTP db research dialog box, is the principle research user interface. The analyst uses this dialog box to select the specific rotations from the data set that he or she wants to begin drawing information from. The analyst may pick one or multiple WFXs. The buttons along the bottom of the dialog box correspond to the major categories of data collected from each WFX. Selection of one or more WFX rotations and one of the six data category buttons activates the appropriate data retrieval dialog box. The analyst may select from six dialogues (Rotational Data, Unit Performance Data, Objective Battle Data, Unit Generated Data, Battle Description, and Unit Profile). During the course of the investigation the user returns to this dialog whenever a new data retrieval is required that is of a different data category.

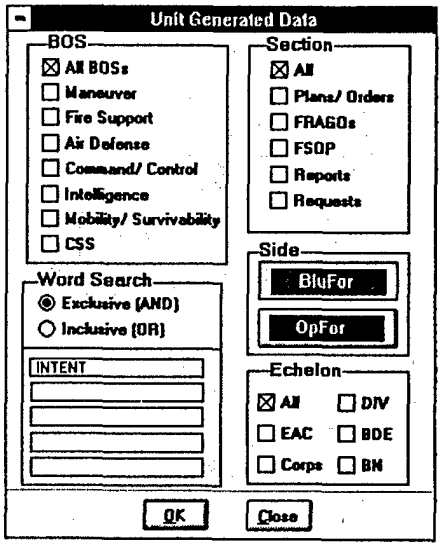


Rotational Data

The Rotational Data Display provides the analyst basic information about the selected WFX rotation. Some of the available data includes the training unit name, the start and end dates of the WFX, the theater of the simulated conflict, the component of the unit (active or reserve), the type of rotation (heavy, light, heavy/light or light/heavy), and the BCTP team which administered the WFX. Additional information concerning the context and nature of the WFX can be accessed by clicking upon the MORE button. The standard BCTP db Data Display is then offered to the analyst for their use, with all the additional rotational data that was available for the selected rotations.

IV. Data Retrieval Dialogues

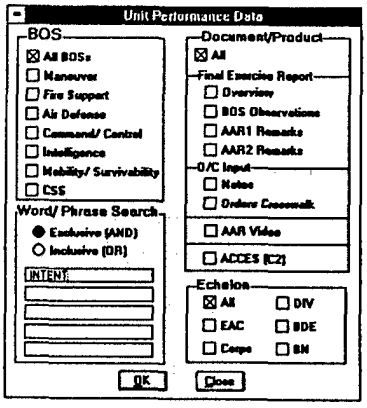
Unit Generated Products



The Unit Generated Products dialog box permits the analyst to retrieve various training unit generated products (i.e. Opords, Fragos, IntSums, etc.) through use of logical functions. The analyst may select a broad or narrow retrieval search for unit generated products. He may conduct the search using several methods. He may choose from the applicable BOS, a type of product, echelon, or a word search. He may refine his retrieval by using collectively two or three of the methods mentioned above. The data is then displayed using the standard BCTP db Data Display.

Orders can be seen and selected by each section and sub-section using a hierarchical pull down list. See Appendix D, for a detailed description of BCTP data types contained in the BCTP db system.

Performance Data

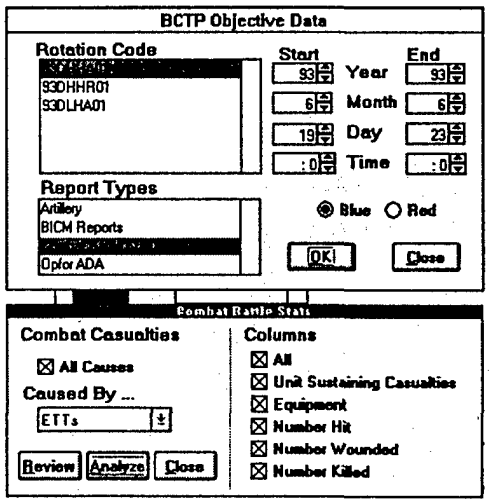


The Unit Performance Data dialog box permits the analyst to retrieve various documents addressing training unit performance (i.e., AAR comments, Final Exercise Report, etc.) through use of logical functions. The analyst may select a broad or narrow retrieval search for unit performance data. He may conduct the search using several methods. He may choose from the applicable BOS, a type of performance data, or a word search. He may refine his retrieval by using collectively two or three of the methods mentioned above. The data is then displayed using the standard BCTP db Data Display.

Objective Battle Data

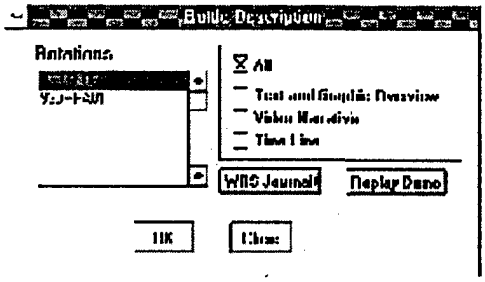
The Objective Battle Data dialog box permits the analyst to retrieve a broad range of

computer generated data produced from the conduct of the simulation (WAARS/AARS reports). The analyst may select a broad or narrow retrieval search for objective data desired. He may conduct the search using several methods. He may choose from the applicable BOS related reports, side (red or blue), and time period. The report topics are diverse and cover most critical combat functions.



Battle Description

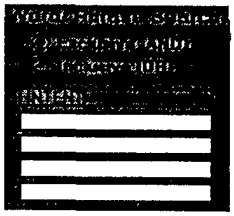
The Battle Description dialog box permits the analyst to retrieve multimedia data describing the WFX battle. Examples of the data available through this data retrieval module are: battle descriptions from the FER and AAR with accompanying graphics or video, and descriptions of key events logged by the workstation controllers.



Unit Profile

TBD Not Implemented

The Unit Profile dialog box permits the analyst to retrieve data describing the training and operational profile of the WFX training unit. Examples of the data available through this data retrieval module are: training status, unit operational tempo, recent training events/history, WFX staff manning, etc. Retrieval methods TBD.



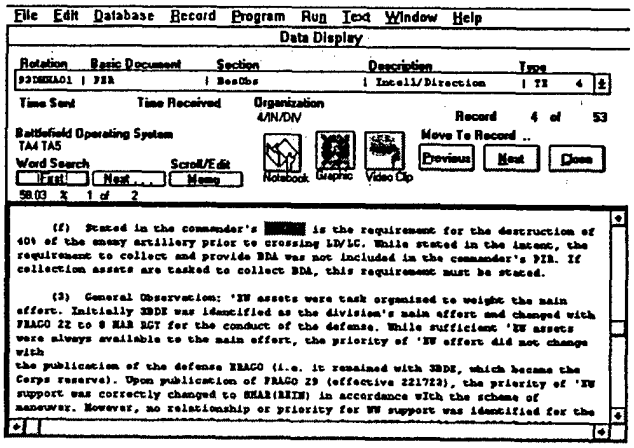
Word Search

The majority of the data retrieval dialogues incorporate the capability to search the text fields for the inclusion of analyst determined key words. The word searches may be done without or in conjunction with other data retrieval logic. When

done in conjunction with other data retrieval logic the word search can retrieve those records that meet all search requirements or any search requirements. A detailed description of these processes is found in Appendix D, BCTP db Search Logic.

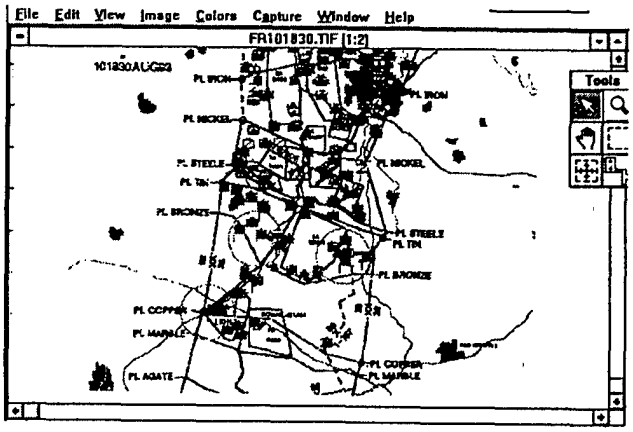
Text

Text is the predominant media type within the database files. Text is displayed within a Data Display window. The Data Display window has a section that includes a pull down list box of all records that met your search query as well as a header that provides information relating to the text record currently selected i.e. source, organization, WFX rotation, Date Time Group (DTG), etc. There are controls to navigate between records and to launch associated still graphics and videos.



Still Graphics

Still graphics of many types are available within the database. These types range from screen shots of WFX workstations showing unit dispositions, AAR BOS slides, BOS analyst generated charts and graphs, to unit generated charts, matrices and decision making aids. Analyst's may view, COPY, and modify/annotate copies of the graphics for later analysis, reference or documentation.

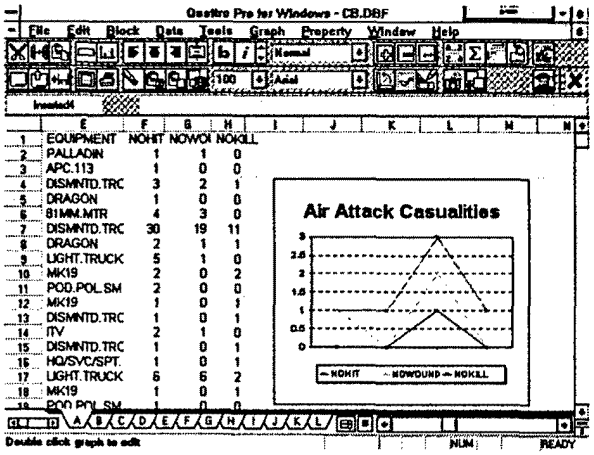


Video Replay

The principle video data contained within the database are videos of the WFX AARs. User's may play those specific video segments that meet their data retrieval requirements or they may view all or any portion of the video that they desire. Video control conventions are identical to those used by common VCRs.

Spreadsheets and Graphs

The Objective Data dialog has the capability to transfer data directly to a spreadsheet. Selection of the ANALYZE button, calls Quattro Pro® and automatically fills in a new spreadsheet with the report data. Once the data has been filled in the analyst has the capability to conduct any spreadsheet function or manipulation of the data.



Quattro Pro® has an expert system that walks the user through the conduct of several types of statistical analysis and the development of illustrative graphs. Once the data is manipulated in a manner sufficient for documentation the user may select, copy and paste the relevant information into the Analyst's Notebook or the wordprocessor of his or her choice.

Queries and Reports

Ad Hoc queries and reports can be developed with FoxPro®. Those users with only the runtime version of BCTP db must request the development of ad hoc queries or custom reports from the BCTP db Administrator at the CALL.

Advanced users may use FoxPro® and the DBF files within the CALL server to develop specialized queries and reports to support unique analytic requirements of their organization. Both SQL and QBE are supported by FoxPro®. If FoxPro® is used to construct user ad hoc queries or reports the user should reference the FoxPro® User's Guide for

explanation of methods. Advanced users are reminded to use a duplicate copy of the software when making software changes. Development support can be coordinated with the BCTP db System Administrator. All software enhancements or new queries and reports should be reported and provided to the BCTP db System Administrator in order that version control can be maintained and that all users can benefit from the additional system functionality.

SECTION 3

RESEARCH TOOLS AND TECHNIQUES ILLUSTRATED

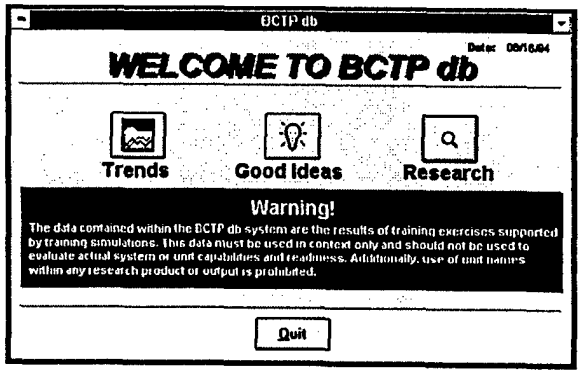
I. Basic Database Concept

The BCTP db system has two principle parts: the data files and the Data Base Management System (DBMS). Each data file is composed of hundreds of records concerning a single WFX. The DBMS has tools to display records. The DBMS uses dialog boxes to solicit the types of information that the user wants. The user interfaces with the DBMS to display the information, the records, that are of interest to their particular investigation. Wise use of the various dialogues will benefit the user by improving the degree of correlation between the kinds of data that the user wants versus the kinds of data available and, if available, data displayed.

The database is organized to support users that are interested in many facets of training developments and military research and analysis. The data is grouped into three main functional elements: Trends, Good Ideas, and the Research Database.

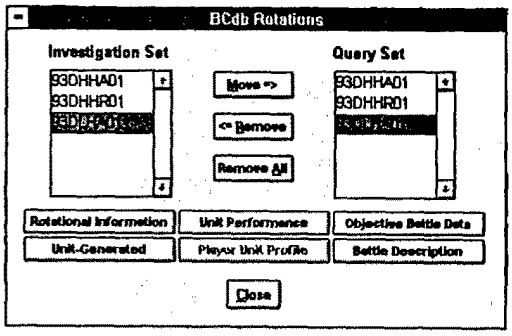
II. Conducting Research

After starting the BCTP db application the first window to come up is the BCTP db Startup Screen. If you intend to conduct original research, the first step is to select RESEARCH and then to select your investigatory set of WFXs in the following dialog. Your selection of rotations is supported by two primary sources of information about each WFX; the rotation code and the Rotational Information data display.



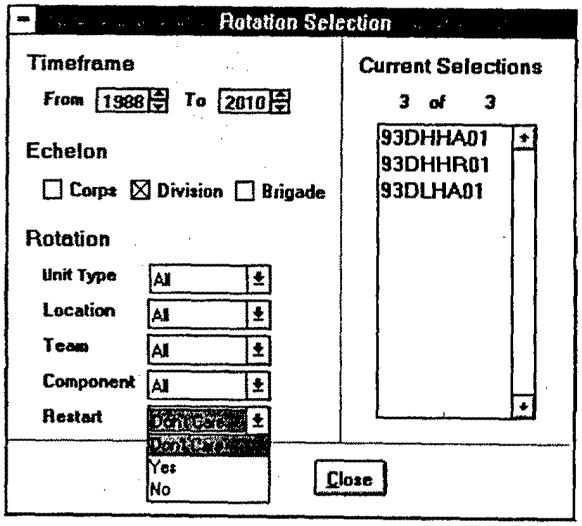
> EXAMPLE: From the BCTP db startup screen select RESEARCH.

The first is the Rotation Code itself. The Rotation Code is an alphanumeric that contains information reflecting the: year, echelon, type, component and sequence number of that specific type of rotation conducted within that year; for example:



YEAR	ECHELON	TYPE	COMPONENT	SEQUENCE#
93	D	HH	R	01

93DHHR01 is the rotation code. For the first rotation of a reserve component heavy division in 1993. Therefore, you can see that if you do or do not want a rotation reflecting one of these criteria it is possible to identify and then to select/deselect the criteria from your consideration. When the user is satisfied with the investigatory set, OK is selected. Additional rotational information about each WFX rotation can be reviewed in the following dialog by selecting a rotation code and then clicking upon the ROTATIONAL INFORMATION button.



> EXAMPLE: From the rotation selection window change the time frame to reflect from 1992 to 1995. Change the rotation unit type to heavy. Two rotations are selected: 93DHHA01 and 93DHHR01. Click on the OK button.

The data sets selected will be those sets that future data retrievals will be made from.

> To select a rotation upon which to conduct research—click the Rotation Code within the left list box that you want to select. Once selected it will become highlighted. Click the MOVE button and the Rotation Code will appear within the right list box.

A quick way to select or deselect a rotation is to simply - double click it.

> EXAMPLE: Double click on the rotation code 930HHA01.

> To deselect a rotation—click on the Rotation Code within the right list box that you want to deselect from your investigation list. Once the Rotation Code is selected it will become highlighted. Click the REMOVE button and the Rotation Code will disappear within the right list box.

Setting Search Options

The next step is to determine and select the type of data in which you are interested. The choices correspond with the buttons along the bottom of the window. They are:

- ROTATIONAL INFORMATION
- UNIT PERFORMANCE DATA
- OBJECTIVE BATTLE DATA
- UNIT GENERATED DATA
- UNIT PROFILE (NOT IMPLEMENTED YET)
- BATTLE DESCRIPTION

A useful hint as you begin your research is to select the battle description for those WFX you will research. The Battle Description data area was developed for express purpose of providing the analyst a WFX overview based on the presentation of selected critical data about the exercise.

To select a type of data—click on the desired information type button. A new window

will appear relating to that specific type of data or data retrieval.

> EXAMPLE: General information regarding the rotation can be found by selecting ROTATIONAL INFORMATION. Click on the rotational information button. Review the contents and click on the MORE button.



Once the user has made a query, the Data Display window will appear which will allow the user to choose and review specific data records. Immediately after creating the data retrieval query and clicking on the OK button, the analyst will see a new window, the Data Display window. This window provides access to all the records that met the retrieval query. These records could be of any media type: text, graphics or video. Across the top of the new window are six column headings which provide distinguishing information/characteristics of the data: Rotation Code, Type of Data, Data Source, Data Name, Order, and Media Type. Media types include text, graphics, or video. There are three command buttons above the text of the window that can be used: CANCEL, NEXT, and PREVIOUS. There is a scroll bar placed vertically along the right edge of the window if all the data selections will not fit on the window. Underneath the column headings are the data records.

> EXAMPLE: To view a list of all the records that met your search criteria, double-click anywhere on the Record List bar. To access a data record, click on it (which automatically brings you to that record in the text portion of the Data Display window). The text may not be the primary data source—it may only be the text that cites a graphic or a description or topic list of a video. If you would then like to see any associated graphics or video, click the GRAPHICS or VIDEO button.
Click on the 'Road-to-War' record.

By choosing a data record, the user will now see the record displayed in the bottom

half of the window. Above the text is header information including times and unit names. There is a scroll bar placed vertically along the right edge of the window if all the textual information will not fit on the window. The textual data within the memo field can be analyzed or copied into the Analyst's Notebook.

> EXAMPLE: Highlight the desired portion of the text with the mouse. From the menu selection EDIT, select the COPY command. Open the Analyst's Notebook (Notepad) by double-clicking on the notebook icon. Point and click within the Notepad window, then from the menu selection EDIT, choose PASTE to transfer the copied portion (see next section, Using the Analyst's Notebook). Close the text editor window and do not save (unless desired).

When the media type is graphics or video, the memo field will be a textual description of either the video or graphic. To double check that a graphic or video is available, look in the center of the window. There are two icons, VIDEO (a miniature picture of the Mona Lisa) and GRAPHICS (a film reel). These are only active (highlighted in full color) when that type of data is available. Therefore, if the window is showing a textual description of graphic data, the GRAPHICS icon will be active. By pressing these active buttons, the user will be accessing Paint Shop Pro or the BCTP db video playback software to see the respective graphic or video (see Section 2, Still Graphics & Video Replay).

> EXAMPLE: To view a graphic click on the long record list bar. Click on record "10" "5 day cartoon day 2." Notice that the graphic icon is now colored. Double-click on the graphic icon. View the graphic and close when through.

After selecting the type of information, the next step is to define your database query. In other words, you have to ask the right question to find the data related to and supportive of your particular investigation. Those users accessing the CALL database over the network should carefully consider their query. A very broad query will take a significantly longer time to retrieve than a specific query.

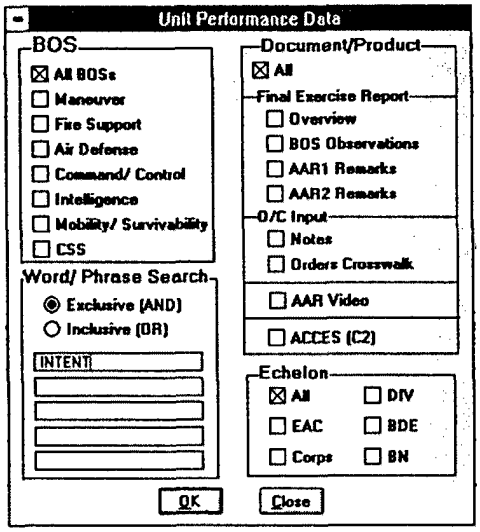
There are many ways to relate and to access data within the BCTP db. Common access methods/relations are:

1. Relate inter and intra WFX by BOS or BoB Ref.
2. Relate data by echelon.
3. Relate data by source or type.
4. Relate data by text content (word search).
5. Relate data within WFX by understanding TIMELINE (Battle) events and retrieving data from fields based on discussions by O/Cs or Unit Products Generated.
6. Relate data among WFX by Trends.

Most of the data dialog boxes operate in a similar manner, therefore they will be discussed generally and illustrated with specific examples. Both the Unit Generated and the Unit Performance dialogues allow the user to choose any or all of the seven different Battlefield Operating Systems: Intelligence, Command and Control, Maneuver, Combat Service Support, Air Defense, Fire Support, and Engineer. These two dialog boxes also give the user the option of choosing either ANY or ALL document types of that respective genre (i.e., Opords, Fragos, Intsums, etc. for Unit Generated Products; AAR comments, Final Exercise Reports, etc. for Performance Data). The echelon that relates to the information can be included as a search parameter. In addition, both dialog boxes contain sections for a word search, which can make the overall database search more general or more specific.

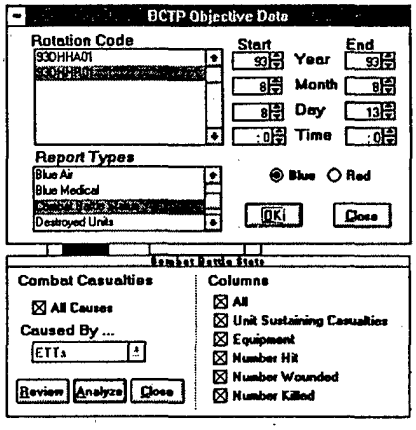
To conduct a specific search, check the appropriate BOS(s) Document type(s) and echelon of interest to your investigation, type the alpha-numeric entry(ies) desired in the word search section, then click AND. To make a more generalized search, click on the appropriate BOS(s) and/or Document type(s), type the alpha-numeric entry(ies) desired in the word search section, then click OR. For example, if the user wants to access data relating to Intelligence AAR comments, containing specific information on BDA.

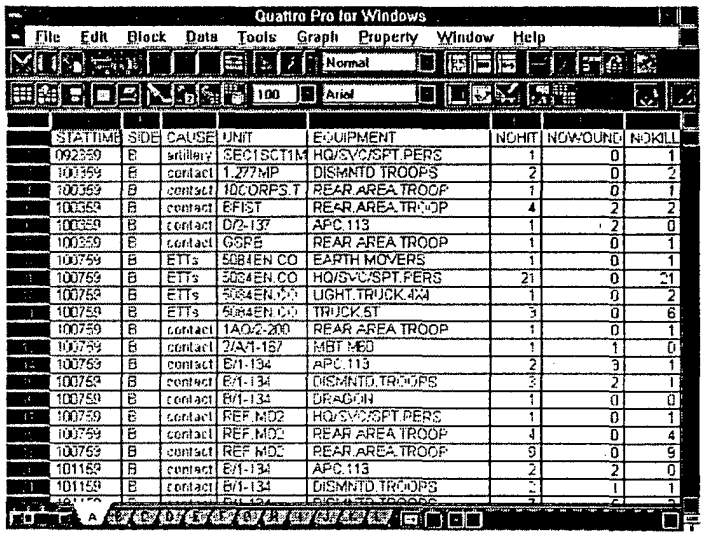
> EXAMPLE: From the BCTP db startup screen click on RESEARCH. From the rotation selection window click on the OK button. From the BCdb rotations window double-click on both '930HHA01' and '93DHHR01' and click on the UNIT PERFORMANCE DATA dialog button. From the Unit Performance dialog box within the BOS selections click on the INTELLIGENCE check box, click on any AAR COMMENTS checkbox within the Document selections, finally clicking within the word search data entry field, then typing **BDA** in the word search area, and then clicking on the OK button (for further explanations and examples of refining the search and its logic, please read Appendix E: BCTP db Search Logic). Review the records and then close the data display and unit performance windows.



Objective data, produced by the simulation, is accessed slightly differently. The analyst must select a rotation, time period, and an objective data category/report. The user then may select/deselect specific report fields. The analyst then has the option of reviewing the data or exporting the data for complete analysis to a spreadsheet.

> EXAMPLE. From the BCdb Rotations window select OBJECTIVE BATTLE DATA. From the BCTP Objective Data window select 93DHHR01 Rotation Code, and the Combat Battle Status Report Type. Click on the OK button. From the Combat Battle Stats window click on the REVIEW button. Review the presented data and when through click anywhere in the BCTP Objective Data window. The analyst may then click on the ANALYZE button or the Combat Battle Stats window. Quattro Pro® then imports the entire data set resulting from your query input. From Quattro Pro® the analyst may then conduct his analysis and graphics production in accordance with the Quattro Pro® User's Guide. When complete, close Quattro Pro®. Close the Combat Battle Stats and BCTP Objective Data windows.

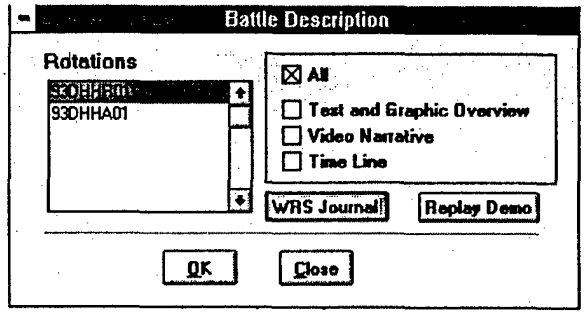


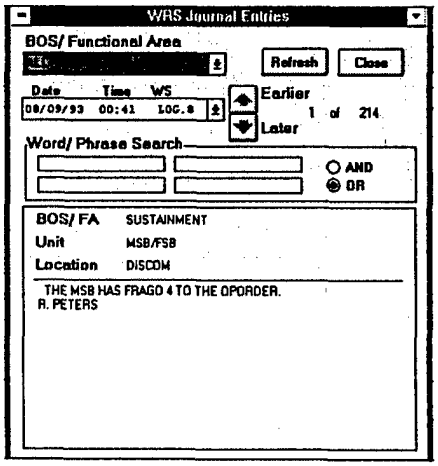


Several types of information describing WFX battle activities are available within the battle description area of the database. Data types include: textual descriptions of the battle from the Final Exercise Report (FER); graphics from the FER, a video narrative of the battle from the AAR video; a timeline graphic derived from the battle description in the FER; specific "vignette" comments or significant activities recorded by the BCTP workstation controllers (WRS Journal), and a Battle Replay of the WFX.

A prototype of a battle replay capability is developed and will be integrated in the near future.

> EXAMPLE: From the BCTP Rotation window click on the BATTLE DESCRIPTION button. From the Battle Description window select the 93DHHR01 rotation, select which areas are to be viewed and click on the OK button. When you select WRS or REPLAY DEMO, you do not need to select OK, as they come up when selected. Review the battle descriptions from the Data Display window as previously described. When through,close the Data Display window. From the Battle Description window click on the WRS JOURNAL button. Review the WRS Journal "vignettes" from the WRS Journal Entries window. When through, close the Data Display and the Battle Description windows.



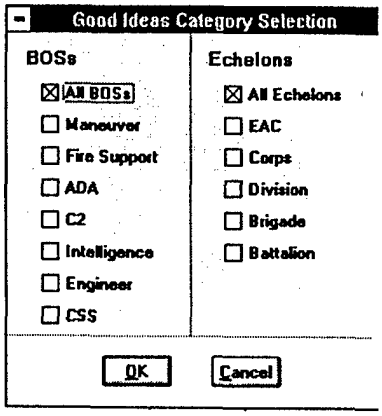


Further combinations can be achieved by creatively utilizing the methods described above.

Viewing the "Good Ideas"

The BCTP db has a simple procedure to view "good ideas" identified by BCTP observer/ controllers, CALL observers, and other analysts.

> EXAMPLE: Close all windows until the only window visible is the BCTP db Startup Screen. Click on the GOOD IDEAS button. Select FIRE SUPPORT and DIVISION. Click on the OK button, the Data Display interface will be displayed. Review the good idea and close the window when through. Cancel the GOOD IDEAS category selection and you are now back at the Startup Screen.

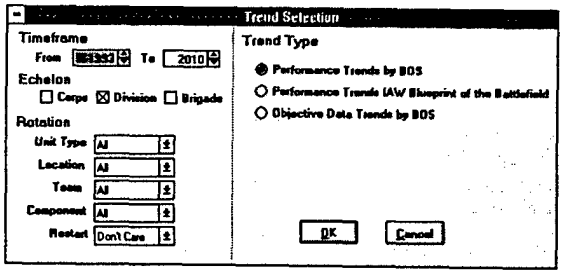


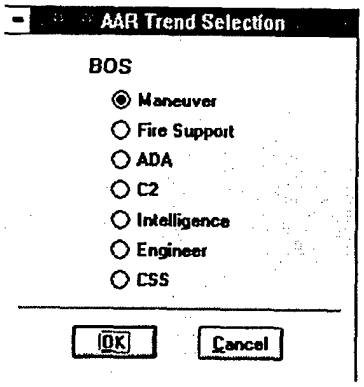
Viewing BCTP Trends

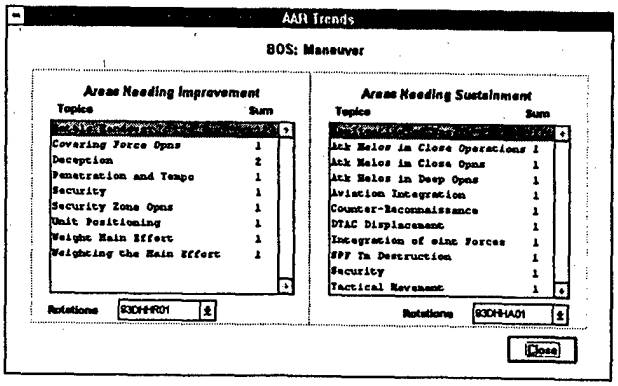
The BCTP db has several types of trend information derived from BCTP exercises. The type of rotations and the types of trends may be selected. Trend types include:

- Performance trends by BOS (a quantification of BOS observations from the after action reviews)
- Performance trends IAW the blueprint of the battlefield (a quantification of the observations from the final exercise report)
- Objective data trends by BOS (selected reports generated by the BCTP computer simulation)

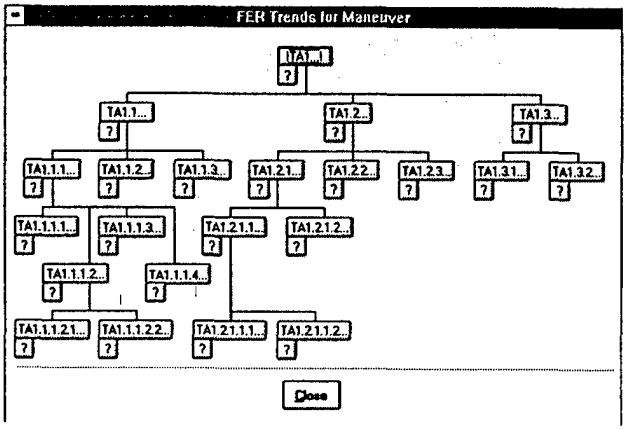
> EXAMPLE: From the BCTP db startup screen click on trends. Select unit type "heavy" "Performance trends by BOS" and then click on the OK button. Select "Maneuver" and click on the OK button. Review the topics needing improvement and sustainment. Notice the Rotation ID numbers shown when a topic is selected. They change to reflect the rotations that the trend data is derived from. When finished, close the AAR trends window. Cancel the AAR Trend Selection.

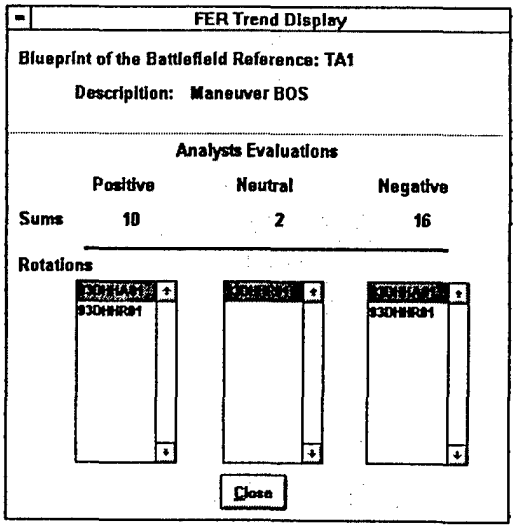




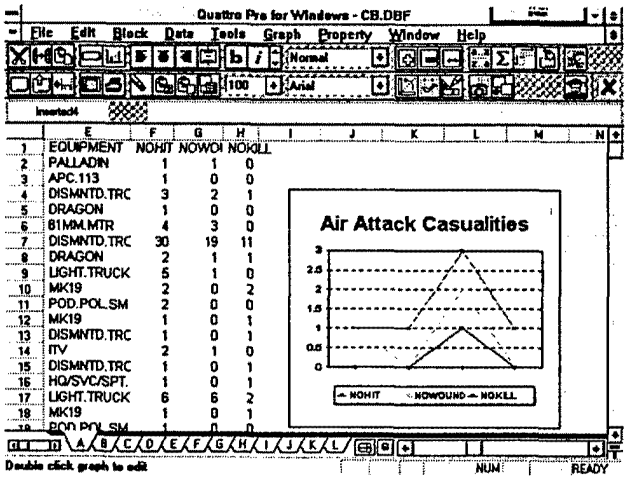


> EXAMPLE: From the trend selection window select "Performance trends IAW Blueprint of the Battlefield." Click on the OK button. Select FIRE SUPPORT from the FER Trend Selection window and click on the OK button. From the FER Trends for Fire Support window click on the "?" under TA2.2. Notice that the title of this category (Engage Ground Targets) appears in the upper right portion of your screen. Click on the TA2.2 button. From the FER Trend Display review the quantification of all positive and negative evaluations regarding TA2.2 and those blueprint of the battlefield categories subordinate to TA2.2. Notice that the rotation identification numbers are shown that produce the quantification. When through, close the FER Trend Display and the FER Trends for Fire Support windows. Cancel the FER Trend Selection.





> EXAMPLE: From the Trend Selection window select "Objective Data Trends by BOS" and click on the OK button. From the objective data trends window select "Fire Support" and "Artillery Missions, Rounds" and then click on the OK button. The Quattro Pro® window displays the raw data and a graph of this data. If desired, the analyst may save this spreadsheet with graph to a personal file. From the analyst's file he or she may use Quattro Pro® to do additional statistical analysis of the data and develop supporting graphs for technical reports and research. When through,
close Quattro Pro®. Cancel the objective data trends and trend selection windows.



	E	F	G	H
1	EQUIPMENT	NOHIT	NOWOU	NOKILL
2	PALLADIN	1	1	0
3	APC.113	1	0	0
4	DISMNTD.TRC	3	2	1
5	DRAGON	1	0	0
6	81MM.MTR	4	3	0
7	DISMNTD.TRC	30	19	11
8	DRAGON	2	1	1
9	LIGHT.TRUCK	5	1	0
10	MK19	2	0	2
11	POD.POL.SM	2	0	0
12	MK19	1	0	1
13	DISMNTD.TRC	1	0	1
14	ITV	2	1	0
15	DISMNTD.TRC	1	0	1
16	HQ/SVC/SPT.	1	0	1
17	LIGHT.TRUCK	6	6	2
18	MK19	1	0	1

III. Using the Analyst's Notebook

The Analyst's Notebook is a very useful tool that allows the analyst to extract and work with parts of the database, without altering the database itself in any way. The Windows™ Notepad is used as the BCTP db Analyst's Notebook. This text editor is used to store selected sections, take notes, store them on floppy disk or hard-drive, and print portions for further analysis and reference. Currently, only textual data from the memo field of the Data Display can be selected and copied in to the Analyst's Notebook. Any alpha-numeric data within the Analyst's Notebook may be chosen for editing.

> In order to copy data from the database into the text editor, select or highlight the

desired portion of the report with the mouse. From the menu selection EDIT, select the COPY command. Open the Analyst's Notebook (Notepad). Point and click within the text editor window, then from the menu selection EDIT, choose PASTE to transfer the copied portion. This transferred data is now ready to be edited, saved, or printed. By using the Analyst's Notebook, the analyst can store or transfer data desired for later use/reference, while not altering the database in any manner.

IV. Viewing Graphics

This section goes into specific detail concerning the use of graphics in the BCTP db system using Paint Shop Pro®. Before any other discussion, it is very important to warn the user that when using Paint Shop Pro®, data can be altered or destroyed permanently. Therefore, it is imperative that the user be cautious when analyzing graphics and only after carefully reading the following section. Once within the graphics program, the analyst has great power, controlling a full range of color, image, resolution, magnification, and manipulation tools.

There are two tools that are especially helpful when working within the graphics window: the Selection Rectangle and the Magnifying Glass. The Selection Rectangle is located in the upper left corner of the window, in the tool bar located along the left edge of the window. It is represented by a rectangle consisting of dashed lines.

> Place the cursor on the dashed rectangle and click. Bring the cursor back into the graphics field, which will cause it to appear as a cross-hair. Click on a point within the field and drag to create a dashed rectangle.

The Selection Rectangle allows the user to do a variety of tasks with all the graphics, or parts of graphics, that are inside its boundaries. At this point, the user can print either the entire window or just the part contained in the selection rectangle. If the user wants to work with or manipulate the selected graphic, the user should save the graphics file under another nam, and conduct any changes on the new file. This ensures that data is not altered or

destroyed. Graphics cannot be copied (copied & pasted) into the Analyst's Notebook, but they can be copied into other application files that will accept graphics, such as Microsoft Word®, WordPerfect® or a graphics application.

The second tool that is commonly used is the Magnifying Glass. It can be used to double or halve the current magnification level. To zoom in or out:

> Place the cursor on the small magnifying glass located in the tool bar along the right edge of the window and click. Move the cursor, which is now a magnifying glass, back into the field at the center of the graphic or area that is to be magnified, and click the left mouse button again. This will double the magnification with each click. In order to bring the graphic back to its original size, move the magnifying glass back to the center of the graphic or area and click the right mouse button. This will halve the magnification with each click.

Review the Paint Shop Pro® documentation for additional information.

V. Viewing Video

This section reflects the interim solution available only at ARI-FLVN.

This section provides greater detail on the use of video in BCTP db. The two additional pieces of equipment required for this specific use are a computer-controlled VCR and a television monitor. Turn on the VCR and monitor power before inserting any tape. It is generally a good rule to turn on the power to all peripherals when starting up the system.

The analyst currently has two choices *vis a vis* the BCTP videos. He may either 1) check out from the archive the "set" of videos supporting his "rotation set" or 2) wait until the point in time that he desires to view a particular video. At this point he may then check out the appropriate tape.

After conducting a data retrieval query the Record List pull down list box within the Data Display will contain all of the records that met that query. Video records that met the

search criteria will be listed along with those of other media types. Remember the media type is shown in the Record List pull down on the right hand side of the record description. Select the record and the Data Display will show the textual list of the video of descriptive topics. The VIDEO icon will be highlighted in full color. Click on the VIDEO icon and you will be prompted with a dialog box to insert the VCR tape. The VCR tape will be referred to by its Archive Reference Identification number. Insert the appropriate tape into the VCR.

The word search process uses the "words" in the topics list to look for query matches.

> Click OK in the Insert Tape prompt dialog box.

The VCR will immediately advance the tape to the video segment that meets the search query. When the tape is correctly positioned, the computer monitor will show the video control window. The computer will then automatically advance the tape to the desired tape segment. After fast forwarding the tape the computer will wait for the user to initiate or PLAY the tape segment.

This window allows the user to manually control the VCR, much like a normal VCR. There are different buttons for PLAY, STOP, REWIND, FAST FORWARD, and PAUSE. The image can still be seen if the PAUSE button is used to stop the tape. The image can not be seen from either FAST FORWARD or REWIND modes. There is also a special button that acts as a reset, REPLAY; it causes the video to go back to the beginning of the specific segment that met the search query again. To choose any of these commands, just place the cursor on them and click. There are three other pieces of information the video control window will provide: the start time/end time of the data that met the search query; the total segment time; and a running counter that progresses in a time count (minutes/seconds) of tape time. For example, if the entire video tape was 100 minutes long, but the segment that met the search query was only 4 minutes in the middle of that, then the running counter may show anywhere from 48:00 to 52:00.

Caution should be used to record the segment start and end time before viewing. Normally, the segment will play and stop at its end; however if the analyst uses the FAST FORWARD or REWIND buttons during the segment viewing the video mode will change from

segment play to browse. Browse mode gives the analyst access to the entire video tape but cannot return to the segment play mode without going back to the segment start. Therefore, it is best to record the times associated with a segment in order that you can use the VCR controls in the most efficient manner.

VI. Saving and Printing Your Work

A necessary step to all analysis is the documentation of the analysis. The BCTP db can be used to facilitate the documentation. The text field within the Data Display dialogues allows the user to select the appropriate text and copy it to the system clipboard. An analyst can transfer the text from the system clipboard to a report document by using the paste option/command from the destination application's Edit menu.

Printing From the Analyst's Notebook

Printing from the analyst's notebook is extremely easy. Simply select PRINT from the file menu items.

Printing Pictures or Maps

Paintshop Pro® allows the user to select, copy and paste graphics into most word processors and into the Window clipboard. Additionally, the user can print from Paintshop Pro® by choosing PRINT from the FILE menu.

APPENDIX A

REFERENCES

1) Research Plan for Battle Command Training Program (BCTP) Database Development, U.S. Army Research Institute, 17 August 1993.

2) Battle Command Training Program (BCTP) Front End Analysis, U.S. Army Research Institute, 22 January 1993.

3) Battle Command Training Program (BCTP) Database Concept, U.S. Army Research Institute, 22 January 1993.

4) Battle Command Training Program (BCTP) Requirements Analysis, U.S. Army Research Institute, 22 January 1993.

5) BCTP Data Conference Read Ahead-Package, U.S. Army Research Institute, 15 December 1992.

6) Management Information Systems — Strategy and Action, C. Parker and T. Case, McGraw-Hill, 1993.

7) Microsoft® Word® User's Guide, Microsoft Corporation, 1993.

8) Management Information Systems — The Manager's View, R. Schultheis and M. Sumner, Irwin, 1992.

9) Analysis and Design of Information Systems, J. A. Senn, McGraw-Hill, 1984.

10) Microsoft® FoxPro® User's Guide, Microsoft Corporation, 1993.

Wrong format

References for appendix

APPENDIX B

TROUBLE SHOOTING

CONTACTS

BCTP db Database Administrator
(ARI-FLVN)
Army Research Institute Field Unit
Attn: PERI-RK
P.O. Box 3407
Fort Leavenworth, KS 66027-0347
AVN (552-4933)
Commercial (913) 684-4933

BCTP db Database Administrator
(ARI-POM)
P.O. Box 5787
Bldg 104
Presidio of Monterey, CA 93944
AVN (929-3329)
Commercial (408) 372-3329

APPENDIX C

BCTP DB DATA TYPES AND MEDIA

This appendix describes the BCTP data sources and the data media. It provides the user an understanding of the range and types of data that will be included in the database. Data sources and formats vary between BCTP teams and WFXs. The BCTP is an evolving training tool. Therefore the analyst must understand that some data and data forms will change over time.

BCTP considers all WFX data as inherently sensitive. The sensitivity consists of any attribution of unit designations with any specific activity. Additionally, certain data types have information that may require special access requirements due to either controversial content, personal information, or overall training readiness evaluations. These data types have been referred to as highly sensitive. User training and the BCTP db password system is the first step to control the access and misuse of the BCTP data. These measures are an attempt to meet BCTP and unit desires not to embarrass units or individuals within those units.

The data types available from each WFX are categorized into eight subject areas. The reader will see that a number of data sources are often used in more than one subject area. The subject areas and the data types they contain are:

- **Unit Generated**: Documents and Products that are produced by the WFX and OPFOR unit.

- **Unit Performance**: Documents and Videos produced by O/Cs, BCTP and Analyst that address WFX results.

- **Rotational Information**: Documents that provide background facts and information briefed to the exercise director and that put the WFX in context.

- **Objective Battle Data**: Statistical data that is produced by the simulation and can be used to conduct original analysis.

- **Battle Description**: Battle information that is produced by any source and contains a playback or description of the battle.

- **Player Unit Profile**: Information on the WFX unit that could help put the unit itself in context. *This data is not currently available.*

- **Good Ideas**: Documentation of successful concepts, ways of doing business, and lessons learned that are provided by O/Cs, SMEs, contractors or others.

- **Trends**:
  - FER analysis: Analyst generated tables that quickly highlight the emerging BOS trends across rotations and time.
  - Objective Data: Statistical computer generated data that is loaded into charts to display emerging trends across rotations and time, within the context of the simulation.

- ## Unit Generated Data

Exercise Unit generated Plans/Orders, FRAGOs, Maps and Overlays:

- Description of data: These data include the plans, orders, FRAGOs, requests, reports, maps and overlays of the unit being trained.
- Media: Various stapled and loose hardcopy documents, acetate overlays, VGTs and Floppy disks.

OPFOR generated data:

- Description of data: These data include the plans, orders, FRAGOs, requests, reports,maps and overlays used by the OPFOR to conduct the WFX.
- Media: Various stapled and loose hardcopy documents, acetate overlays, VGTs and Floppy disks.

➢ Unit Performance Data

After Action Review (AAR) video tapes:

- Description of data: These data include video tapes taken during the AARs (normally 2). Topics that are included are unit strengths and weaknesses, areas to sustain or improve and supporting VGTs and briefing charts.
- Media: 2 - 4 video tapes.

Army Command and Control Evaluation System (ACCES) data:

- Description of data: These data include detailed observer notes and final reports evaluating C2 operations/functions.
- Media: Hardcopy report and Floppy disks.

Final Exercise Report (FER):

- Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battlefield Operating Systems observations, After Action Review Products from both AARs, World Class OPFOR information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.
- Media: Bound hardcopy document.

O/C crosswalk of the unit Operations Plan:

- Description of data: The crosswalk is a comparison, conducted by O/C's, of the training units' operations plan against the higher headquarters plan. It contains

comparisons by BOS and helps identify to the O/C's, strengths and weaknesses in the unit plan.

- Media: Stapled hardcopy document.

Observer/Controller (O/C) notes and checklists:

- Description of data: These notes could include observations of unit and/or staff section performance that is an indicator of training strengths and weaknesses as well as the informal O/C AAR s conducted with appropiate staff sections.
- Media: Various loose hardcopy notes, charta and VGTs *(At present, this data is not available)*

➢ Rotational Information

Exercise Control 5 day cartoon:

- Description of data: These data include EXCON provided graphic drawings of the battlefield with OPFOR/WFX unit positions as of the exercise start through days 1-5 and the end of the exercise.
- Media: 5 - 7 pages of hardcopy drawings.

Exercise Control briefing slides:

- Description of data: These data include EXCON provided information on weather, terrain, OPFOR vs. WFX unit status (strength), correlation of forces and means (COFM), and a Montage of unit locations.
- Media: Various loose hardcopy VGTs and documents.

White Cell directives:

- Description of data: This would be any instructions that change the WFX unit or OPFOR structures (i.e., additional units), boundary changes, scripted events, etc.
- Media: Various hardcopy notes, if provided. *(At present, this data is not available)*

➢ Objective Battle Data

Warfighter After Action Report System (WAARS) or After Action Review (AARS) tape:

- Description of data: These data provide comparisons of WFX units vs. OPFOR actions and results by BOS. It includes: WFX unit and OPFOR combat damage reports, attrition reports, personnel casualty reports, unit supply reports, maintenance reports, medical reports, artillery reports, air mission reports, etc.
- Media: The WAARS tape consists of one, ten-inch, nine track reel to reel tape. The AARS tape consists of one 8mm data tape.

➢ Battle Description

After Action Review (AAR) video tapes:

are: Battle Summary, OPFOR Summary, BOS observations and discussion, areas to sustain or improve and supporting VGTs and briefing charts.

- Media: 2 -4 video tapes.

Workstation Reporting System (WRS) tape:

- Description of data: This is a log that contains those events considered as significant by the workstation controller and are generally arranged by BOS. Comments would include: personnel transfers, movement orders, notes on time FRAGOs were received, contact reports with small units, workaround information, units under SOF attack, ammo delivery projections, units being overrun, etc.
- Media: Digital Data tapes

Final Exercise Report (FER):

- Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battle Summaries, Battlefield Operating Systems observations, After Action Review Products from both AARs, World Class OPFOR

information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.

- Media: Bound hardcopy document.

Timeline:

- Description of data: The timeline is an extract of significant events that occurred during the rotation. It is extracted from the FER Tactical Outcomes by an analyst or from ACCES data.
- Media: Created by an Analyst or provided Hardcopy document

Battle Replay:

- Description of data: The graphic replay of the computer simulation battle.
- Media: SUN Raster Graphics files.

➢ Player Unit Profile

TBP when and if this data is collected.

➢ Good Ideas

Good Ideas:

- Description of data: Any documentation of successful concepts, ways of doing business, and lessons learned that are provided by O/Cs, SMEs, contractors, analysts or others.
- Media: Hardcopy documents, floppy disk, VGTs, Charts, Tables - any media.

➢ Trends

FER analysis:

Final Exercise Report (FER):

- Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battle Summaries, Battlefield Operating Systems

observations, After Action Review Products from both AARs, World Class OPFOR information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.

- Media: Bound hardcopy document.

Objective Data:

Warfighter After Action Report System (WAARS) or After Action Review (AARS) tape:

- Description of data: These data provide comparisons of WFX units vs. OPFOR actions and results by BOS. It includes: WFX unit and OPFOR combat damage reports, attrition reports, personnel casualty reports, unit supply reports, maintenance reports, medical reports, artillery reports, air mission reports, etc.
- Media: The WAARS tape consists of one, ten-inch, nine track reel to reel tape. The AARS tape consists of one 8mm data tape.

APPENDIX D

BCTP DB SEARCH LOGIC

The Battle Command database, BCTP db, is a very powerful tool that can be used most effectively when the analyst understands the logic behind specific data queries. There are various search options that can be employed, each "finding" the specific user-requested data in a very simple, step-by-step approach.

The discussion begins by describing the entire database as the universal set. This universal set contains every single word, large or small, and all symbols within its boundaries (Figure D-1). All the various Battlefield Operating Systems (BOSs), reports, comments, summaries, orders, analyses etc. are entered as data from previous Warfighter Exercises (WFXs).

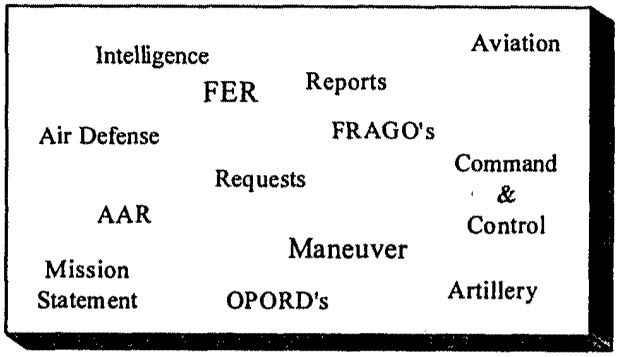


Figure D-1. The Universal Set.

This data is very important to many people in the U.S. Army, so we must develop some means to access it in an efficient and logical manner. For simplicity's sake, we break the data down into its various components so that specific queries can be accessed quickly and easily. The first breakdown is between the BOSs. The BOSs represent different functional areas within the entire battlefield. They are as follows: Command and Control, Fire Support, Maneuver, Engineer,

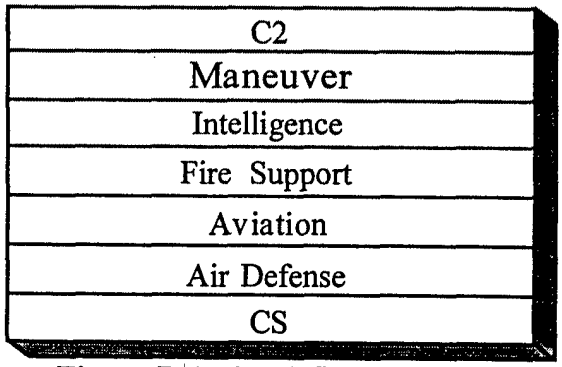


Figure D-2. Battlefield Operating Systems (BOS).

Combat Service Support, Air Defense, and Intelligence. In order to see this breakdown more clearly, we will "cut" the universal set into seven horizontal blocks, each corresponding to a different BOS (Figure D-2). If the user wanted to access or analyze maneuver data, in theory the computer would only retrieve data from that specific horizontal block.

We can now make a second breakdown of the universal set. This breakdown will deal with various documents from the WFXs data. Examples of these documents could be as follows: Opords/Plans, Reports, Requests, Messages, or Staff Working Documents. As we did in Figure D-2, we will "cut" the universal set into five vertical columns, each corresponding to a different type of document (Figure D-3). If the user desires to access or analyze Orders and Plans, the computer would only retrieve data from that specific vertical column.

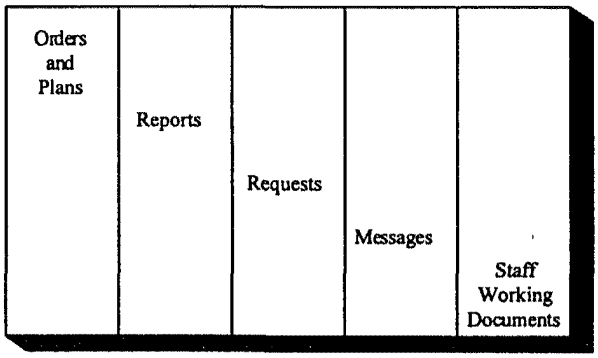


Figure D-3. Document Examples.

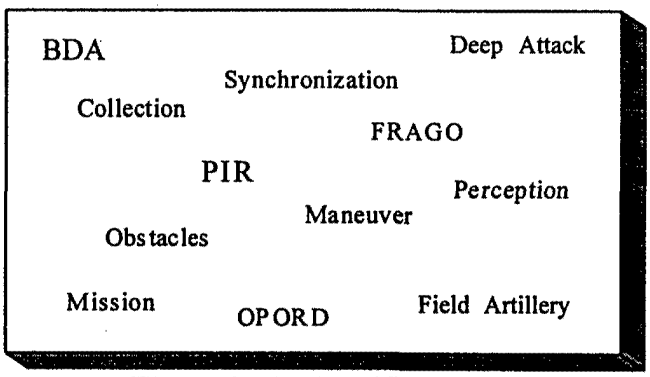


Figure D-4. Specific Words.

With these two general types of data understood, we can go into greater detail — specific words. Since words make up the English language as we know it, they also form each piece of data within the database. We can access these specific words by using the word search function to enter the word/symbol/numeral we're interested in retrieving. These alpha-numeric entries may be found in any or all of the BOSs and documents mentioned before, or may not be found at all (Figure D-4). It is with this specialized search command that we can pinpoint and retrieve such words, symbols, or numerals no matter where they're located within the database.

There is one final concept that needs to be explained before going on into more detailed examples and situations. In both the BOS choice list and Document list, there is an option for ALL. This option accesses either all seven BOSs, or all five Document types, or both (if ALL is chosen for both lists!). It is the default within the system, the "catch-all" if you will. By selecting this, the user is choosing not to make any specific query for that area, whether BOS or Document.

Now that simple logic behind specific searches within different areas of the database have been reviewed, it is important to move on to some very important topics and terms. These first two are the basis for the rest of this section. Both are simple words we use everyday in our speech as conjunctions–*and* and *or*. In the following sections, when they are in italics, they are to be understood as our special terms; otherwise, they play their normal grammatical role. The definitions of the two:

- *and* — all chosen selections will have to be taken into account, i.e. only data selected must satisfy all requirements of the query;
- *or* — data selected will satisfy any <u>one</u> of the requirements from the user's query of selections.

Don't worry if that seems confusing, the following figures make the terms much more understandable.

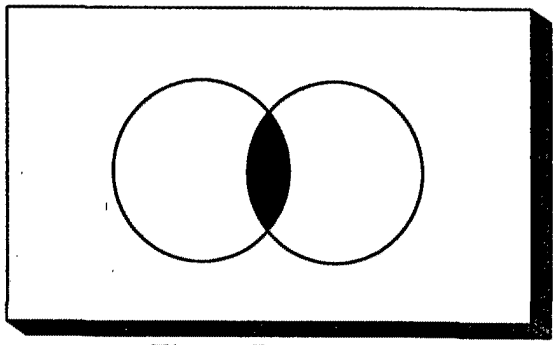


Figure D-5. AND.

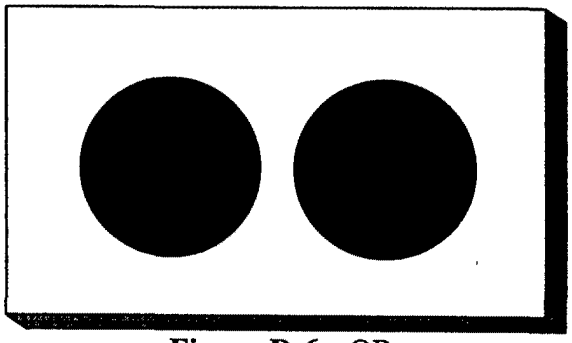


Figure D-6. OR.

If we choose to use mathematical terminology, *and* is the same as intersection; only that which both parts have in common is accessed (Figure D-5). Using the same terminology, *or* is equivalent to union; any segment of either of the parts can be accessed (Figure D-6). These bubble diagrams will be used in the following examples to help facilitate discussion.

Rule #1: The BOS list selection and Document list selection are always *and.* Therefore, whichever BOS you choose, the computer will only look in that horizontal block. Similarly, whichever Document is selected, only that vertical column in accessed.

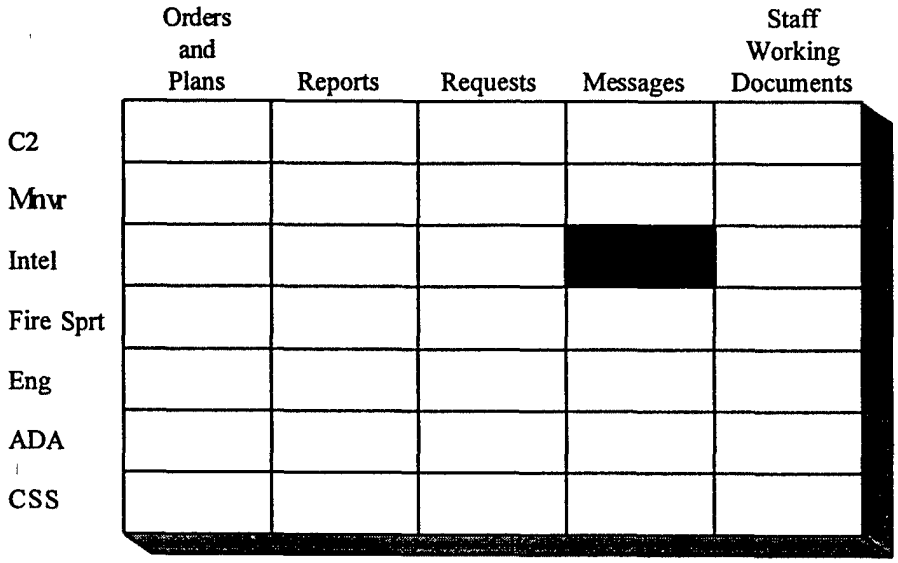


Figure D-7. Rule #1.

The common ground upon which these two meet will be retrieved as data for the user. For example, let's say the user chooses BOS—Intelligence and Document—Messages. Then the only type of data that can be retrieved on this query for user analysis will be messages that are concerned with Intelligence, for example Intelligence Summaries (IntSums), on whichever WFX data is being analyzed (Figure D-7).

Another way of looking at it is shown in Figure D-8, where only the common ground that meets all selections is chosen. Again, the BOS selection and the Document selection are always *and*.

Rule #2: Any alpha-numeric entries chosen in the word search selection area are always *or* among themselves. This means that if you choose more than one entry for a word search, that if either entry is found in the database, it will be retrieved for the user's analysis. These entries have no need to have anything in common, nor does it matter what is selected in the BOS or Document list (Figure D-9). For example, the user enters BDA as one entry, and OVERRUN as the second entry (one can have up to five different entries for search, all of which will be *or*). Then, anytime BDA or Overrun is found as an entry in the database, the screen will either center itself on that word or highlight that word (see Appendix A) from among the documents that contain it.

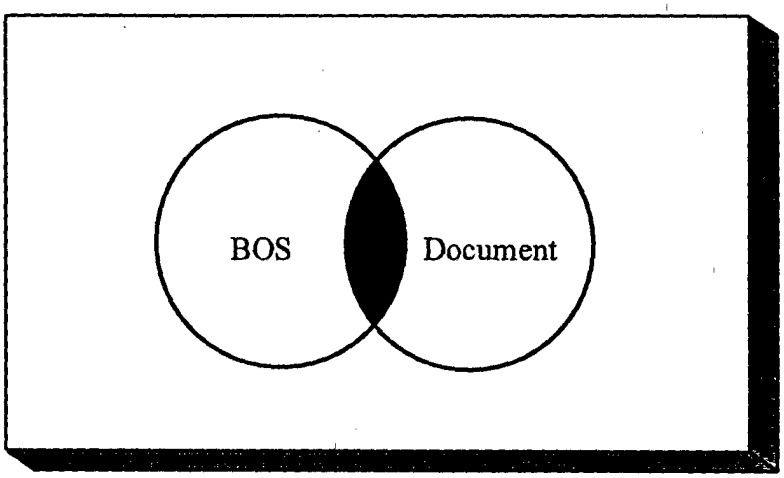


Figure D-8. Rule #1 Bubble Diagram.

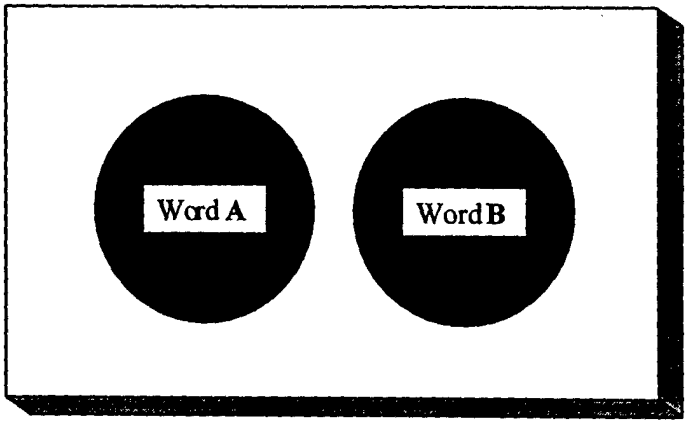


Figure D-9. Rule #2.

Before going on with the final four rules, there is one thing that needs to be pointed out. We have introduced *and* and *or* as terms defining relationships among sections of the database. In the word search section of the computer's screen, the user will see that AND and OR are choices on the lower right (we will use small caps to identify key punches). By

choosing AND, we are choosing the *and* relationship; by choosing OR, we are choosing the *or* relationship. A more detailed explanation follows...

Rule #3: If choosing AND under the word search with only one entry selected, the user is refining the search to a more specific topic. We already know that the BOS and Document list are *and*; now the entry chosen also becomes *and* with them. This means the only data retrieved from the database must contain the entry chosen and fall under the selected BOS and Document (Figure D-10).

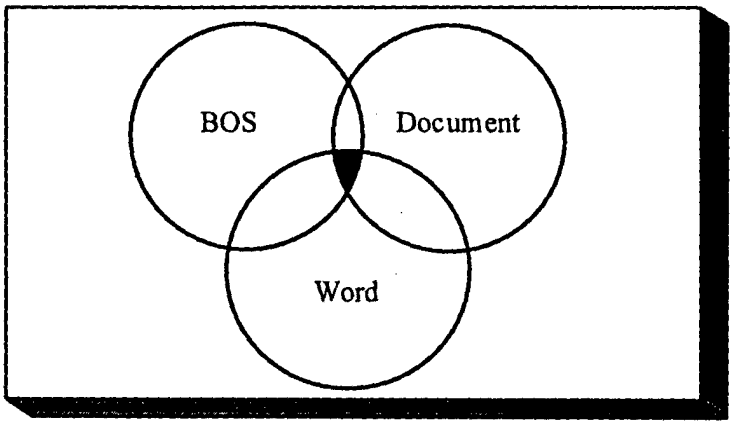


Figure D-10. Rule #3.

For example, the user selects BOS—Maneuver, Document—Requests, and under word search enters OVERRUN while selecting AND. The only data accessed must be concerned with maneuver requests and contain the word Overrun at some place within the document. It is now obvious, hopefully, that using the AND selection causes the search to become more specific.

Rule #4: If choosing OR under the word search with only one entry selected, the user is enlarging the search to a more general topic. Again, we know that BOS and Document are *and*, but by choosing OR, our selected entry is not necessarily intersected with those specific documents. Now the computer will search the database for any data that is either the common ground of the BOS and Document selection, or any

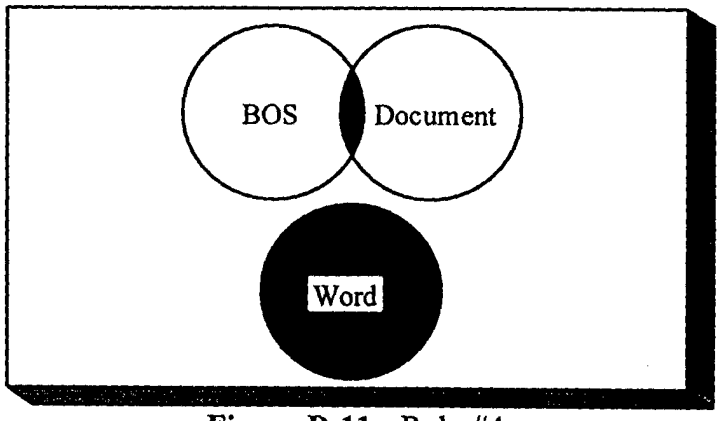


Figure D-11. Rule #4.

time the chosen entry is found (Figure D-11). For example, let's say we've chosen BOS—Fire Support, Document—Reports, and under word search entered BDA while selecting OR. The data accessed must either deal with Fire Support reports or contain the word BDA in any document. You can see our search is now more general.

Rule #5: If choosing OR under the word search with more than one entry selected, the user is just expanding the search more and more with each entry. This is similar to Rule #4, but becoming even more general. We know the BOS and Document selection are *and*, but by selecting OR in the word search with multiple entries, the computer will retrieve data that is either common ground for the BOS and Document or anytime any of the entries selected appear in a document, related or not (Figure D-12). Following previous examples, the user chooses BOS—Combat Service Support, Document—Opords/Plans, and under word search selects OR while entering MAINTENANCE, CROSS-LEVEL, and BRIDGE as words. The accessed data will be concerned with either Engineer's Opords/Plans, or maintenance or cross-levels or bridges in any document within the database.

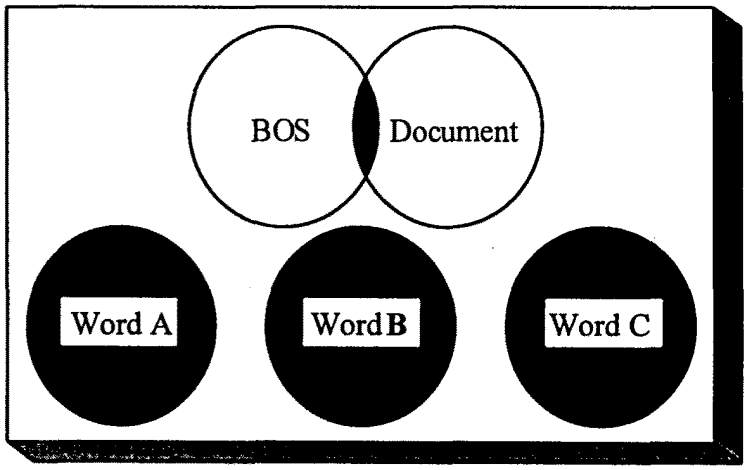


Figure D-12. Rule #5.

Rule #6: If choosing AND under the word search with more than one entry selected, the different entries are still *or*, but the user has created different groups of *and*. This rule is the most difficult to comprehend, but once mastered, the logic can be easily understood no matter what selections are made. If two entries are chosen, then there are two groups of data that the computer can retrieve. The first will deal with only that data that is common for BOS and Document selected containing the first entry; the second group will deal with the same BOS and Document material, but containing the second entry selected, and so on (Figure

D-13). So let's say BOS—Fire Support, Document—Reports, the AND selection, and two entries, Q36 and Q37, are all chosen. Then the only data retrieved will either be Fire Support reports with the entry Q36, or Fire Support reports containing the entry Q37. This rule uses parts of many previous rules, hence is presented last.

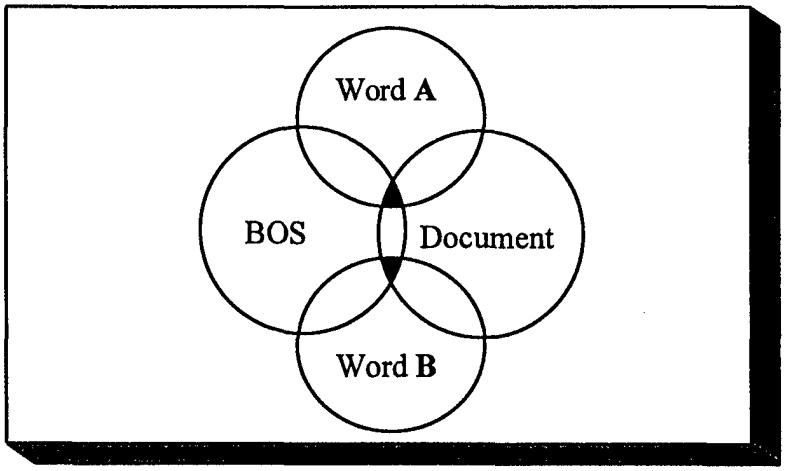


Figure D-13. Rule #6.

By gaining an understanding of this section, the user can grasp the logic used by the computer in searching, accessing, and retrieving data from the database. Whether the search be very general or very specific, the desired outcome is a knowledgeable user who can manipulate the screen to access only the exact documents and/or data that they desire.

GLOSSARY

AAR	After Action Review
AARS	After Action Review System
ACCES	Army Command and Control Evaluation System
ADA	Air Defense Artillery
AJS	Automated Journal System
ARI	Army Research Institute
BCTP	Battle Command Training Program
BICM	Battlefield Intelligence Collection Model
BOS	Battlefield Operating System(s)
C2	Command and Control
CBS	Corps Battle Simulator
COA	Course Of Action
COFM	Correlation Of Forces and Means COTS p2
CSS	Combat Service Support
db	database
DBF	Data Base File
DTG	Date Time Group
ENG	Engineer
EXCON	Exercise Control
FER	Final Exercise Report
FLVN	Fort Leavenworth, Kansas
FRAGO	Fragmentary Order
HQ	Headquarters
O/C	Observer/Controller
OPFOR	Opposing Force
OPORD	Operations Order
POM	Presidio of Monterey, California
PSP	Proficiency Sustainment Package
QBE	Query By Example
SME	Subject Matter Expert
SOF	Special Operations Forces
SPF	Special Purpose Forces
SQL	Structured Query Language
VCR	Video Cassette Recorder
VGT	View Graph Transparency
WAARS	WarFighter After Action Reporting System
WFX	WarFighter Exercise

CONTRACT #: MDA 903-92-D-0075
DELIVERABLE #: 0036-01-0036AC
September 15, 1995

CONVERTED DATA STRUCTURES: BCTP DATA BASE

Jack A. Briscoe
BDM Federal, *Inc.*

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Dr. Zita M. Simutis, Director
Personnel and Training Research Division

Dr. Stanley Halpin, Contracting Officer's Representative



October 24, 1995

U.S. Army Research Institute

Converted Data Structures:
BCTP Data Base

Contents

Page

Converting BCTPdb structures to INFORMIX
1.0 Modifying the structures 1
2.0 Conversion from FoxPro to INFORMIX 4

Appendix A INFORMIX Table Definitions A-1

LIST OF TABLES

Table A.1 ROTATION - Summary rotation information . . . . . A- 1
Table A.2 SUST - Sustain Comments . . . . . A- 1
Table A.3 OBJTREND - Objective trends . . . . . A- 1
Table A.4 REPORTS - Reports table is used internally by BCdb code . . . . . A- 1
Table A.5 BOB - Blueprint of the Battlefield Reference . . . . . A- 2
Table A.6 GI - Good Ideas . . . . . A- 2
Table A.7 TAAR - AAR Trends . . . . . A- 2
Table A.8 TFER - FER Trends . . . . . A- 3
Table A.9 B_ARTILL - Blue Combat Artillery Missions . . . . . A- 3
Table A.10 B_ATTRIT - Blue Combat Attrition . . . . . A- 4
Table A.11 B_MED - Blue Medical Report . . . . . A- 4
Table A.12 BLUE_AIR - Blue Army Aviation Report . . . . . A- 4
Table A.13 CBSTAT - Combat Damage Report . . . . . A- 5
Table A.14 DATA - Textual, Video, Graphics . . . . . A- 5
Table A.15 INTEL - Intel Reports . . . . . A- 6
Table A.16 R_ADARPT - Red Air Defense Report . . . . . A- 7
Table A.17 R_ARTILL - Red Combat Artillery Missions . . . . . A- 7
Table A.18 WIPE_OUT - Destroyed Unit Report . . . . . A- 8
Table A.19 WRS - Workstation Reporting System . . . . . A- 8

Converting BCTPdb structures to INFORMIX

Two steps were required to convert the existing FoxPro data structures to INFORMIX:

(1) Implement any desired/required changes to the existing data structures to make them compatible with INFORMIX and/or to implement desired changes and improvements, and

(2) Create the INFORMIX database on the new database server, then physically convert the data structures from FoxPro to INFORMIX.

1.0 Modifying the structures

The current FoxPro implementation stores information aggregated across rotations in the root database directory BCDB. Rotation-specific information is stored in identically-named tables in separate sub-directories. The current structure is shown below. Directory names are bold-faced; table names are italicized:

BCDB
- *ROTATION*
- *SUST*
- *OBJTREND*
- *REPORTS*
- **SUPPORT**
  - *BOB*
  - *GI*
  - *TAAR*
  - *TFER*
- **93DHHR01**
  - *B_ARTILL*
  - *B_ATTRIT*
  - *B_MED*
  - *BLUE_AIR*
  - *CBSTAT*
  - *DATA*
  - *INTEL*
  - *R_ADARPT*
  - *R_ARTILL*
  - *WIPE_OUT*
  - *WRS*
- **93DHHA01**
  - *B_ARTILL*
  - *B_ATTRIT*
  - *B_MED*
  - *BLUE_AIR*
  - *CBSTAT*
  - *DATA*
  - *INTEL*
  - *R_ADARPT*
  - *R_ARTILL*
  - *WIPE_OUT*
  - *WRS*
- **93DLHA01**
  - *DATA*
- **94DHHA01**
  - *DATA*
- **93DLHA02**
  - *DATA*
- **94DHHA02**
  - *DATA*

As far as FoxPro is concerned, there are only tables; the concept of a database containing tables is imposed by the user interface, the screens with their embedded code which handles the file details. For example, there is one *DATA* table for each rotation in the database, two *B_ARTILL* tables, etc. The code handles the access depending upon the user's selection of rotation(s).

INFORMIX explicitly recognizes databases as collections of tables, and will not tolerate two tables with the same name. To migrate the BCdb "database" to INFORMIX, then, either the separate tables with the same names have to be renamed, e.g. *93DHHR01_DATA* and *93DHHA01_DATA*, or the data in the separate tables can be combined, adding a new field to identify the rotation.

Clearly, the cleaner solution is the second one: combine the tables and add a rotation index. This solution avoids the creation of new tables every time a new rotation's worth of data is added to the database. It also simplifies some of the internal logic, avoiding frequently having to open and close tables. The downside is the addition of an integer field in each of the combined tables.

The job of modifying and combining the tables was done in FoxPro. This allowed the job to be done quickly, and as importantly, locally. The combined tables generally maintain the same structures as the originals, with the the addition of the ROTATION_INDEX field. The only major restructuring done was with the DATA table, as described in Appendix A.

Once the structures were altered and tested, the entire database was converted from FoxPro to Microsoft Access 2.0. This was done for three reasons:

(1) Access supports concept of a named database as a collection of tables, which is consistent with INFORMIX;

(2) Access supports longer element names, so that renaming the fields could be done prior to the step of transferring the data across the phone line; and

(3) Access is supported by a more robust ODBC (Object Database Connectivity) driver, which is used by Windows to handle database interactions, meaning fewer problems during the actual database conversion process.

When the new structures have been completed, the file structure will be as shown below. Tables containing the new ROTATION_INDEX field are marked with an asterisk. Note that table ROTATION was modified to add that field; this step has been taken to allow ROTATION_INDEX to be an integer field, providing better database performance. Tables which will be consolidated are noted by the number of tables which have been combined.

1 ROTATION*
2 SUST
3 OBJTREND
4 REPORTS
5 BOB
6 GI
7 TAAR
8 TFER
9 B_ARTILL* (2)
10 B_ATTRIT * (2)
11 B_MED * (2)
12 BLUE_AIR* (2)
13 CBSTAT * (2)
14 DATA* (6)
15 INTEL* (2)
16 R_ADARPT* (2)
17 R_ARTILL* (2)
18 WIPE_OUT* (2)
19 WRS* (2)

Appendix A contains the structures of the intermediate tables - element by element. It also contains a column listing of the implemented, more descriptive, INFORMIX element name.

2.0 Conversion from FoxPro to INFORMIX

The next step was the conversion of the new FoxPro (Access) tables to INFORMIX - along with changing the element names. This step was accomplished by using the PowerBuilder 4.0 facility called the Data Pipeline, which supports rapid conversion, table by table, between different Database types. The table below reflects the results of the data conversion/transfer process.

Table Name	Records Transferred	Problems/Comments/Format Changes
ROTATION	6	OK
SUST	90	OK
OBJTREND	8	OK
REPORTS	7	OK
BOB	267	OK
GI	1	MEMO-type DATA field was changed to CHARACTER*10000
TAAR	294	OK
TFER	1076	OK
B_ARTILL	6339	OK
B_ATTRIT	14735	OK
B_MED	607	OK
BLUE_AIR	2082	OK
CBSTAT	17709	OK
DATA	2357	Split into tables DATA_INDEX and DATA_CONTENTS. See details in Appendix 2, section A.14
INTEL	2239	Subset of original 87430 records - includes only DETECTED_UNIT_TYPE=ENGR
R_ADARPT	2178	OK
R_ARTILL	4538	Subset of original 17772 records - includes only NUMBER_HIT>0
WIPE_OUT	2039	OK
WRS	591	Memo field COMMENTS changed to CHAR*5000

Appendix A INFORMIX Table Definitions

A.1 Table ROTATION - Summary rotation information

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	4
1	ROTCODE	ROTATION_CODE	VARCHAR	10
2	ROTID	ROTATION_ID	VARCHAR	10
3	UNIT	UNIT_IDENTIFICATION	VARCHAR	20
4	ROTSTART	ROTATION_START	DATE	8
5	ROTEND	ROTATION_END	DATE	8
6	ROTLOC	ROTATION_LOCATION	VARCHAR	20
7	BCTPTEAM	BCTP_TEAM	VARCHAR	10
8	COMPONENT	COMPONENT	VARCHAR	10
9	UNITTYPE	UNIT_TYPE	VARCHAR	11
10	RESTART	HAD_RESTART	CHAR	1

A.2 Table SUST - Sustain Comments

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
1	BOBREF	BOB_REFERENCE	VARCHAR	3
2	SUSTAIN	SUSTAIN	VARCHAR	30

A.3 Table OBJTREND - Objective trends

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
1	OTREND	OBJECTIVE_TREND	VARCHAR	50
2	FILENAME	FILE_NAME	VARCHAR	10
3	BOS	BOS	VARCHAR	12
4	BOSNO	BOS_NUMBER	DOUBLE	

A.4 Table REPORTS - Reports table is used internally by BCdb code

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
1	REPORT	REPORT_NAME	VARCHAR	20
2	TABLENAME	TABLE_NAME	VARCHAR	10
3	ENABLED	REPORT_ENABLED	DOUBLE	

A.5 Table BOB - Blueprint of the Battlefield Reference

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
1	BOBREF	BOB_REFERENCE	VARCHAR	30
2	BOBREFDESC	BOB__DESCRIPTION	Memo	

A.6 Table GI - Good Ideas

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	TYPEOFDATA	TYPE_OF_DATA	VARCHAR	20
2	DATANAME	DATA_NAME	VARCHAR	45
3	DATASOURCE	DATA_SOURCE	VARCHAR	15
4	SIDE	SIDE	VARCHAR	1
5	MEDIUM	MEDIUM	VARCHAR	10
6	FILENAME	FILENAME	VARCHAR	35
7	ORDER	ORDER	INTEGER	3
8	ORG	ORGANIZATION	VARCHAR	15
9	TIMESENT	TIME_SENT	VARCHAR	12
10	TIMERECVD	TIME_RECEIVED	VARCHAR	12
11	BOBREF	BOB_REFERENCE	VARCHAR	30
12	DATA	DATA	Memo	10

A.7 Table TAAR - AAR Trends

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	ROTCODE	(Deleted)		
2	BOBREF	BOB_REFERENCE	VARCHAR	30
3	SUSTAIN	SUSTAIN	VARCHAR	30
4	IMPROVE	IMPROVE	VARCHAR	30

A.8 Table TFER - FER Trends

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	ROTCODE	(Deleted)		
2	BOBREF	BOB_REFERENCE	VARCHAR	3
3	EVAL	EVALUATION	VARCHAR	1

A.9 Table B_ARTILL - Blue Combat Artillery Missions

Field	Field Name	Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	MISSION	MISSION_TYPE	VARCHAR	10
2	MTYPE	MTYPE	VARCHAR	6
3	TIME	TIME	VARCHAR	6
4	UNIT	UNIT	VARCHAR	15
5	LOCATION	LOCATION	VARCHAR	12
6	WEAPON	WEAPON	VARCHAR	15
7	AMMO	AMMUNITION_TYPE	VARCHAR	9
8	ROUNDS	ROUNDS	INTEGER	
9	MPOI	MPOI	VARCHAR	11
10	UNITHIT	UNIT_HIT	VARCHAR	20
11	SYSTEMHIT	SYSTEM_HIT	VARCHAR	15
12	NUMBERHIT	NUMBER_HIT	INTEGER	

A.10 Table B_ATTRIT - Blue Combat Attrition

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	TIMESTART	TIME_START	VARCHAR	6
2	TIMEEND	TIME_END	VARCHAR	6
3	UNIT	UNIT	VARCHAR	15
4	EQUIPMENT	EQUIPMENT	VARCHAR	20
5	DESTROYED	DESTROYED	INTEGER	
6	DAMAGED	DAMAGED	INTEGER	

A.11 Table B_MED - Blue Medical Report

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	STARTTIME	START_TIME	VARCHAR	6
2	ENDTIME	END_TIME	VARCHAR	6
3	UNIT	UNIT	VARCHAR	15
4	ADMITTED	ADMITTED	INTEGER	
5	RETURNED	RETURNED	INTEGER	
6	SHIFTED	SHIFTED	INTEGER	
7	DIED	DIED	INTEGER	
8	EVACUATED	EVACUATED	INTEGER	

A.12 Table BLUE_AIR (Renamed B_AIR for consistency) - Blue Army Aviation Report

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	MISSION	MISSION_NAME	VARCHAR	20
2	TIME	TIME	VARCHAR	6
3	LOCATION	LOCATION	VARCHAR	12
4	UNIT	UNIT	VARCHAR	15
5	SYSTEM	SYSTEM	VARCHAR	15
6	HITS	HITS	DOUBLE	

A.13 Table CBSTAT - Combat Damage Report

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	STATTIME	STATISTICS_TIME	VARCHAR	6
2	SIDE	SIDE	VARCHAR	1
3	UNIT	UNIT	VARCHAR	15
4	EQUIPMENT	EQUIPMENT	VARCHAR	15
5	CAUSE	CAUSE	VARCHAR	15
6	NOHIT	NUMBER_HIT	INTEGER	
7	NOWOUND	NUMBER_WOUNDED	INTEGER	
8	NOKILL	NUMBER_KILLED	INTEGER	

A.14 Table DATA (DATA_INDEX, DATA_CONTENTS) - Textual, Video, Graphics

The DATA table was restructured to make the field names more descriptive and to more directly support the user interface. First, it was split into two tables, DATA_INDEX, which contains all the information which describes the data, and DATA_CONTENTS, which contains the bulk of the data fields. Next, the key fields which describe the data were re-named and restructured. The table below indicates in general the changes that were made during the restructuring process. Mappings between the old and new tables were not totally direct; data formerly in the DATASOURCE field might have gone to the DOCUMENT_TYPE field or it might have been divided between the DOCUMENT_TYPE and SUBDOCUMENT_TYPE fields. Additional fields DOCUMENT_NUMBER and SECTION_ID were added to simplify the data selection logic.

Field	FoxPro Field Name	Table*	INFORMIX Field Name	Type	Width
New		1	ROTATION_INDEX	INTEGER	
1	TYPEOFDATA	1	SUB_DOCUMENT	VARCHAR	20
2	DATANAME	1	SECTION_TITLE	VARCHAR	45
3	DATASOURCE	1	DOCUMENT_TYPE	VARCHAR	15
4	SIDE	1	SIDE	VARCHAR	1
5	MEDIUM	1	MEDIUM	VARCHAR	10
6	FILENAME	2	FILE_NAME	VARCHAR	35
7	ORDER	1	REC_ORDER	INTEGER	
8	ORG	1	ORGANIZATION	VARCHAR	15
9	DESTINATIO	2	DESTINATION	VARCHAR	15

DATA Field	Table(Continued) FoxPro Field Name	Table*	INFORMIX Field Name	Type	Width
10	TIMESENT	2	TIME_SENT	VARCHAR	12
11	TIMERECVD	2	TIME_RECEIVED	VARCHAR	12
12	OPNLTIMFRM	2	OPNL_ TIME_FRAME	VARCHAR	15
13	OPTYPE	2	OPTYPE	VARCHAR	30
14	ANALEVAL	1,2	ANALYSTS_ EVAL	INTEGER	
15	CP	N/A	(Deleted)		
16	BOBREF	1	BOB_REFERENCE	VARCHAR	30
17	BATTLELOC	N/A	(Deleted)		
18	OEG	N/A	(Deleted)		
19	DATA	2	TEXT_DATA	VARCHAR	200
New		1	SECTION_ID	VARCHAR	5
New		1	DOCUMENT_NUMBER	VARCHAR	3

* 1 - DATA_INDEX Table
2 - DATA_CONTENTS Table

A.15 Table INTEL - Intel Reports

Field	FoxPro Field_Name	INFORMIX Field_Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	SIDE	SIDE	VARCHAR	1
2	DET_UNIT	DETECTED_UNIT	VARCHAR	10
3	DET_UN_TYP	DETECTED_UNIT_TYPE	VARCHAR	10
4	DET_TIME	DETECTION_TIME	VARCHAR	6
5	ASSET_LEVE	ASSET_LEVEL	VARCHAR	2
6	ASSET_TYPE	ASSET_TYPE	VARCHAR	1
7	RECIPIENT	RECIPIENT	VARCHAR	10
8	PERCEPT	PERCEPTION	VARCHAR	10
9	LOCATION	LOCATION	VARCHAR	11
10	ACTIVITY	ACTIVITY	VARCHAR	10
11	ORIENT	ORIENTATION	VARCHAR	2
12	PARENT	PARENT	VARCHAR	12

A.16 Table R_ADARPT Red Air Defense Report

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	TIME	TIME	VARCHAR	6
2	AIRCRAFT	AIRCRAFT	VARCHAR	9
3	MISSION	MISSION	VARCHAR	15
4	UNIT	UNIT	VARCHAR	15
5	WEAPON	WEAPON	VARCHAR	15
6	LOCATION	LOCATION	VARCHAR	12
7	ENGTYPE	ENGAGEMENT_ TYPE	VARCHAR	12
8	RPT_FIRED	REPORTED _FIRED	INTEGER	
9	EOE_FIRED	EOE_FIRED	INTEGER	
10	DESTROYED	DESTROYED	INTEGER	
11	DAMAGED	DAMAGED	INTEGER	

A.17 Table R_ARTILL - Red Combat Artillery Missions

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	MISSION	MISSION	VARCHAR	10
2	MTYPE	MTYPE	VARCHAR	6
3	TIME	TIME	VARCHAR	6
4	UNIT	UNIT	VARCHAR	15
5	LOCATION	LOCATION	VARCHAR	12
6	WEAPON	WEAPON	VARCHAR	15
7	AMMO	AMMUNITION_TYPE	VARCHAR	9
8	ROUNDS	ROUNDS	INTEGER	
9	MPOI	MPOI	VARCHAR	11
10	UNITHIT	UNIT_HIT	VARCHAR	20
11	SYSTEMHIT	SYSTEM_HIT	VARCHAR	15
12	NUMBERHIT	NUMBER_HIT	INTEGER	

A.18 Table WIPE_OUT - Destroyed Unit Report

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	
1	UNIT	UNIT	VARCHAR	15
2	STATION	STATION	VARCHAR	10
3	TIME	TIME	VARCHAR	6
4	LOCATION	LOCATION	VARCHAR	12
5	THRESHHOLD	THRESHHOLD	DOUBLE	
6	REMAINDER	REMAINDER	DOUBLE	

A.19 Table WRS - Workstation Reporting System

Field	FoxPro Field Name	INFORMIX Field Name	Type	Width
New		ROTATION_INDEX	INTEGER	4
1	BOS	BOS	VARCHAR	20
2	UNIT	UNIT	VARCHAR	10
3	LOCATION	LOCATION	VARCHAR	25
4	DATE	DATE	DATE	
5	TIME	TIME	VARCHAR	5
6	WORKSTATION	WORKSTATION	VARCHAR	7
7	COMMENTS	COMMENTS	CHAR	5000
New		COMMENT_FIELD	TEXT	

Due to problems in transferring FoxPro/Access Memo fields, the structure of the WRS table was changed; The COMMENTS field bacame a character field of size 5000 and contains the data formerly held in the Memo field. The COMMENT_FIELD was added for a later transfer of the textual data , at which time the COMMENT field will be eliminated.

Contract #: MDA 903-92-D-0075
Deliverable #: 0036-01-0036AG
November 1, 1995

PowerBuilder User Interface BCTP Data Base

Jack A. Briscoe
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Dr. Zita M. Simutis, Director
Personnel and Training Research Division

Dr. Stanley Halpin, Contracting Officer's Representative



November 30, 1995

U. S. Army Research Institute

PowerBuilder User Interface
BCTP Data Base

CONTENTS

Page

Overview of the PowerBuilder Implementation 1

PowerBuilder Windows 2
Main Window (w_main) 2
Rotation Selection (w_rotsel) 2
Information Control (w_rot) 3
Battle Description (w_bdesc) 4
TimeLine/ Overview (w_desc) 5
Workstation Reporting System (w_wrs) 5
Objective Data Control (w_objtop) 6
Combat Battle Statistics (w_cbstat) 6
Battlefield Intelligence Collection Model (w_bicm) 7
Blue Air Activity (w_bair) 7
Opfor Air Defense (w_ada) 8
Artillery (w_artill) 8
Destroyed Units (w_dest) 8
Blue Medical Units (w_medics) 9
Performance Data (w_perf) 9
2.6.1 Data Display (w_d2) 10
Unit-Generated Data (w_unit) 10
Rotational Information (w_rotin) 11

Limitations of the Current Implementation 12
Test and Development Environment 12
List of Current Limitations 13

Deliverable Files 13

List of Figures

Figure 1 - BCTPdb Hierarchy 1
Figure 2 - Main Window 2
Figure 3 - Rotation Selection 3
Figure 4 - Information Control 3
Figure 5 - Battle Description Screen 4
Figure 6 - Timeline/ Overview Display 5
Figure 7 - WRS Journal Entries 5
Figure 8 - Objective Data 6
Figure 9 - Battle Statistics 6
Figure 10 - Intelligence 7
Figure 11 - Blue Air Activity 7
Figure 12 - OPFOR Air Defense 8
Figure 13 - Artillery 8
Figure 14 - Destroyed Units 8
Figure 15 - Blue Medical Units 9
Figure 16 - Unit Performance Data 9
Figure 17 - Performance Data Display 10
Figure 18 - Unit Generated Data 10
Figure 19 - Rotational Information 11

PowerBuilder User Interface
BCTP Data Base

Overview of the PowerBuilder Implementation

The PowerBuilder implementation of the BCTPdb resembles the FoxPro version in most respects. The screens have been left exactly the same, or improved, when possible. In some cases, the interface has been modified to account for differences in the client-server environment.

The user interface uses windows which contain standard Windows® controls throughout. They consist of:

Command buttons which trigger an action when activated,
Drop-down list boxes which provide a list of possible choices for the user to select,
Text Boxes which display one or more lines of text,
Picture boxes which display a graphic,
Text, which displays text which is an integral part of the underlying window,
Check boxes, which allow the user to select/deselect an option,
Radio buttons, which allow the user to select one of two or more options.

The implementation also contains a control unique to PowerBuilder - DataWindows. DataWindows provide a convenient mechanism for retrieving and displaying data without the need to develop the underlying queries separately. DataWindows also provide a means to dynamically change the query, providing the flexibility needed for the BCTPdb application.

The structure of the current implementation is shown in Figure 1. The top level is the PowerBuilder Application - called bcdb_pb. Below the application are two kinds of entities - Windows are denoted by the window icon, and DataWindows are denoted by the spreadsheet-looking box.

Chains which end with a DataWindow are those which have been fully implemented and display data retrieved from the BCTPdb database. The others currently exist as stubs with further effort required to be fully connected.

Subsequent sections will describe features and limitations, if any, of each window in the current PowerBuilder implementation.

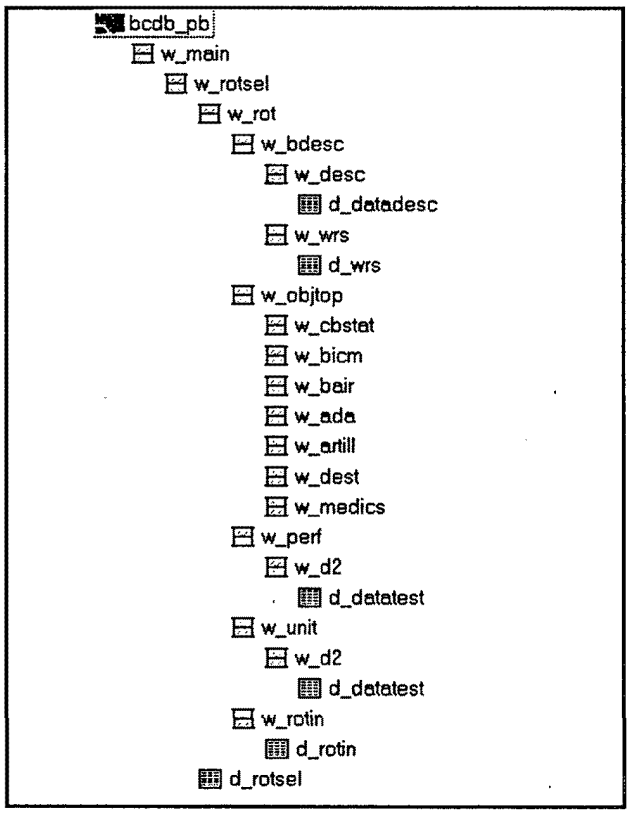


Figure 1 - BCTPdb Hierarchy

PowerBuilder Windows

This section describes the form and functionality of the PowerBuilder user interface - describing each window shown in Figure 1 in that order.

Main Window (w_main)

The Main window introduces users to the BCTPdb and controls which processing option the user will perform. It also contains a message advising the user about the sensitivity of the data which will be displayed. Figure 2 is a snapshot of the Main window.There are three option buttons on the screen.

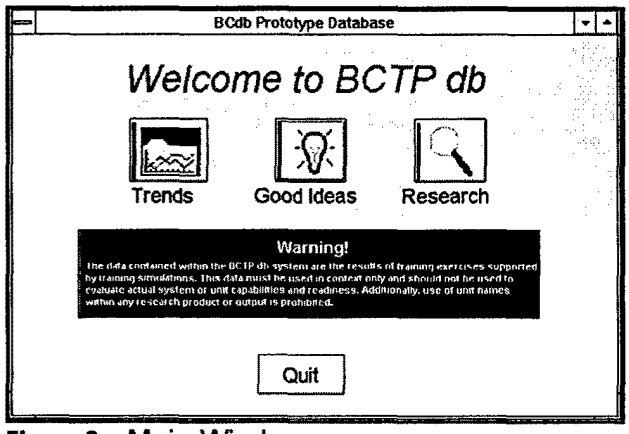


Figure 2 - Main Window

The **Trends** button allows the user to examine systemic trends identified by BCTP Operations personnel and other Army analysts. This option is not available for this version of the BCTPdb.

The **Good Ideas** button allows the user to "good ideas" documented by BCTP Operations personnel and other Army analysts. This option is not available for this version of the BCTPdb.

The **Research** button is the gateway for the user to examine a wealth of BCTP data. The database contains objective data gleaned from VAX/SUN computer records of BCTP exercises, documents prepared by participating units prior to and during their BCTP rotations, and data collected by BCTP Operations personnel and contractors relating to the unit's performance during the course of the WarFighter exercise.

Finally, the **Quit** button exits the BCTPdb software and returns the user to Windows.

Rotation Selection (w_rotsel)

The Rotation Selection Window allows the user to select BCTP rotations based on a number of criteria. Most criteria are selected on a one or all basis, where the choices (except for echelon) include All, and any other choice selects only the one criterion. Figure 3 shows a Rotation Selection Window upon entry. The rotations which currently meet the selection criteria are listed in the "Selected Rotations" box, and become the "Investigation Set" for the next screen.

First the user may set a period of years within which BCTP rotations are desired by setting the Time Frame From and To values by means of the spinners.

The user may select rotations for a specific echelon by selecting one of the Echelon radio buttons (Corps, Division, or Brigade). Echelon is the only field which is restricted to one input - thus the radio buttons.

Unit type is selected from a drop-down list box from All, Heavy, Light, Light-Heavy, or Heavy-Light.

The simulation location for desired rotations may be selected from the Location drop down list box from All, Germany, or Korea.

The BCTP team assigned to the rotation may also be a criterion. Choices are A-C or All.

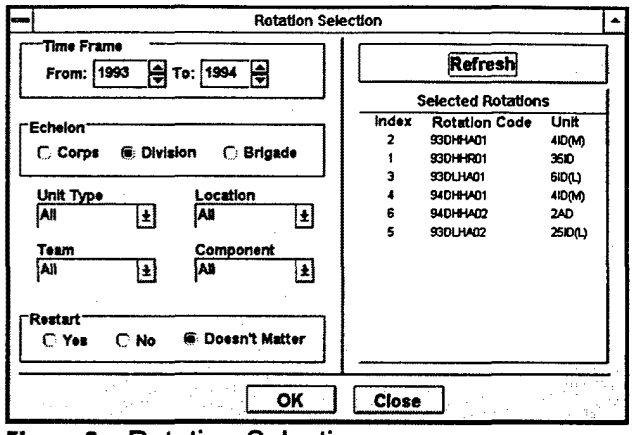


Figure 3 - Rotation Selection

The selections for component are All, Active, or Reserve.

Whether or not there was a simulation restart during the rotation is the final selection.

Once the user is satisfied with his selections, hitting the OK button moves to the Information Control screen. Selecting Close at any point returns the user to the Main Window.

Information Control (w_rot)

The Information Control screen serves as the gateway to the BCTP data. It allows the user to make a final choice as to which rotations in the Investigation Set will be part of the Query Set. Figure 4 shows the screen after several rotations have been selected. Upon selection of one or more rotations to the Query Set (one or more rotations in the right-hand box), the processing options are enabled.

The buttons between the Investigation Set and the Query Set are used to move rotations to/from the two sets.

The **Rotation Information** button displays summary information relating to the specific rotation selected in the Investigation Set box. The Rotation Information windows is described in section 2.8.

The **Unit Performance** button moves the user to the Performance Data screen, described in section 2.6.

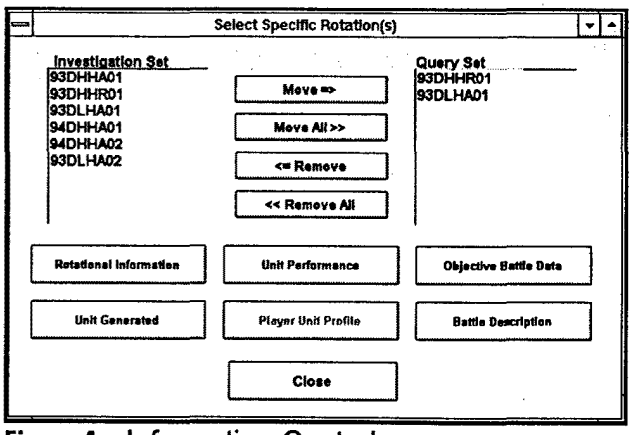


Figure 4 - Information Control

The **Objective Data** button is the gateway into BCTP objective data, and brings up the Objective Data Control window, described in section 2.5.

The **Unit Generated** button opens the Unit-generated data window described in section 2.7.

The **Player Unit Profile** button is intended to lead to screens depicting the make up of participating units, by MOS, turbulence, TOE, etc. This capability has not yet been added to the BCTPdb.

The **Battle Description** button leads to a screen which more fully described the rotation selected in the Investigation Set box. The Battle Description window is described in section 2.4.

The **Close** button takes the user back to the Rotation Selection window.

Battle Description (w_bdesc)

The Battle Description screen allows the user to get additional descriptive information concerning a specific rotation. The screen is shown as Figure 5 below.

The **WRS Journal** button displays the Workstation Reporting System screen described in section 2.4.1.

The **Replay Demo** button starts a demonstration application which recreates a WarFighter replay using battle graphic snapshots, This capability is available only for rotation 93DHHR01.

The **Video Narrative** button brings up the portion of the video-taped AAR which gives an overview of the WarFighter exercise. This feature has not been implemented in the current version.

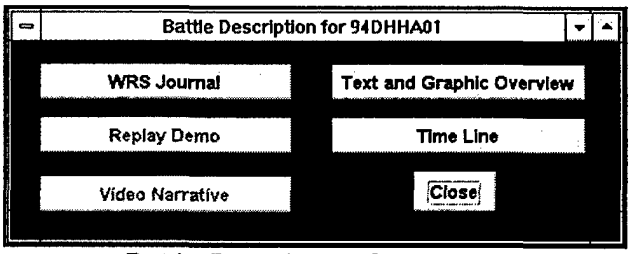


Figure 5 - Battle Description Screen

The **Text and Graphic Overview** button brings up relevant graphics and textual information which provide an overview of the WarFighter. The Overview and Timeline buttons make use of the same results window, which is described in section 2.4.1.

The **Timeline** button brings up graphics and textual information to provide a timeline of significant events for the selected WarFighter.

The **Close** button returns the user to the Information Control screen.

TimeLine/ Overview (w_desc)

The Timeline/ Overview screen (Figure 6) displays the relevant information for the option selected. Presented information includes rotation ID, document type, sub-document, section ID, start time, end time, BOS, and record manipulation buttons to scroll among the selected records.

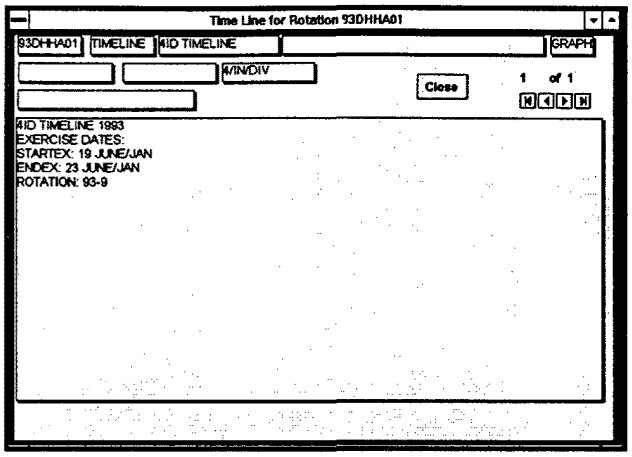


Figure 6 - Timeline/ Overview Display

Workstation Reporting System (w_wrs)

The WRS Screen shows data from the BCTP Workstation Reporting System. A sample screen is shown as Figure 7.

BOS Selection is a drop down list box which allows the user to select a specific Battlefield Operating System (BOS) or functional area. The records displayed will relate to the selected BOS.

Record manipulation buttons are used to step through the selected records one at a time, or to the first or last record.

The **Close** Button returns the user to the Battle Description screen.

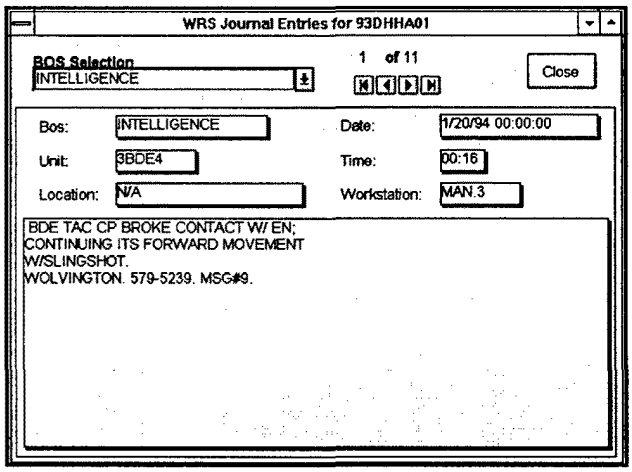


Figure 7 - WRS Journal Entries

Objective Data Control (w_objtop)

The objective data control is the lead-in screen for all objective data displays. The user must first select a single rotation and one side or the other. After these choices, the user may select an objective data report from the drop-down list. Choices are:

Combat Battle Statistics,
Battlefield Intelligence Collection Model,
Blue Air Activity,
Opfor Air Defense,
Artillery,
Destroyed Units, and
Blue Medical Units.

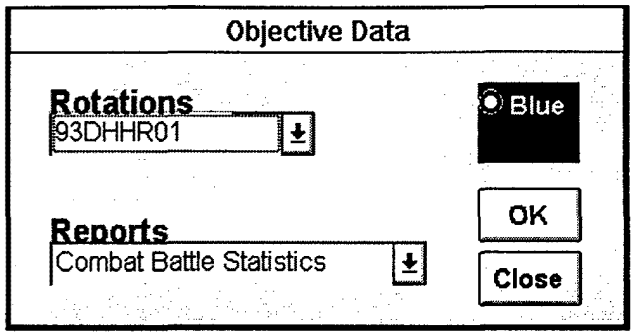


Figure 8 - Objective Data

Selection of a report brings up a specific screen with additional user options. Individual screens are documented in sections 2.5.1-2.5.7.

The screens share a similar user interface. When implemented, **Review** will allow on-screen review of the data, **Analyze** will start a spreadsheet application with the data pre-loaded., and **Close** will return to the Objective Data Control Screen.

None of the objective data reports is operational in the current implementation.

Combat Battle Statistics (w_cbstat)

The combat battle statistics screen allows the user to examine casualty data from any single cause or from all causes for a number of data elements.

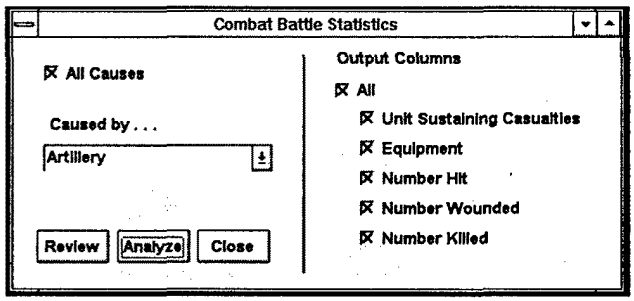


Figure 9 - Battle Statistics

Battlefield Intelligence Collection Model (w_bicm)

The Battlefield Intelligence Collection Model screen allows the user to review data from the BCTP's BICM. The user may select to review data for all detected unit types, or any specific type.

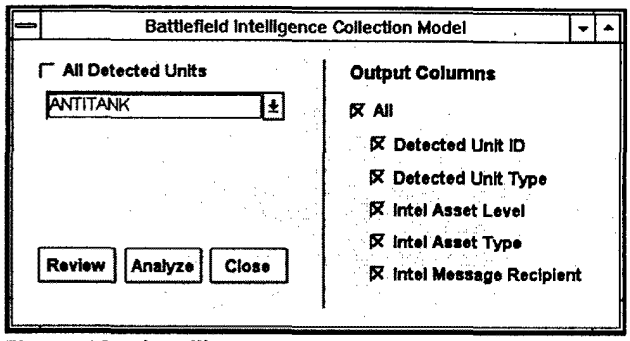


Figure 10 - Intelligence

Blue Air Activity (w_bair)

This screen allows the user to review outcomes of blue air missions.

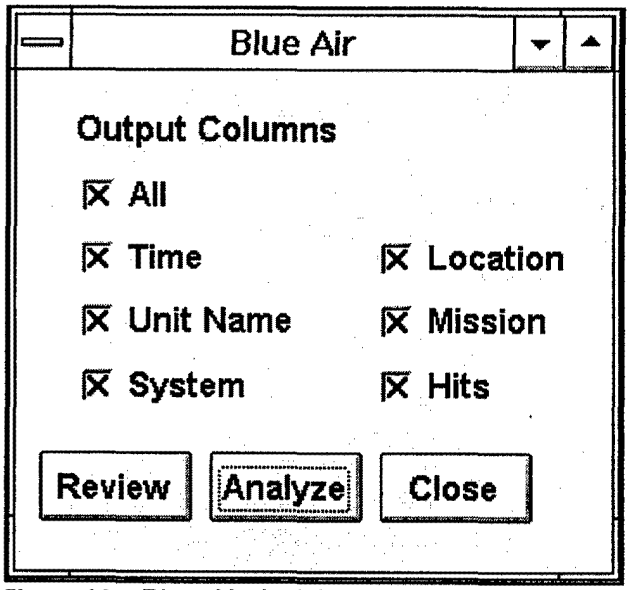


Figure 11 - Blue Air Activity

Opfor Air Defense (w_ada)

The Opfor Air Defense Screen allows the user to review/ analyze the results of opfor air defense missions for either automatic operation or self defense.

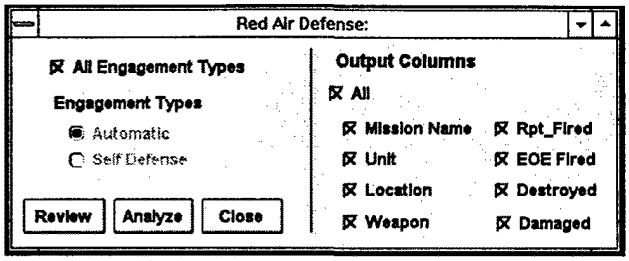


Figure 12 - OPFOR Air Defense

Artillery (w_artill)

The user may review the results of artillery engagements for any single ammunition type or for all ammo types.

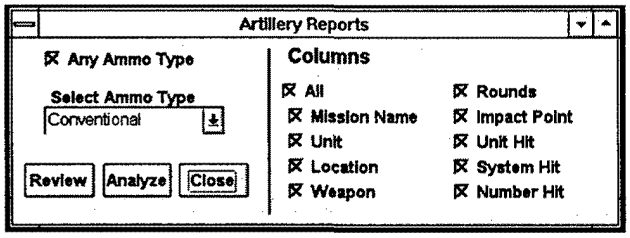


Figure 13 - Artillery

Destroyed Units (w_dest)

The destroyed unit screen displays statistics about blue units.

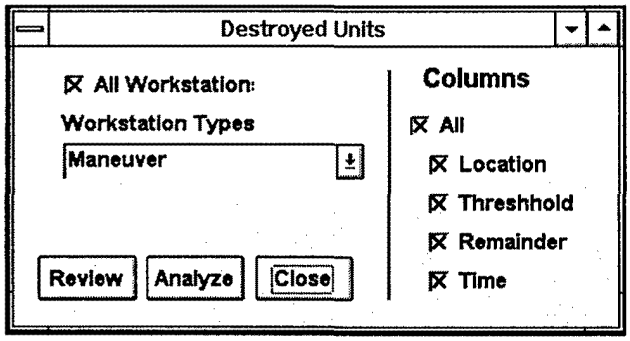


Figure 14 - Destroyed Units

Blue Medical Units (w_medics)

The Blue Medical Unit screen (Figure 15) makes information concerning blue medical units available to the user.

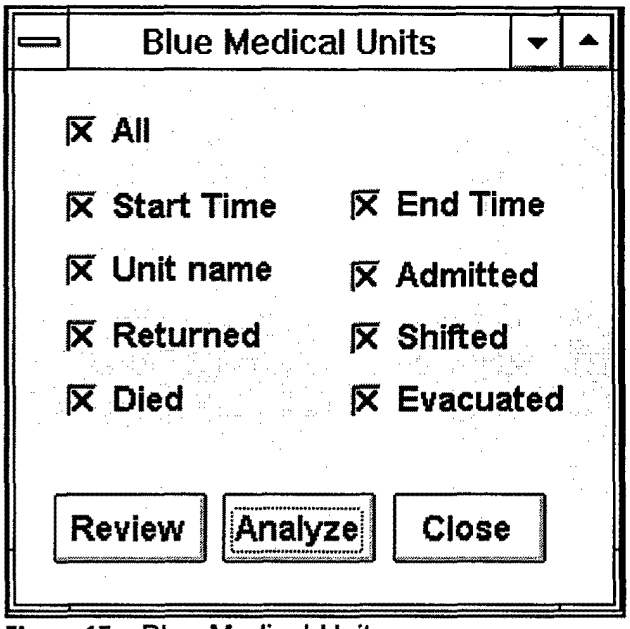


Figure 15 - Blue Medical Units

Performance Data (w_perf)

The Unit Performance Data screen, shown in Figure 16, is one of the key components of the BCTPdb user interface. It allows users to examine any combination of performance data across multiple BCTP rotations. The range of rotations is controlled by the Query Set on the Information Control Screen (Section 2.3). Data are selected by Battlefield Operating System (BOS), by specific document, by echelon, and by combining keywords for which the content of the products will be searched. Documents in the selection set include products generated by the BCTP as well as outside analyses of BCTP data, such as ACCES. Selected data may be a mixture of textual, graphical, and video.

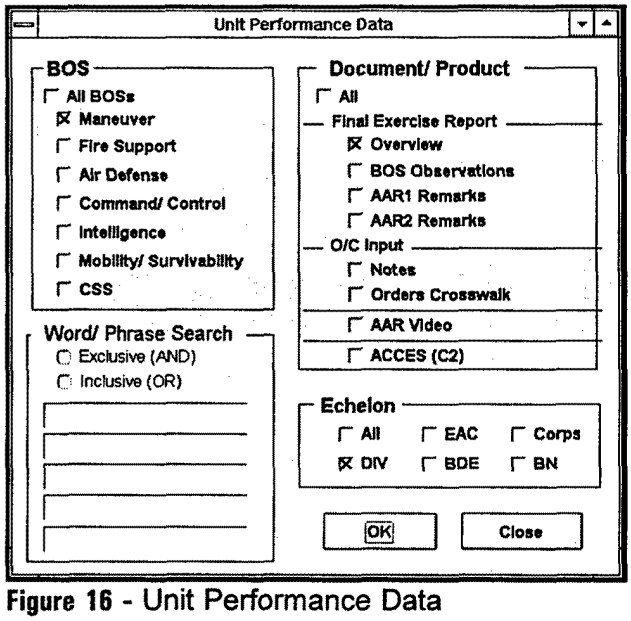


Figure 16 - Unit Performance Data

The Word/ Phrase search capability is not operational in the current implementation.

Data Display (w_d2)

The Data Display screen shown in Figure 17 is used for both the Unit Performance Data as well as Unit-Generated data (Section 2.7). It contains the same data as the Timeline/ Overview screen discussed in Section 2.4.1.

The capability to review video clips is not operational in the current implementation.

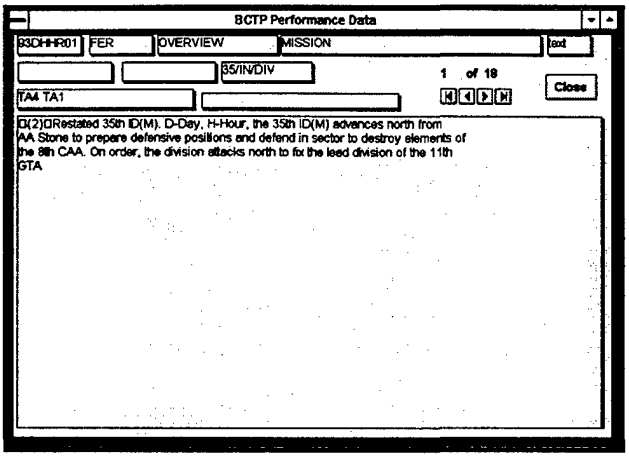


Figure 17 - Performance Data Display

Unit-Generated Data (w_unit)

The Unit-Generated Screen allows the users to select documents generated by participating units over multiple rotations. The range of rotations is controlled by the Query Set on the Information Control Screen (Section 2.3). Data are selected by Battlefield Operating System (BOS), by specific document, by echelon, and by combining keywords for which the content of the products will be searched. Documents in the selection set may include Op Orders, Fragos, Reports, Requests, and FSOPs.

The Word/ Phrase search capability is not operational in the current implementation.

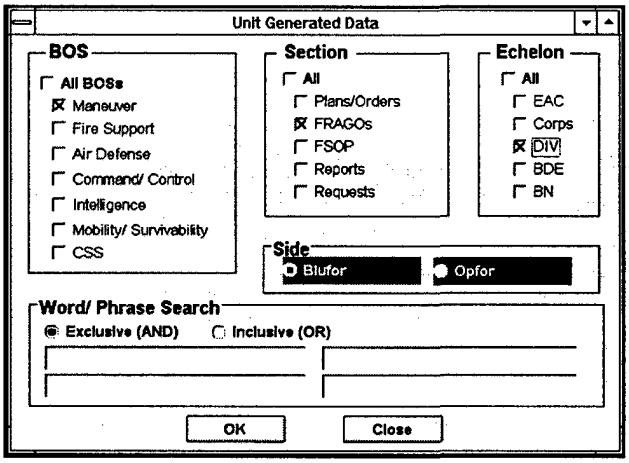


Figure 18 - Unit Generated Data

Rotational Information (w_rotin)

Basic information about any rotation may be reviewed from the Information Control Screen (Section 2.3) by selecting a single rotation in the Investigation Set and clicking on the **Rotational Information** button. The information displayed is shown in Figure 19.

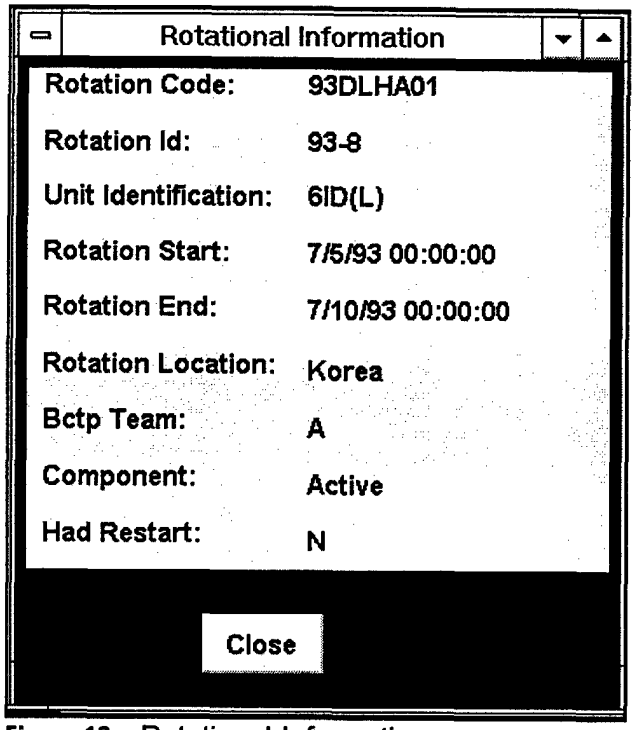


Figure 19 - Rotational Information

Limitations of the Current Implementation

The current implementation of the BCTPdb PowerBuilder is incomplete in several respects for the following reasons:

1. The speed of commercial telephone lines is too slow to provide practical database access, particularly when significant amounts of data must be retrieved. Telephone access is acceptable for applications when a small amount of data is returned, no matter how complicated the underlying query. An application such as the BCTPdb requires, by its very nature, that a large amount of data be returned to the user. For the BCTPdb application, for example, performance is acceptable when accessing the ROTATION table, but degrades when trying to use the DATA table(s) or any of the objective data tables. Current capability to use graphics is tortuously slow, and the ability to handle video is essentially non-existent.

2. The nature of the PowerBuilder/INFORMIX combination is restrictive. The earlier FoxPro generation of the BCTPdb contained essentially limitless blocks of text in memo fields, which are not supported by INFORMIX. Word search capabilities were well supported within memo fields. INFORMIX does support binary data types of unrestricted length, but Implementing the word/phrase search for those data types would require specialized coding. Likewise, the transfer of data from FoxPro to INFORMIX forced some accommodations.

3. INFORMIX does not easily facilitate bulk transfer of data to other forms. In the FoxPro implementation, transfer of table data into a spreadsheet was straightforward, primarily because the spreadsheet could directly read the .DBF table data. This is not true with the INFORMIX tables. While the INFORMIX SELECT statement is capable of converting data, making the jump from table data to a spreadsheet-compatible form would require extensive coding.

Test and Development Environment

Testing of the current BCTPdb version was limited to use of a local, WATCOM IV database which is identical in format and contents to the INFORMIX database on the Leavenworth DOIM HP server. Differences in syntax between WATCOM and INFORMIX were not investigated. Testing was accomplished over a Novell 4.1 network, with graphics storage mapped to the F: drive. The replay capability was revised to run from the F: drive as well.

List of Current Limitations

a. The word/phrase search capabilities for the Unit Performance Data and Unit-Generated Data Screens have not been implemented.

b. None of the objective data screens have been implemented.

c. The Trends button has not been implemented.

d. The Good Ideas button has not been implemented.

e. Within the data screens, the video capability is not implemented.

f. In order to transfer the data, some of the memo fields in the data table were truncated to match INFORMIX CHAR data type limits.

Deliverable Files

Contents of diskette:

Name of file/ directory	Description	In Screen ...
PB4	diskette subdirectory	
BCDB.PBL	File - PowerBuilder Screens and source code	
BCDB_W.INI	File - Initialization File	
BCDB	diskette subdirectory	
GI.BMP	Bitmap file ' Good Ideas' icon	Main Screen
RESEARCH.BMP	Bitmap file ' Research' icon	Main Screen
TRENDS.BMP	Bitmap file ' Trends' icon	Main Screen
WARNING.BMP	Bitmap file ' Warning'	Main Screen
CAMCORD.BMP	Bitmap file ' Graphic' icon	Data Display
FIRST1.BMP	Bitmap file record manipulation icon	Data Display
LAST1.BMP	Bitmap file record manipulation icon	Data Display
NEXT1.BMP	Bitmap file record manipulation icon	Data Display
PRIOR1.BMP	Bitmap file record manipulation icon	Data Display

Contract #: MDA 903-92-D-0075
Deliverable #: 0036-01-0036AH
November 1, 1995

Addendum to Data Directory

Jack A. Briscoe
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Dr. Zita M. Simutis, Director
Personnel and Training Research Division

Dr. Stanley Halpin, Contracting Officer's Representative



November 30, 1995

U. S. Army Research Institute

LIST OF TABLES

Table 1.0 ROTATION - Summary rotation information 2
Table 2.0 SUST - Sustain Comments 2
Table 3.0 OBJTREND - Objective trends 2
Table 4.0 REPORTS - Reports table is used internally by BCdb code 2
Table 5.0 BOB - Blueprint of the Battlefield Reference 3
Table 6.0 GI - Good Ideas 3
Table 7.0 TAAR - AAR Trends 3
Table 8.0 TFER - FER Trends 4
Table 9.0 B_ARTILL - Blue Combat Artillery Missions 4
Table 10.0 B_ATTRIT - Blue Combat Attrition 5
Table 11.0 B_MED - Blue Medical Report 5
Table 12.0 B_AIR - Blue Army Aviation Report 5
Table 13.0 CBSTAT - Combat Damage Report 6
Table 14.0 DATA_INDEX - Textual, Video, Graphics Index Information 6
Table 15.0 DATA_CONTENTS - Textual, Video, Graphics 6
Table 16.0 INTEL - Intel Reports 7
Table 17.0 R_ADARPT Red Air Defense Report 8
Table 18.0 R_ARTILL - Red Combat Artillery Missions 8
Table 19.0 WIPE_OUT - Destroyed Unit Report 9
Table 20.0 WRS - Workstation Reporting System 9

BCTPdb Contents

The table below reflects the current contents of the BCDB INFORMIX data base. The primary format changes involved changing MEMO-type fields to either VARCHAR or CHAR data types.

Table Name	Records	Problems/Comments/Format Changes
ROTATION	6	OK
SUST	90	OK
OBJTREND	8	OK
REPORTS	7	OK
BOB	267	OK
GI	1	MEMO-type DATA field was changed to CHARACTER*10000
TAAR	294	OK
TFER	1076	OK
B_ARTILL	6339	OK
B_ATTRIT	14735	OK
B_MED	607	OK
B_AIR	2082	Name changed from BLUE_AIR
CBSTAT	17709	OK
DATA_INDEX	2357	Derived from DATA table.
DATA_CONTENTS	2357	Derived from DATA table.
INTEL	2239	Subset of original 87430 records - includes only DETECTED_UNIT_TYPE=ENGR
R_ADARPT	2178	OK
R_ARTILL	4538	Subset of original 17772 records - includes only NUMBER_HIT>0
WIPE_OUT	2039	OK
WRS	591	Memo field COMMENTS changed to CHAR*5000

1.0 Table ROTATION - Summary rotation information

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	4
2	ROTATION_CODE	VARCHAR	10
3	ROTATION_ID	VARCHAR	10
4	UNIT_IDENTIFICATION	VARCHAR	20
5	ROTATION_START	DATE	8
6	ROTATION_END	DATE	8
7	ROTATION_LOCATION	VARCHAR	20
8	BCTP_TEAM	VARCHAR	10
9	COMPONENT	VARCHAR	10
10	UNIT_TYPE	VARCHAR	11
11	HAD_RESTART	CHAR	1

2.0 Table SUST - Sustain Comments

Field	Field Name	Type	Width
1	BOB_REFERENCE	VARCHAR	3
2	SUSTAIN	VARCHAR	30

3.0 Table OBJTREND - Objective trends

Field	Field Name	Type	Width
1	OBJECTIVE_TREND	VARCHAR	50
2	FILE_NAME	VARCHAR	10
3	BOS	VARCHAR	12
4	BOS_NUMBER	DOUBLE	

4.0 Table REPORTS - Reports table is used internally by BCdb code

Field	Field Name	Type	Width
1	REPORT_NAME	VARCHAR	20
2	TABLE_NAME	VARCHAR	10
3	REPORT_ENABLED	DOUBLE	

5.0 Table BOB - Blueprint of the Battlefield Reference

Field	Field Name	Type	Width
1	BOB_REFERENCE	VARCHAR	13
2	BOB__DESCRIPTION	VARCHAR	60

6.0 Table GI - Good Ideas

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	TYPE_OF_DATA	VARCHAR	20
3	DATA_NAME	VARCHAR	45
4	DATA_SOURCE	VARCHAR	15
5	SIDE	VARCHAR	1
6	MEDIUM	VARCHAR	10
7	FILENAME	VARCHAR	35
8	ORDER	INTEGER	3
9	ORGANIZATION	VARCHAR	15
10	TIME_SENT	VARCHAR	12
11	TIME_RECEIVED	VARCHAR	12
12	BOB_REFERENCE	VARCHAR	30
13	DATA	Memo	10

7.0 Table TAAR - AAR Trends

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	BOB_REFERENCE	VARCHAR	3
3	SUSTAIN	VARCHAR	30
4	IMPROVE	VARCHAR	30

8.0 Table TFER - FER Trends

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	BOB_REFERENCE	VARCHAR	3
3	EVALUATION	VARCHAR	1

9.0 Table B_ARTILL - Blue Combat Artillery Missions

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	MISSION	VARCHAR	10
3	MISSION_TYPE	VARCHAR	6
4	TIME	VARCHAR	6
5	UNIT	VARCHAR	15
6	LOCATION	VARCHAR	12
7	WEAPON	VARCHAR	15
8	AMMUNITION_TYPE	VARCHAR	9
9	ROUNDS	INTEGER	
10	MPOI	VARCHAR	11
11	UNIT_HIT	VARCHAR	20
12	SYSTEM_HIT	VARCHAR	15
13	NUMBER_HIT	INTEGER	

10.0 Table B_ATTRIT - Blue Combat Attrition

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	TIME_START	VARCHAR	6
3	TIME_END	VARCHAR	6
4	UNIT	VARCHAR	15
5	EQUIPMENT	VARCHAR	20
6	DESTROYED	INTEGER	
7	DAMAGED	INTEGER	

11.0 Table B_MED - Blue Medical Report

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	START_TIME	VARCHAR	6
3	END_TIME	VARCHAR	6
4	UNIT	VARCHAR	15
5	ADMITTED	INTEGER	
6	RETURNED	INTEGER	
7	SHIFTED	INTEGER	
8	DIED	INTEGER	
9	EVACUATED	INTEGER	

12.0 Table B_AIR - Blue Army Aviation Report

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	MISSION_NAME	VARCHAR	20
3	TIME	VARCHAR	6
4	LOCATION	VARCHAR	12
5	UNIT	VARCHAR	15
6	SYSTEM	VARCHAR	15
7	HITS	DOUBLE	

13.0 Table CBSTAT - Combat Damage Report

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	STATISTICS_TIME	VARCHAR	6
3	SIDE	VARCHAR	1
4	UNIT	VARCHAR	15
5	EQUIPMENT	VARCHAR	15
6	CAUSE	VARCHAR	15
7	NUMBER_HIT	INTEGER	
8	NUMBER_WOUNDED	INTEGER	
9	NUMBER_KILLED	INTEGER	

14.0 Table DATA_INDEX - Textual, Video, Graphics Index Information

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	SUB_DOCUMENT	VARCHAR	20
3	SECTION_TITLE	VARCHAR	45
4	DOCUMENT_TYPE	VARCHAR	15
5	SIDE	VARCHAR	1
6	MEDIUM	VARCHAR	10
7	REC_ORDER	INTEGER	
8	ORGANIZATION	VARCHAR	15
9	ANALYSTS_ EVAL	INTEGER	
10	BOB_REFERENCE	VARCHAR	30
11	SECTION_ID	VARCHAR	5
12	DOCUMENT_NUMBER	VARCHAR	3

15.0 Table DATA_CONTENTS - Textual, Video, Graphics

Field	Field Name	Type	Width
1	FILE_NAME	VARCHAR	35
2	DESTINATION	VARCHAR	15
3	TIME_SENT	VARCHAR	12
4	TIME_RECEIVED	VARCHAR	12
5	OPNL_ TIME_FRAME	VARCHAR	15
6	OPTYPE	VARCHAR	30
7	ANALYSTS_ EVAL	INTEGER	
8	TEXT_DATA	CHAR	15000

16.0 Table INTEL - Intel Reports

Field	Field_Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	SIDE	VARCHAR	1
3	DETECTED_UNIT	VARCHAR	10
4	DETECTED_UNIT_TYPE	VARCHAR	10
5	DETECTION_TIME	VARCHAR	6
6	ASSET_LEVEL	VARCHAR	2
7	ASSET_TYPE	VARCHAR	1
8	RECIPIENT	VARCHAR	10
9	PERCEPTION	VARCHAR	10
10	LOCATION	VARCHAR	11
11	ACTIVITY	VARCHAR	10
12	ORIENTATION	VARCHAR	2
13	PARENT	VARCHAR	12

17.0 Table R_ADARPT Red Air Defense Report

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	TIME	VARCHAR	6
3	AIRCRAFT	VARCHAR	9
4	MISSION	VARCHAR	15
5	UNIT	VARCHAR	15
6	WEAPON	VARCHAR	15
7	LOCATION	VARCHAR	12
8	ENGAGEMENT_ TYPE	VARCHAR	12
9	REPORTED _FIRED	INTEGER	
10	EOE_FIRED	INTEGER	
11	DESTROYED	INTEGER	
12	DAMAGED	INTEGER	

18.0 Table R_ARTILL - Red Combat Artillery Missions

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	MISSION	VARCHAR	10
3	MTYPE	VARCHAR	6
4	TIME	VARCHAR	6
5	UNIT	VARCHAR	15
6	LOCATION	VARCHAR	12
7	WEAPON	VARCHAR	15
8	AMMUNITION_TYPE	VARCHAR	9
9	ROUNDS	INTEGER	
10	MPOI	VARCHAR	11
11	UNIT_HIT	VARCHAR	20
12	SYSTEM_HIT	VARCHAR	15
13	NUMBER_HIT	INTEGER	

19.0 Table WIPE_OUT - Destroyed Unit Report

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	
2	UNIT	VARCHAR	15
3	STATION	VARCHAR	10
4	TIME	VARCHAR	6
5	LOCATION	VARCHAR	12
6	THRESHHOLD	DOUBLE	
7	REMAINDER	DOUBLE	

20.0 Table WRS - Workstation Reporting System

Field	Field Name	Type	Width
1	ROTATION_INDEX	INTEGER	4
2	BOS	VARCHAR	20
3	UNIT	VARCHAR	10
4	LOCATION	VARCHAR	25
5	DATE	DATE	
6	TIME	VARCHAR	5
7	WORKSTATION	VARCHAR	7
8	COMMENTS	CHAR	5000

Contract #: MDA 903-92-D-0075
Deliverable #: 0036-01-0036AJ
November 1, 1995

Addendum to Loading Guide

W. E. Walsh
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Dr. Zita M. Simutis, Director
Personnel and Training Research Division

Dr. Stanley Halpin, Contracting Officer's Representative



November 30, 1995

U. S. Army Research Institute

ADDENDUM TO THE LOADING GUIDE

INTRODUCTION

The need to improve command and control functioning, particularly at echelons above brigade, is a recognized concern of long standing within the Army. The BCTP is a training initiative that applies computer technology as a tool to train the war planning, war fighting and decision making skills at the division and corps levels. The BCTP Relational Database was designed to increase the accessibility and utility of data derived from BCTP WarFighter Exercises. The BCTP Database has the potential to provide a rich source of information for studying both short and long term Army higher-echelon command and control issues.

The Prototype BCTP Database was implemented initially as a FoxPro stand-alone application to run within the Microsoft Windows 3.1 environment on any IBM compatible 386 or 486 computer. The BCTP FoxPro application works in conjunction with several commercial off-the-shelf software packages, e.g. Quattro Pro, PaintShop Pro, and the Windows Notepad. Supporting documents for the source code files, User's Guide, Data Dictionary, and Loading Procedures Guide exist for the prototype development environment (FoxPro stand-alone).

The current stage in the evolution of the BCTP Database involves the transfer of the BCTP Database from a FoxPro stand-alone environment to a client/server configuration on a UNIX server within the Combat Training Center (CTC) Warrior Information Network (WIN) Database at Ft. Leavenworth. When the BCTP database is incorporated into the CTC WIN Database, the BCTP Database will possess an Informix back-end to support the BCTP database table structure and a PowerBuilder front-end to provide access to BCTP and CTC data. The integration of the Prototype BCTP Database into the CTC WIN environment will result in significant modifications to the database tables, the BCTP source code files, and the supporting documentation. These software changes and their impacts upon the table structure, user guidelines, and loading procedures for the BCTP Database will be reflected in the addenda to the BCTP Data Dictionary, User's Guide, and Loading Procedures Guide.

The purpose of the original Loading Procedures Guide (LPG) for the BCTP Database is to provide data loaders and analysts with a system reference for loading a relational database within the prototype development environment (FoxPro stand-alone). The LPG provides detailed descriptions of the methods and procedures which are required to perform relational database loading tasks. In addition, the BCTP LPG provides basic information about the database and the data which are entered into the database.

The purpose of this addendum to the Loading Procedures Guide is to identify the components of the original LPG which will require modification as a result of the conversion and transfer of the BCTP database to a client/server environment at Ft. Leavenworth, Kansas.

MODIFICATIONS TO THE LOADING PROCEDURES GUIDE

Section 1. Introduction

a. Application software components of the BCTP Loading System

The loading system that will be employed with the HP Server at Ft. Leavenworth will not use Microsoft FoxPro. All references to FoxPro icons, command windows, and dialog windows are to be deleted. Populating the Informix tables can be accomplished interactively (INSERT statements to **DB-Access** or **INFORMIX-SQL**), through an application program (in **INFORMIX-4GL** or another language), or through the conversion of the source data into a flat ASCII file. See page 9-29 of the Informix Guide to SQL, dated December 1991.

b. References to the host hardware configuration for the BCTP Database

The description of the hardware configuration must be expanded to include the HP network server at Ft. Leavenworth.

c. Categories of BCTP data files

BCTP database files are now designed to work with Informix SQL and the Database Server software which are identified on pages 1-16 and 1-17 of the Informix Guide to SQL, dated December 1991.

Section 2. Guided Tour

a. References to and discussion of the Loading Application software (MS FoxPro)

Replace references to MS FoxPro with Informix SQL.

b. References to and discussion of the Database User Application Software (MS FoxPro)

Replace references to MS FoxPro with Informix SQL.

Section 3. Pre-processing Procedures

a. Video tape preparation - UNKNOWN

b. Preparation of data tapes with objective data

1. Retrieval of the data from its source

   BCTP objective data are generated either on a SUN minicomputer or on the VAX which hosts the CBS model. The data must first be read from tape (SUN cartridge or VAX reel) into a host computer compatible with its original computer. Then the data must be transferred to a PC to transform the original data from its native format into a format which will facilitate its conversion into an Informix table.

2. Conversion tools for objective data

   When the source of the data is not compatible with Informix, you must find a way to convert it into a flat ASCII file; that is, a file of printable data in which each line represents the contents of one table row.

c. Procedures for saving text and graphics files - UNKNOWN

d. Creation of rotational data tables

   The rotational data tables will be created using Informix application software. Informix requires the appending of records rather than the creation of new tables for each rotation.

e. References to FoxPro application software

   Replace references to FoxPro application software with Informix-SQL.

Section 4. Loading Process for Rotational Data Tables

a. Procedures for scanned documents - file locations

   Replace references to FoxPro start-up screen with PowerBuilder interface screen. The procedures for loading scanned documents within an Informix environment are the same as the procedures employed in the FoxPro database.

b. Procedures for digital data

   When the data source is not compatible with Informix, the source file must be converted into a flat ASCII file - a file of printable data in which each line represents the contents of one table row. The conversion process will depend on the type of source file.

c. References to FoxPro start-up screen

Delete all references to FoxPro application software.

Section 5. Loading Process for Good Ideas and Trend Tables

References to FoxPro start-up screen

Delete all references to FoxPro application software.

Section 6. References

a. Add Informix User's Guide, December 1991.

b. Add Addendum to the BCTPdb Data Dictionary

c. Add BCTPdb Converted Data Structures (FoxPro to Informix)

d. Add Addendum to the BCTPdb User's Guide

e. Add BCTPdb PowerBuilder Graphical User Interface

f. Add Informix Guide to SQL, Tutorial, December 1991.

g. Add Informix Guide to SQL, Reference, December 1991.

h. Add Informix-OnLine Administrator's Guide, December 1991.

I. Add Informix-OnLine Conversion Guide, Version 5.1, December 1991.

j. Add Informix Error Messages, Version 7.1.

Appendices.

Appendix A - Setting Preferences

Delete references to FoxPro

Appendix B - Standard Loading Conventions

Delete references to individual FoxPro tables

Appendix C - Trouble-shooting

Address and telephone number of ARI-DoD Center point of contact

BDM Federal, Inc.
Attn: Bill Walsh or Jack Briscoe
DoD Center Monterey Bay
400 Gigling Road
Seaside, CA 93955-6771
(408) 393-8851

Appendix D - Data Types and Media

No Change

Appendix E - Archive Reference ID Codes

No Change

Glossary - No Change

Figures

a. Add Dialer Icon

b. Delete FoxPro 2.6 Icon

c. Modify Command Window Figure - replace FoxPro with Informix

d. Modify Open Dialog Window Figure - replace FoxPro with Informix

Contract #: MDA 903-92-D-0075
Deliverable #: 0036-01-0036AK
November 1, 1995

Addendum to the User's Guide

W. E. Walsh
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Dr. Zita M. Simutis, Director
Personnel and Training Research Division

Dr. Stanley Halpin, Contracting Officer's Representative



November 30, 1995

U. S. Army Research Institute

ADDENDUM TO THE USER'S GUIDE

INTRODUCTION

The need to improve command and control functioning, particularly at echelons above brigade, is a recognized concern of long standing within the Army. The BCTP is a training initiative that applies computer technology as a tool to train the war planning, war fighting and decision making skills at the division and corps levels. The BCTP Relational Database was designed to increase the accessibility and utility of data derived from BCTP WarFighter Exercises. The BCTP Database has the potential to provide a rich source of information for studying both short and long term Army higher-echelon command and control issues.

The Prototype BCTP Database was implemented initially as a FoxPro stand-alone application to run within the Microsoft Windows 3.1 environment on any IBM compatible 386 or 486 computer. The BCTP FoxPro application works in conjunction with several commercial off-the-shelf software packages, e.g. Quattro Pro, PaintShop Pro, and the Windows Notepad. Supporting documents for the source code files, User's Guide, Data Dictionary, and Loading Procedures Guide exist for the prototype development environment (FoxPro stand-alone).

The current stage in the evolution of the BCTP Database involves the transfer of the BCTP Database from a FoxPro stand-alone environment to a client/server configuration on a UNIX server within the Combat Training Center (CTC) Warrior Information Network (WIN) Database at Ft. Leavenworth. When the BCTP database is incorporated into the CTC WIN Database, the BCTP Database will possess an Informix back-end to support the BCTP database table structure and a PowerBuilder front-end to provide access to BCTP and CTC data. The integration of the Prototype BCTP Database into the CTC WIN environment will result in significant modifications to the database tables, the BCTP source code files, and the supporting documentation. These software changes and their impacts upon the table structure, user guidelines, and loading procedures for the BCTP Database will be reflected in the addenda to the BCTP Data Dictionary, User's Guide, and Loading Procedures Guide.

The purpose of the original User's Guide for the BCTP Database is to provide analysts and researchers with a system reference for accessing the BCTP database within the prototype development environment (FoxPro stand-alone). The User's Guide provides basic information about the database and the BCTP data elements. In addition, the User's Guide contains methods which researchers may use to analyze data derived from BCTP Warfighter Exercises.

The purpose of this addendum to the User's Guide is to identify the components of the original User's Guide which will require modification as a result of the conversion and transfer of the BCTP database to a client/server environment at Ft. Leavenworth, Kansas.

MODIFICATIONS TO THE USER'S GUIDE

Section 1. Introduction

a. Components of the BCTP database system

The BCTP database system will now include the HP server at Ft. Leavenworth, Informix application software, and PowerBuilder application software.

b. References to the FoxPro application software

Include references to PowerBuilder as the new application software for the user interface.

Section 2. Guided Tour

a. Start up instructions will include procedures for connecting to the DOIM server

UNKNOWN

b. References to and discussion of the Database User Application Software (MS FoxPro)

Include references to PowerBuilder as the new application software for the user interface.

Section 3. Research Tools and Techniques Illustrated

a. Viewing graphics with Paint Shop Pro application software - UNKNOWN

b. Procedures for viewing video within the BCTP database - UNKNOWN

c. References to FoxPro application software

Include references to PowerBuilder as the new application software for the user interface.

Appendices.

Appendix A - References

a. Add Informix User's Guide

b. Add addendum to the BCTPdb Data Dictionary

c. Add BCTPdb Converted Data Structures (FoxPro to Informix)

d. Add addendum to the Loading Procedures Guide for the BCTP database

e. Add BCTPdb PowerBuilder Graphical User Interface

f. Add Informix Guide to SQL, Tutorial, December 1991.

g. Add Informix Guide to SQL, Reference, December 1991.

h. Add Informix-OnLine Administrator's Guide, December 1991.

I. Add Informix-OnLine Conversion Guide, Version 5.1, December 1991.

j. Add Informix Error Messages, Version 7.1, December 1991.

Appendix B - Trouble-shooting

Address and telephone number of ARI-DoD Center point of contact

BDM Federal, Inc.
Attn: Bill Walsh or Jack Briscoe
DoD Center Monterey Bay
400 Gigling Road
Seaside, CA 93955-6771
(408) 393-8851

Appendix C - BCTP db Data Types and Media

No Change

Appendix D - BCTP db Search Logic

No Change

Glossary - No Change

CONTRACT #: MDA 903-92-D-0075
DELIVERABLE #: 0018-0018AH
OCTOBER 29, 1994

FINAL DATA DICTIONARY: BCTP PROTOTYPE DATABASE

Jack A. Briscoe
BDM Federal, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Jack Hiller, Director
Training Research Laboratory

Dr. Stanley Halpin, Contracting Officer's Representative



November 1, 1994

U.S. Army Research Institute

FINAL DATA DICTIONARY:
BCTP PROTOTYPE DATABASE

Page

I. Physical Structure 1

II. Relating BCTP Prototype Database Tables 2

III. BCTP Prototype Table Documentation 2

LIST OF TABLES

1. ROTATION.DBF 4
2. REPORTS.DBF 6
3. OBJTREND.DBF 7
3a. BOS/BOSNO 7
4. GI.DBF 8
5. TFER.DBF 11
6. TAAR.DBF 12
7. BOB.DBF 13
8. DATA 14
9. R_ADARPT 22
10. BLUE_AIR 24
11. B_ARTILL 26
12. B_MED 29
13. B_ATTRIT 31
14. CBSTAT 33
15. R_ARTILL 35
16. WIPE_OUT 38
17. INTEL 40
18. WRS.DBF 42

BCTP PROTOTYPE DATABASE
DATA DICTIONARY

I. PHYSICAL STRUCTURE

The BCTP Prototype Database is organized as a collection of related FoxPro/ Windows tables. The data may be stored either locally on a user's DOS/Windows 3.1 compatible computer, or in a Windows-compatible network in a read-only configuration.

Numeric and fixed-length character data are stored in Dbase-like files with an extension of DBF. Indeterminate-length text data are stored in memo records, which are written to files with an extension of FPT. The current sizes of both the .DBF and .FPT files are documented in this report.

Directory Structure	Tables
C:\BCDB	ROTATION REPORTS OBJTREND
C:\BCDB\SUPPORT	BOB GI TAAR TFER
C:\BCDB\(Rotation ID)	Rotation- specific Tables

Figure 1

The BCTP Prototype Database Data Dictionary is organized by the individual FoxPro tables which, in concert with the user interface, comprise the BCTP Prototype Database. Tables are stored in three levels of the file hierarchy as shown in Figure 1. The root BCDB directory contains three tables used to control program capabilities. The ROTATION table contains summary information pertaining to each rotation for which specific information is stored in the rotation-specific tables. The REPORTS table carries information about which objective tables are available, and the OBJTREND table contains the spreadsheet names for the objective trend displays. The tables in the C:\BCDB\SUPPORT subdirectory contain either reference data, as in the BOB (Blueprint of the Battlefield) table, or aggregated data which apply to entire set of BCTP data. The GI (Good Ideas) table includes analysts' suggestions on ways to improve the BCTP experience either in terms of training or data collection. The trends tables TAAR and TFER contain summary trend data aggregated from all the component rotation data. Rotation-specific tables, located in the C:\BCDB\(Rotation ID) subdirectory, contain data specific to individual BCTP rotations and are maintained in separate subdirectories.

The data dictionary contains a summary of all tables which have been created, and provides information concerning data element names and types, number of records per rotation, and gross size, and element descriptions. The Data table also contains references to external graphics files. The total number of external files referenced is shown. The separate

sections for each table are designed to be replaced as the prototype evolves over time into an operational product. Note that the sizes given are as of 10/1/94, and are subject to change as development and database loading activities continue.

II. RELATING BCTP PROTOTYPE DATABASE TABLES

The BCTP Database is a relational database and different BCTP Prototype Database tables may be related by matching identical or similar values in fields in the different tables. The table below reflects the fields which are most likely to be used in matching different tables. It is not necessary for fields in different tables to have identical names; the contents are matched. In cases where the SIDE field is enclosed in parentheses, the SIDE is determined by the name of the table, e.g. R_ADARPT.

Field Type Table Name	UNIT	TIME	LOCATION	SIDE	WEAPON
DATA	ORG, DESTINATIO	TIMESENT TIMERECVD		SIDE	
R_ADARPT	UNIT	TIME	LOCATION	(R)	WEAPON
BLUE_AIR	UNIT	TIME	LOCATION	(B)	SYSTEM
B_ARTILL	UNIT	TIME	LOCATION	(B)	WEAPON
B_MED	UNIT	STARTTIME ENDTIME		(B)	
B_ATTRIT	UNIT	TIMESTART TIMEEND		(B)	
CBSTAT	UNIT	STATTIME		SIDE	CAUSE
R_ARTILL	UNIT	TIME	LOCATION	(R)	WEAPON
WIPE_OUT	UNIT	TIME	LOCATION		
WRS	UNIT	TIME	LOCATION		
INTEL	DET_UNIT	DET_TIME	LOCATION	SIDE	

III. BCTP PROTOTYPE TABLE DOCUMENTATION

The sections below document the individual tables which make up the BCTP Prototype Database. The documentation includes a summary of the contents of each table, in terms of the number of records and the physical size, a short description of the table, and a description of each field in the table. When practical, the complete range of values for each field is presented for rotations currently represented in the BCTP database. When several similar items are present, the listings of values have been abbreviated by signifying the presence of multiple items by a lower case n, e.g. ANNEX n. In cases where the number of unique values is very large, the listing of values has been omitted.

Table 1 - ROTATION.DBF

Built from: Summary rotation information
Number of records : 3
Size in bytes: 586
Level : Root

Field	Field Name	Type	Width
1	ROTCODE	Character	10
2	ROTID	Character	10
3	ROTSTART	Date	8
4	ROTEND	Date	8
5	ROTLOC	Character	20
6	BCTPTEAM	Character	10
7	COMPONENT	Numeric	10
8	RESTART	Character	1
9	UNIT	Character	10
	Total Size		88

Table Description

The ROTATION table contains summary information describing each of the rotations loaded into the BCTPdb. It enables the users to select rotations which support their areas of interest.

Field: ROTID

ROTID is the BCTP nomenclature for the rotation, made up of the fiscal year followed by the serial number of the rotation within the fiscal year, e.g. 94-06.

Field: ROTSTART

ROTSTART is the starting date of the rotation's WarFighter exercise.

Field: ROTEND

ROTEND is the ending date of the rotation's WarFighter exercise.

Field: ROTCODE

ROTCODE is an 8-character identifier used within the BCTPdb to uniquely identify a BCTP rotation. It does not relate directly to any BCTP nomenclature and is made up to the following subfields:

Characters	Type	Description
1-2	Numeric	Fiscal Year rotation WFX took place e.g. 93
3	Alpha	Top echelon being trained (C=Corps; D=Division; B=Brigade)
4-5	Alpha	Type of unit (HH=Heavy; HL=Heavy/Light; LH=Light/Heavy)
6	Alpha	Component (A=Active; R=Reserve)
7-8	Numeric	Index indicating order of units of this type within the same fiscal year (01, 02 ...)

The ROTCODE is the key field for accessing rotation-specific data. It is also used to name the physical subdirectories which hold the data.

Field: ROTLOC

ROTLOC is the theater of operations the simulation is set in, e.g. Korea.

Field: BCTPTEAM

BCTPTEAM denotes the BCTP team assigned to conduct the rotation (A,B,C, or D)

Field: COMPONENT

COMPONENT identifies whether the participating unit is Active or Reserve Component.

Field: RESTART

RESTART signifies whether or not the CBS simulation was restarted during the WFX.

Field: UNIT

The unit identification of the participating unit.

Table 2 - REPORTS.DBF

Built from: Number of objective tables loaded
Number of records: 7
Size in bytes: 354
Level: Root

Field	Field Name	Type	Width
1	REPORT	Character	20
2	TABLENAME	Character	10
3	ENABLED	Character	1
	Total Size		32

Table Description

The REPORTS table is used within the BCTPdb to control which objective data tables are accessible to the user.

Field: REPORT

The REPORT field holds the description of the objective data table which may be accessed.

Field: TABLENAME

TABLENAME is the actual name of the FoxPro DBF file which will be accessed for objective data.

Field: ENABLED

ENABLED denotes whether the specific report has been activated (T) or not (F).

Table 3 - OBJTREND.DBF

Built from: Information concerning objective trends
Number of records : 8
Size in bytes: 762
Level : Root

Field	Field Name	Type	Width
1	OTREND	Character	50
2	FILENAME	Character	10
3	BOS	Character	12
4	BOSNO	Numeric	2
	Total Size		75

Table Description

The OBJTREND table contains a list of trends based on objective data which have been identified and included in the BCTPdb in the form of spreadsheets and associated graphs. The list of objective trends is keyed by Battlefield Operating System (BOS).

Field: OTREND

A description of the specific objective data trend.

Field: FILENAME

The filename of the Quattro Pro spreadsheet containing the trend data and associated trend graph.

Fields: BOS, BOSNO

Battlefield Operating System Identification, BOS Index. *See Table 3a.*

Table 3a - BOS/BOSNO

BOS	BOSNO	BOS	BOSNO
Maneuver	1	Intelligence	5
Fire Support	2	Engineer	6
ADA	3	CSS	7
C2	4		

Table 4 - GI.DBF

Built from: "Good Ideas"
Number of records : 3
DBF Size in bytes: 634
FPT Size in bytes: 3392
Level : Trends/ Good Ideas

Field	Field Name	Type	Width
1	ROTCODE	Character	8
2	TYPEOFDATA	Character	20
3	DATANAME	Character	45
4	DATASOURCE	Character	15
5	MEDIUM	Character	10
6	FILENAME	Character	35
7	ORDER	Numeric	3
8	ORG	Character	15
9	TIMESENT	Character	12
10	TIMERECVD	Character	12
11	BOBREF	Character	30
12	DATA	Memo	10
	Total Size		216

Table Description

The "Good Ideas" table contains a number of ideas generated by military analysts which are suggestions to improve the quality of training or data collection at the BCTP.

Field: ROTCODE

The 8-character BCTPdb rotation identifier.

Field: TYPEOFDATA

This field indicates the general category of the data record, such as a section of an Op Order, a FRAGO, or a specific product. TYPEOFDATA is used as a key field in several queries.

Field: DATANAME

This field refines the category specified by the TypeOfData field. It contains information such as the specific section title of unit products and a more detailed title for graphics. It is used as a key field.

Field: DATASOURCE

This field is intended to be the most general of the document qualifiers. It reflects the highest level of aggregation of documents/sections. It is used as a key field.

Field: MEDIUM

The MEDIUM field indicates the form of the referenced data. If MEDIUM is TEXT, then the textual information is stored in the memo DATA field. If MEDIUM is GRAPHIC, field FILENAME contains the fully qualified file name of the graphics file. For a MEDIUM of VIDEO, the FILENAME field contains a video tape identification.

Range of Values : TEXT
GRAPHIC
VIDEO

Field: FILENAME

The FILENAME field contains the fully-qualified file name of the graphic image identified by the remainder of the record, when MEDIUM is GRAPHIC. FILENAME contains a short video tape identification for records where MEDIUM is VIDEO.

Range of Values: Each graphic image consists of a unique file name; video clips contain a short video tape identification.

Field: ORDER

The ORDER field is a numeric field indicating the logical order of related records. ORDER may indicate time sequencing, as in graphics images, or ordering of document sections. ORDER applies to records with identical DATASOURCE values.

Field: ORG

The ORG field contains the organization (Unit) identification of the unit preparing the product in the case of unit-generated material or the identification of the unit being evaluated in the case of performance data.

Field: TIMESENT

The TIMESENT field is used to document the time some activity occurred, such as the send time of a message. It also used to show the start time of a video segment.

Range of Values: TimeSent may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

Field: TIMERECVD

The TIMERECVD field is used to document the time some activity occurred, such as the receive time of a message. It also used to show the end time of a video segment.

Range of Values : TIMERECVD may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

Field: BOBREF

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values : TAn

Note: *The prefix, "TA" represents a tactical function in the Blueprint of the Battlefield (BOB); "n" is a number which identifies the function's location in the BOB hierarchy.*

Field: DATA

The DATA field is a memo field which contains the text of the product or document, or a description of the graphic or video clip. In general, the DATA field contains the data of interest, as defined by the remainder of the record.

Range of Values: The range of values in the DATA field ranges from a few words to several pages of textual data.

Table 5 - TFER.DBF

Built from: Trend data gathered from the FER
Number of records : 310
DBF Size in bytes: 7260
Level : Trends/ Good Ideas

Field	Field Name	Type	Width
1	ROTCODE	Character	8
2	BOBREF	Character	13
3	EVAL	Character	1
	Total Size		23

Table Description:

The TFER table maintains a record of trends, by BOS, for all rotations loaded.

Field: ROTCODE

The 8-character BCTPdb rotation identifier.

Field: BOBREF

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values : TAn

Field: EVAL

Subjective trend evaluation (+,-, or blank)

Table 6 - TAAR.DBF

Built from: Trend data gathered from the AAR
Number of records : 99
DBF Size in bytes: 7290
Level : Trends/ Good Ideas

Field	Field Name	Type	Width
1	ROTCODE	Character	8
2	BOBREF	Character	3
3	SUSTAIN	Character	30
3	IMPROVE	Character	30
	Total Size		72

Table Description:

The TAAR table maintains a record of trends as documented in the After Action Reviews (AARs), by BOS, for all rotations loaded.

Field: ROTCODE

The 8-character BCTPdb rotation identifier.

Field: BOBREF

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values : TAn

Field: SUSTAIN

Specific areas for which performance is adequate and should be sustained.

Field: IMPROVE

Specific areas for which performance is should be improved..

Table 7 - BOB.DBF

Built from: TRADOC Pam 11-9 Blueprint of the Battlefield
Number of records : 267
DBF Size in bytes: 6506
FPT Size in bytes: 17664
Level : Trends/ Good Ideas

Field	Field Name	Type	Width
1	BOBREF	Character	13
2	BOBREFDESC	Memo	10
	Total Size		24

Table Description:

The BOB table is a short reference file containing the Blueprint of the Battlefield structure and descriptions.

Field: BOBREF

The Tactical Blueprint of the Battlefield item number in the form TA.n..., where n is the top-level BOS and the lower levels are components. The BOB table is carried out to five levels, e.g. TA.1.1.2.2.2.

Range of Values : TAn...

Field: BOBREFDESC

The Description of the related BoB function.

Table 8 - Data Table

Built from: Unit-generated products
Performance evaluations
CBS/AARS products
AAR Video

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	724	794
Size in bytes - DBF File	211,326	231,696
Size in bytes - Memo File	1,966,912	1,704,704
External File References	314	400

Field	Field Name	Type	Width
1	TYPEOFDATA	Character	20
2	DATANAME	Character	45
3	DATASOURCE	Character	15
4	SIDE	Character	1
5	MEDIUM	Character	10
6	FILENAME	Character	35
7	ORDER	Numeric	3
8	ORG	Character	15
9	DESTINATIO	Character	15
10	TIMESENT	Character	12
11	TIMERECVD	Character	12
12	OPNLTIMFRM	Character	15
13	OPTYPE	Character	30
14	ANALEVAL	Numeric	2
15	CP	Character	5
16	BOBREF	Character	30
17	BATTLELOC	Character	10
18	OEG	Character	5
19	DATA	Memo	10
		Total	291

Table Description

The DATA table contains most of the textual information accessed by the users. Seventeen of the nineteen fields are used to describe and/or categorize the data. The other fields point to the file which contains the data (Field FILENAME) or actually contain the

textual data (Field DATA).

Field: TYPEOFDATA

This field indicates the general category of the data record, such as a section of an Op Order, a FRAGO, or a specific product. TYPEOFDATA is used as a key field in several queries.

Range of values:

Rotation 93DHHR01	Rotation 93DHHA01
AAR1	AAR1
AAR2	AAR2
ADA	ANALYSIS
ANNEX n	ANNEX n
APPENDIX n	APPENDIX n
ATK GUID MATRIX	BattleObs
ATTACHMENT n	BosObs
Analysis	C2
BOSOBS	CHANGE n
C2	COMBAT INSTRUCTIONS
CHECKLIST	COMPARISON
COMBAT INSTR	DISCONNECTS
CSS	FRAGO n
Comparison	INTELLIGENCE
EX DIR UPDATE	O/C TEAM
EXECUTION MATRIX	OPFOR MANNING
FRAGO n	OPORD
HPT LIST	OPORD EXTRACT
INTELLIGENCE	OVERVIEW
MOB/SURVIVABILITY	SCENARIO
O/C TEAM	TAB n
OPFOR	UNIT
OPFOR TEAM	WARNO n
OPORD	
OTHER	
OVERVIEW	
Obs/Comments	
SAMPLE OVERLAY	
SCENARIO	
TAB n	
TEMPLATE	
UNIT	
VOL I CHAPTER 1	
VOL I CHAPTER 2	
VOL I CHAPTER 3	
VOL I CONTENTS	
VOL I COVE	

Field: DATASOURCE

This field is intended to be the most general of the document qualifiers. It reflects the highest level of aggregation of documents/sections. It is used as a key field.

Range of values:

Rotation 93DHHR01	Rotation 93DHHA01
AAR2	AJS
BDE OPORD	BDE OPORD
CAA OPORD	CNTROFF OPORD
CF OPORD	CORP OPORD
CORP OPORD	DEF OPORD
DIV OPORD	DIV OPORD
FER	FER
FRAGO n	FRAGO n
FSOP	ORDERS X-WALK
ORDERS X-WALK	REPORT
REPORT	WHITE CELL
REQUEST	
WHITE CELL	

Field: DATANAME

This field refines the category specified by the TYPEOFDATA field. It contains information such as the specific section title of unit products and a more detailed title for graphics. It is used as a key field.

Field: SIDE

The SIDE field is used as a qualifier for kinds of data which might apply to either the Opfor or Blue side, such as unit-generated data.

Range of Values : O or B

Field: MEDIUM

The MEDIUM field indicates the form of the referenced data. If MEDIUM is TEXT, then the textual information is stored in the memo DATA field. If MEDIUM is GRAPHIC, field FILENAME contains the fully qualified file name of the graphics file. For a MEDIUM of VIDEO, the FILENAME field contains a video tape identification.

Range of Values : TEXT
GRAPHIC
VIDEO

Field: FILENAME

The FILENAME field contains the fully-qualified file name of the graphic image identified by the remainder of the record, when MEDIUM is GRAPHIC. FILENAME contains a short video tape identification for records where MEDIUM is VIDEO.

Range of Values : Each graphic image consists of a unique file name; video clips contain a short video tape identification.

Field: ORDER

The ORDER field is a numeric field indicating the logical order of related records. ORDER may indicate time sequencing, as in graphics images, or ordering of document sections. ORDER applies to records with identical DATASOURCE values.

Field: ORG

The ORG field contains the organization (Unit) identification of the unit preparing the product in the case of unit-generated material or the identification of the unit being evaluated in the case of performance data.

Range of Values :

Rotation 93DHHR01	Rotation 93DHHA01
1-167/CAV/SQDN	1//BDE
10/ADA/BDE	11/KPA/CORP
149//BDE	116/CAV/BDE
35 /AVN/BDE	17/FA/BDE
35/AVN/BDE	3//BDE
35/IN/DIV	4/AVN/BDE
ORG	4/IN/DIV
67//BDE	8/MAR/BDE
69//BDE	DISCOM/BDE
8//CAA	III//CORP
CENTRAL FROUNT	
EAC	
OPFOR	
X//CORP	

Field: DESTINATIO

The DESTINATIO field is intended to document the recipient of a message or order. Its format is the same as the ORG field described above.

Range of values:

Rotation 93DHHR01	Rotation 93DHHA01
28/IN/DIV 35/IN/DIV 69//BDE X//CORP	(Not Used)

Field: TIMESENT

The TIMESENT field is used to document the time some activity occurred, such as the send time of a message. It also used to show the start time of a video segment.

Range of Values: TimeSent may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

Field: TIMERECVD

The TIMERECVD field is used to document the time some activity occurred, such as the receive time of a message. It also used to show the end time of a video segment.

Range of Values : TIMERECVD may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

Field: OPNLTIMFRM

The OPNLTIMFRM field is used to document the battle phase.

Range of Values:

Rotation 93DHHR01	Rotation 93DHHA01
CURRENT BATTLE	PHASE I
PHASE 1	PHASE I II
PHASE I	PHASE II
PHASE I/ II	PHASE III
PHASE I/ II/III	Phase I II III
PHASE I/II	
PHASE I/II/III	
PHASE II	
PHASE III	
Phase I/II	

Field: OPTYPE

OPTYPE documents the type of the operation to which the DATA record applies

Range of Values:

Rotation 93DHHR01	Rotation 93DHHA01
BHO	ATTACK
CATK	ATTACK / DEFEND
COUNTER ATTACK	ATTACK DEFEND
DEEP ATK	ATTACK DEFEND CATK
DEEP ATTACK	Attack
DEFEND	DEEP ATK
DEFEND D	DEFEND
DEFEND / ATTACK	DEFENSE
OPTYPE	Defend
MOVE	MOVE PASSAGE OF LINES
MOVE / DEFEND	ATTACK
MOVE / DEFEND / ATTACK	CONSOLIDATION
MOVE /DEFEND / CATK	PASSAGE OF LINES
MOVE/ DEFEND / CATK	
Move / Defend	
SCREEN	

Field: ANALEVAL

The ANALEVAL field is intended to allow an analyst to enter a qualitative evaluation of the information contained in the remainder of the record.. It is not currently used.

Field: CP

The CP field shows the command post to which information in the current record applies.

Range of Values : CP

Field: BOBREF

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values : TAn

Field: BATTLELOC

The BATTLELOC field indicates the relative position on the battlefield. It is not currently used.

Field: OEG

Operational Exposure Guidance. (Not currently used)

Field: DATA

The DATA field is a memo field which contains the text of the product or document, or a description of the graphic or video clip. In general, the DATA field contains the data of interest, as defined by the remainder of the record.

Range of Values: The range of values in the DATA field ranges from a few words to several pages of textual data.

Table 9 - R_ADARPT Table

Built from: WAARS Report ADARPT_R.OUT - Red Air Defense Report

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	822	1356
Size in bytes DBF/Memo	83,408	137,342

Field	Field Name	Type	Width
1	TIME	Character	6
2	AIRCRAFT	Character	9
3	MISSION	Character	15
4	UNIT	Character	15
5	WEAPON	Character	15
6	LOCATION	Character	12
7	ENGTYPE	Character	12
8	RPT_FIRED	Numeric	4
9	EOE_FIRED	Numeric	4
10	DESTROYED	Numeric	4
11	DAMAGED	Numeric	4
	Total Size		101

Table Description:

The R_ADARPT table holds information concerning Opfor air defense missions.

Field Name : TIME

The time in DDHHMM format that the Opfor artillery mission was initiated.

Field Name : AIRCRAFT

The type of aircraft (if any) destroyed or damaged.

Range of Values: A-10, AH-1, AH-64, CH-53D, EH-60, F-16, F-4G, OH-58, OH-58D, RF-4, UH-1, UH-60

Field Name : MISSION

Unique mission identification for the Opfor ADA mission.

Field Name : UNIT

Opfor ADA unit identification.

Field Name : WEAPON

Opfor ADA weapon type.

Range of Values: 100MM.AAA, 14.5MM.AAA.ZPU2,
14.5MM.AAA.ZPU4, 37MM.AAA(M1939),
57MM.AAA(S-60), 57MM.AAA(ZSU),
SA-16(GIMLET), SA-2(GUIDELINE), SA-3(GOA), SA-7B(GRAIL)

Field Name : LOCATION

Location Blue aircraft was destroyed or damaged.

Field Name : ENGTYPE

Opfor engagement type.

Range of Values: Automatic, Self_Defense

Field Name : RPT_FIRED

Number of rounds/missiles fired during a mission which resulted in aircraft damage or destruction.

Field Name : EOE_FIRED

Number of rounds/missiles fired during a mission which resulted in no aircraft damage or destruction.

Field Name : DESTROYED

Number of aircraft destroyed.

Field Name : DAMAGED

Number of aircraft damaged.

Table 10 - BLUE_AIR Table

Built from: WAARS Report ARMY_AIR_B.OUT - Blue Army Aviation Report

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	578	3595
Size in bytes DBF/Memo	42,420	262,661

Field	Field Name	Type	Width
1	MISSION	Character	20
2	TIME	Character	6
3	LOCATION	Character	12
4	UNIT	Character	15
5	SYSTEM	Character	15
6	HITS	Numeric	4
	Total Size		73

Table Description:

The BLUE_AIR table describes blufor air missions and their results.

Field Name : MISSION

Unique mission identification for the Blue Air mission.

Field Name : TIME

The time in DDHHMM format that the Blue Air mission was initiated.

Field Name : LOCATION

Location Opfor system was destroyed or damaged.

Field Name : UNIT

Blue Air unit identification. Unit designation may indicate type of air asset employed.

Field Name: System

Opfor systems hit by Blue Air.

Range of Values:

Rotation 93DHHR01	Rotation 93DHHA01
100MM.AAA	100MM.AAA
BMP-2	107MM.MRL(TYP63
BMP-BMD	120MM.MTR
BRDM	122.MRL.BM21-11
BTR.60	122MM.D74-1981
BTR.70-73-80	122MM.HOW(M-30)
COM.SUP.SYS.C3	122MM.HOW.M1977
DISMNTD.TROOPS	130MM.FG(M-46)
HOT.SHOT	130MM.GUN.M1975
HQ.SVC.SPT.PERS	14.5MM.AAA.ZPU2
No	14.5MM.AAA.ZPU4
SA-13(GOPHER)	152MM.G-H.M1937
SA-15(TOR)	152MM.HOW.M1974
SA-16(GIMLET)	203MM.KOKSAN
SPAAG.2S6	240MM.MRL.M1985
TANK.T-80.HA	37MM.AAA(M1939)
TRK.LRG	57MM.AAA(S-60)
TRK.MED	57MM.AAA(ZSU)
TRK.TANKER	60-82MM.MTR
	76MM.ATG.M1942
	APC.M1973
	ATGM(AT-2)
	ATGM(AT-3-4)
	BRDM
	BTR.60
	DISMNTD.TROOPS
	EARTH.MOVER
	FIRECAN
	HQ.SVC.SPT.PERS
	No
	REAR.AREA.TROOP
	SA-16(GIMLET)
	SYSTEM
	SA-2(GUIDELINE)

Field Name : HITS

Number of targets hit.

Table 11 - B_ARTILL

Built from: WAARS Report BLU_ARTILLERY_MISSIONS.OUT - Blue Combat Artillery Missions

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	3146	9864
Size in bytes - DBF File	403,106	1,263,010

Field	Field Name	Type	Width
1	MISSION	Character	10
2	MTYPE	Character	6
3	TIME	Character	6
4	UNIT	Character	15
5	LOCATION	Character	12
6	WEAPON	Character	15
7	AMMO	Character	9
8	ROUNDS	Numeric	4
9	MPOI	Character	11
10	UNITHIT	Character	20
11	SYSTEMHIT	Character	15
12	NUMBERHIT	Numeric	4
	Total Size		128

Table Description:

The B_ARTILL table describes blue artillery missions and their results.

Field Name : MISSION

Unique mission identification for the Blufor artillery mission.

Field Name: MTYPE

Type of artillery mission.

Range of Values :

Value	Description
COUNTE	Counterfire mission
FASCAM	Scatterable Mines
GUIDED	Guided munitions
SEAD A	Suppress Enemy Air Defense
OTHERS	All others

Field Name : TIME

The time in DDHHMM format that the Blufor artillery mission was initiated.

Field Name : UNIT

Blue artillery unit identification.

Field Name : LOCATION

Location of Blue artillery battery.

Field Name : WEAPON

Blue artillery weapon type.

Range of Values: 152MM.GUN(2S5), 155MM.H.SP, 155MM.H.TOWED, 203MM.H.SP,MLRS, PALLADIN

Field Name: AMMO

Type of ammunition used in the Blue artillery mission.

Range of Values: AMMO, Conventio, Improved, Mines, Precision

Field Name : ROUNDS

Number of artillery rounds fired.

Field Name: MPOI

Location of the main point of impact.

Field Name: UNITHIT

Identification of the Opfor unit hit by blue artillery.

Field Name: SYSTEMHIT

Opfor system hit by Blue artillery.

Field Name: NUMBERHIT

Number of Blufor artillery hits on Opfor system.

Table 12 - B_MED Table

Built from: WAARS Report BLU_MEDICAL.OUT - Blue Medical Report

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	154	454
Size in bytes - DBF File	7,682	22,034

Field	Field Name	Type	Width
1	STARTTIME	Character	6
2	ENDTIME	Character	6
3	UNIT	Character	15
4	ADMITTED	Numeric	4
5	RETURNED	Numeric	4
6	SHIFTED	Numeric	4
7	DIED	Numeric	4
8	EVACUATED	Numeric	4
	Total Size		48

Table Description:

The B_MED table details activities of blue medical units.

Field Name : STARTTIME

Start time of 4 hour status period.

Field Name : ENDTIME

End time of 4 hour status period.

Field Name : UNIT

Blue medical unit identification.

Field Name : ADMITTED

Number of patients admitted to the medical unit.

Field Name : RETURNED

Number of patients returned to duty from the medical unit.

Field Name : SHIFTED

Number of patients shifted from the medical unit to another.

Field Name : DIED

Number of patients that died at the medical unit.

Field Name : EVACUATED

Number of patients evacuated from the medical unit.

Table 13 - B_ATTRIT Table

Built from: WAARS Report CBATTR_BLU.OUT - Blue Combat Attrition

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	5180	9555
Size in bytes DBF/Memo	290,306	535,306

Field	Field Name	Type	Width
1	TIMESTART	Character	6
2	TIMEEND	Character	6
3	UNIT	Character	15
4	EQUIPMENT	Character	20
5	DESTROYED	Numeric	4
6	DAMAGED	Numeric	4
	Total Size		56

Table Description:

The B_ATTRIT table documents blufor attrition throughout the WFX.

Field Name : TIMESTART

Start time of 4 hour status period.

Field Name : TIMEEND

End time of 4 hour status period.

Field Name : UNIT

Identification of blue unit from which equipment was damaged/ destroyed.

Field Name: EQUIPMENT

Type of Blue equipment destroyed or damaged.

Range of Values:

Rotation 93DHHR01		Rotation 93DHHA01	
155MM.H.SP	MINE.CLEARING	155MM.H.SP	MBT.M1.A1
203MM.H.SP		155MM.H.TOWED	MBT.M1A1.HA
4.2.MTR	MINE.LAYING	4.2.MTR	MINE.CLEARING
ACQ.RADAR		60MM.MTR	MINE.LAYING
APC.113	MK19	81MM.MTR	MK19
AVLB	MLRS	ACE	MLRS
CARRIER.ARM	PALLADIN	ACQ.RADAR	PALLADIN
CF.RADAR.Q-36	POD.POL.SM	APC.113	POD.POL.MED
CF.RADAR.Q-37	SEMI.34T	AVLB	POD.POL.SM
CHAPARRAL	SEMI.VAN	CARRIER.ARM	SEMI.12T
COM.SUP.SYS.C3	STINGER	CF.RADAR.Q-36	SEMI.22T
DRAGON	TANKER.SM	CFV	SEMI.34T
EARTH.MOVERS		CHAPARRAL	SEMI.VAN
ITV	TRACKED.RECOV	COM.SUP.SYS.C3	STINGER
LIGHT.TRUCK.4X4		DRAGON	TANKER.5K.GAL
MBT.M60	TRUCK.10T	EARTH.MOVERS	TANKER.SM
	TRUCK.2-1/2T	HAWK	TOW.LAUNCHER
	TRUCK.5T	HAWK.FC.RADAR	TRACKED.RECOV
	WHEELED.WRECK	IFV/LAV	TRUCK.10T
	ER	ITV	TRUCK.2-1/2T
		LAV-25	TRUCK.5T
		LIGHT.TRUCK.4X4	WHEELED.WRECKER

Field Name: DESTROYED

Number of units of equipment destroyed during the time period.

Field Name: DAMAGED

Number of units of equipment damaged during the time period.

Table 14 - CBSTAT

Built from WAARS Reports: COMBAT_DAMAGE_B.OUT, COMBAT_DAMAGE_R.OUT - Blue/Red Combat Damage Report

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	4201	13,508
Size in bytes - DBF File	260,752	837,786

Field	Field Name	Type	Width
1	STATTIME	Character	6
2	SIDE	Character	1
3	UNIT	Character	15
4	EQUIPMENT	Character	15
5	CAUSE	Character	15
6	NOHIT	Numeric	3
7	NOWOUND	Numeric	3
8	NOKILL	Numeric	3
	Total Size		62

Table Description:

The CBSTAT table describes combat activity for both sides.

Field Name: STATTIME

End time of four hour block for which data apply.

Field Name: SIDE

Side sustaining casualties.

Range of Values : R or B

Field Name: UNIT

Unit sustaining casualties.

Field Name: EQUIPMENT

Type of equipment sustaining casualties.

Field Name: CAUSE

Cause of casualty.

Range of Values: Artillery, air_attack, contact, mines, OVERRUN, ETT's, transit

Field Name: NOHIT

Number personnel hit.

Field Name: NOWOUND

Number personnel wounded.

Field Name: NOKILL

Number personnel killed.

Table 15 - R_ARTILL

Built from: WAARS Report RED_ARTILLERY_MISSIONS.OUT - Red Artillery Missions

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	5708	12064
Size in bytes DBF/Memo	403,106	1,263,010

Field	Field Name	Type	Width
1	MISSION	Character	10
2	MTYPE	Character	6
3	TIME	Character	6
4	UNIT	Character	15
5	LOCATION	Character	12
6	WEAPON	Character	15
7	AMMO	Character	9
8	ROUNDS	Numeric	4
9	MPOI	Character	11
10	UNITHIT	Character	20
11	SYSTEMHIT	Character	15
12	NUMBERHIT	Numeric	4
	Total Size		128

Table Description:

The R_ARTILL table describes opfor artillery missions and their results.

Field Name : MISSION

Unique mission identification for the Opfor artillery mission.

Field Name: MTYPE

Type of artillery mission.

Range of Values :

Value	Description
COUNTE	Counterfire mission
FASCAM	Scatterable Mines
GUIDED	Guided munitions
SEAD A	Suppress Enemy Air Defense
OTHERS	All others

Field Name: TIME

The time in DDHHMM format that the Opfor artillery mission was initiated.

Field Name: UNIT

Blue artillery unit identification.

Field Name: LOCATION

Location of Blue artillery battery.

Field Name: WEAPON

Blue artillery weapon type.

Range of Values:

122MM.HOW(2S1)
122MM.HOW(D-30)
122MM.MRL(BM21)
152MM.G-H(2A65)
152MM.G-H(2S19)
152MM.GUN(2S5)
152MM.HOW(2A36)
152MM.HOW(2S3)
203MM.GUN(2S7)
220MM.MRL(BM22)
300MM.MRL(9A52)
SS-1C
SS-21

Field Name: AMMO

Type of ammunition used in the Blue artillery mission.

Range of Values: AMMO, Conventio, Improved, Mines, Precision

Field Name : ROUNDS

Number of artillery rounds fired.

Field Name: MPOI

Location of the main point of impact.

Field Name: UNITHIT

Identification of the Opfor unit hit by blue artillery.

Field Name: SYSTEMHIT

Opfor system hit by Blue artillery.

Field Name: NUMBERHIT

Number of Bluefor artillery hits on Opfor system.

Table 16 - WIPE_OUT Table

Built from: WAARS Report WIPED_OUT.OUT Destroyed Unit Report

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	1076	963
Size in bytes - DBF File	60,482	54,154

Field	Field Name	Type	Width	Dec
1	UNIT	Character	15	
2	STATION	Character	10	
3	TIME	Character	6	
4	LOCATION	Character	12	
5	THRESHHOLD	Numeric	6	3
6	REMAINDER	Numeric	6	3
	Total Size		56	

Table Description:

The WIPE_OUT table documents when and where blue units are considered wiped out.

Field Name : UNIT

Identification of the unit which was destroyed.

Field Name: STATION

Workstation which reported the unit destruction.

Field Name : TIME

The time in DDHHMM format that the unit was destroyed.

Field Name : LOCATION

Location unit was destroyed.

Field Name : THRESHHOLD

Portion of total unit below which unit is considered destroyed.

Field Name : REMAINDER

Portion of unit remaining after destruction.

Table 17 - INTEL Table

Built from: WAARS Report BLUE_SORTn.DAT

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	26.902	60,530
Size in bytes - DBF File	2,313,990	5,205,998

Field	Field Name	Type	Width
1	SIDE	Character	1
2	DET_UNIT	Character	10
3	DET_UN_TYP	Character	10
4	DET_TIME	Character	6
5	ASSET_LEVE	Character	2
6	ASSET_TYPE	Character	1
7	RECIPIENT	Character	10
8	PERCEPT	Character	10
9	LOCATION	Character	11
10	ACTIVITY	Character	10
11	ORIENT	Character	2
12	PARENT	Character	12
	Total Size		86

Table Description:

The INTEL table summarizes intel received by both sides, in terms of when intel reports are recieved, the units detected, the location, and the perceived activity.

Field Name: SIDE

Always B. This table contains only Bluefor data.

Field Name: DET_UNIT

Identification of the unit detected by the intel asset.

Field Name: DET_UN_TYP

Type of unit detected.

Field Name: DET_TIME

Time of detection.

Field Name: ASSET_LEVE

Echelon/ level of intel asset.

Range of Values: AV, CA, CO, DG, DV, EA, NA, SO

Field Name: ASSET_TYPE

Type of intel asset.

Field Name: RECIPIENT

Recipient of intel information.

Field Name : PERCEPT

Perceived Identification of detected unit.

Field Name: LOCATION

Actual location of detected unit.

Field Name: ACTIVITY

Type of mission the detected unit was engaged in.

Range of Values: ATTACK, DEFEND, ENGAGE, MVMT, WTHDR, UNK, NEUTED

Field Name: ORIENT

Orientation.

Field Name: PARENT

Parent unit of detected unit.

Table 18 - WRS.DBF

Built from: WAARS Report WRS_JOURNAL.DAT
Level : Rotation-specific

	Rotation 93DHHR01	Rotation 93DHHA01
Number of Records	214	377
Size in bytes - DBF File	18662	32,680
Size in bytes - Memo File	48,256	93504

Field	Field Name	Type	Width
1	BOS	Character	20
2	UNIT	Character	10
3	LOCATION	Character	25
4	DATE	Date	8
5	TIME	Character	5
6	WORKSTATIO	Character	7
7	COMMENTS	Memo	10
	Total Size		86

Table Description:

The WRS table holds journal entries of the workstation operators and OCs, keyed by functional area and time.

Field Name: BOS

Either Battlefield Operating System (BOS) or other functional area.

Range of values:

Rotation 93DHHR01	Rotation 93DHHA01
COMMAND&CONTROL	AIRDEFENSE
FIRESUPPORT	COMMAND&CONTROL
MANEUVER	COMMAND&CONTROL/SUST
MANEUVER-ARMYAVIATIO	FIRESUPPORT
MOBILITY/SURVIVABILI	INTELLIGENCE
SUSTAINMENT	MANEUVER
	MANEUVER-ARMYAVIATIO
	MOBILITY/SURVIVABILI
	SUSTAINMENT

Field Name: UNIT

The name of the unit to which the WRS comments pertain.

Field Name: LOCATION

Grid coordinates locating incident being reported.

Field Name: DATE

Field Name: TIME

HH:MM

Field Name: WORKSTATIO

Workstation ID for analyst making the entry

Field Name: COMMENTS

The actual comments of the workstation operator - in a memo field.

CONTRACT #: MDA 903-92-D-0075
DELIVERABLE #: 0018-0018AG
AUGUST 29,1994

FINAL LOADING PROCEDURES GUIDE: BATTLE COMMAND TRAINING PROGRAM RELATIONAL DATABASE (BCTPDB)

VERSION PROTOTYPE 3

Terry P. Bartkoski
PRC, Inc.

Submitted by: Mr. Michael R. McCluskey, Acting Chief
Unit-Collective Training Research Unit
and Jack Hiller, Director
Training Research Laboratory

Dr. Stanley Halpin, Contracting Officer's Representative



September 30, 1994

U.S. Army Research Institute

FINAL LOADING PROCEDURES GUIDE
TABLE OF CONTENTS

SECTION 1

I. Introduction 1-1
A. How to Use This Guide 1-1
B. Components 1-3
C. Conventions 1-5
1. General Conventions 1-5
2. Keyboard Conventions 1-6
3. Mouse Conventions 1-7

SECTION 2

II. Guided Tour 2-1
A. Pre-Processing Applications 2-2
B. Loading and Database Applications 2-4

SECTION 3

III. Pre-Processing Procedures 3-1
A. Planning: Sorting/Indexing 3-2
B. Loading the Scanner 3-4
1. Loading Documents using the ADF 3-4
2. Loading Single Documents 3-5
C. Scanning Techniques for Text Files 3-6
D. Scanning Techniques for Graphic Files 3-11
E. Video Preparation 3-18
F. Data Tape Preparation 3-24
G. Saving Files 3-28
H. Creating Rotation Data Tables 3-30

SECTION 4

IV. The Loading Process for Rotation Data Tables 4-1
A. Loading Procedures for Scanned Documents 4-3
B. Loading Procedures for Digital Data 4-8
1. Digital Tapes 4-8
2. Floppy Disks 4-9
3. *Loading Procedures for Video Tapes* . . . . . TBP

SECTION 5

V. The Loading Process for Good Ideas and Trend Tables 5-1

A. Loading Procedures for Good Ideas 5-2
B. Loading Procedures for Trends 5-6
1. Performance Trends (AAR Trends) 5-6
2. FER Trends 5-9
3. *Objective Data Trends* . . . . . TBP

SECTION 6

VI. References 6-1

APPENDICES

APPENDIX A - Setting Preferences A-1

APPENDIX B - Standard Loading Conventions B-1

APPENDIX C - Trouble Shooting C-1

APPENDIX D - Data Types & Media D-1

APPENDIX E - Archive Reference ID Codes E-1

GLOSSARY GLOS-1

USER NOTES USER-1

IMPROVEMENT SUGGESTIONS . . . . .

List of Figures

Figure		Page
2-1	TextBridge OCR icon	2-2
2-2	Norton Desktop Editor icon	2-2
2-3	Paint Shop Pro icon	2-2
2-4	Loadvdo icon	2-3
2-5	WordPerfect icon	2-3
2-6	FoxPro 2.6 icon	2-4
2-7	BCTPdb icon	2-4
3-1	Interface Screen for TextBridge	3-6
3-2	Preference Screen for TextBridge	3-7
3-3	Scanner Settings Screen for TextBridge	3-8
3-4	Add More Pages Screen for TextBridge	3-8
3-5	Save As Screen for TextBridge	3-9
3-6	Interface Screen for Paint Shop Pro	3-11
3-7	File Pull down Window for Paint Shop Pro	3-12
3-8	Interface Screen for Envisions Scanner	3-12
3-9	Preview option for Envisions	3-14
3-10	Scanned Image displayed in Interface Screen for Paint Shop Pro	3-14
3-11	Paint Shop Pro Tools box	3-15
3-12	Colors Pull down Window for Paint Shop Pro	3-16
3-13	Save As Screen for Paint Shop Pro	3-17
3-14	VCR Tape Reference Identifier Screen	3-19
3-15	Mark VCR Tape Topics Screen	3-20
3-16	VCR Tape Comments Screen	3-22
3-17	Data Tape Loading steps	3-24
3-18	Directory/sub-directory/file structure for BCTPdb	3-28
3-19	Open dialog window for FoxPro	3-30

Figure		Page
3-20	Rotation Table for BCTPdb	3-31
3-21	Command Window from FoxPro	3-33
4-1	Open dialog window for FoxPro	4-3
4-2	Rotation Data Table - Screen 1	4-4
4-3	Rotation Data Table - Screen 2	4-5
4-4	Rotation Data Table displayed in Change option	4-6
4-5	Filled out record for Rotation Data Table displayed in Change option	4-6
5-1	Open dialog window for FoxPro	5-2
5-2	Good Idea (Gi) Table	5-3
5-3	Good Idea (Gi) Table displayed in Change option	5-4
5-4	Performance Trends (Taar) Table	5-7
5-5	FER Trends (Tfer) Table	5-11
C-1	Screens for Loading Data (*memo*) Fields	C-20

SECTION 1

I. INTRODUCTION

Space has been provided in the margin throughout this guide to allow users to make notes.

The purpose of the BCTPdb Loading Guide is to provide loaders and analysts with a system reference for loading a relational database. It provides basic information in regard to the database and the data that is entered into it. Where it is appropiate, it specifies who (loader or analyst) is required to prepare and/or load the data. More importantly, methods and procedures are explained which the user may find helpful in performing relational loading tasks. It is assumed that the user has a basic understanding of DOS based personal computer (PC) systems and is familiar with using software that operates in a Windows environment.

A. How to Use This Guide

This Loading Guide consists of the following sections:

- **Introduction.** Section 1 provides users with a brief overview of the BCTPdb and the loading system.
- **Guided Tour.** For a quick description of the applications used to prepare materials and load the database, see Section 2.
- **Pre-processing Procedures.** Section 3 describes the actual steps involved in the preparation of documents and the database for loading.
- **The Loading Process for Rotation Data Tables.** Section 4 describes the procedures used to load the different media types into the Rotation tables.
- **The Loading Process for Good Ideas and Trends Tables.** Section 5 explains the Analyst and Programmer tasks and

procedures used to load the Good Ideas and Trend tables.

- **Appendices.** The appendices contain references, information on setting preferences, loading conventions, trouble shooting, data types & media, and Archive Reference coding.
- **Glossary.** Acronyms are defined in this section.
- **User notes.** Users may use this area to record their notes and frequently used information.
- **Improvement Suggestions.** This section has been provided for suggestions on improving the loading process and guide.

B. Components

The components of the BCTPdb Loading System are:

- Application Software
- Hardware
- Data Files
- BCTPdb Loading Guide

The loading system uses Microsoft® FoxPro®, TextBridge™ OCR, Paint Shop Pro™, and Envisions TWAIN application software. FoxPro® is a popular commercial relational database. The BCTPdb FoxPro® application is the main program driving the database and works in conjunction with several other commercial and custom programs. It calls the other applications for execution of unique functions, such as video tape control, graphics display, and spreadsheets. The loading interface for loading data is executed using FoxPro®. TextBridge™ OCR (Optical Character Reader) is used to scan and save into data files all hardcopy text files. Paint Shop Pro™ and Envisions TWAIN application software are used to scan, manipulate and save into data files all hardcopy graphic and other documents that cannot be scanned as a text file.

The BCTPdb database is run on any IBM® compatible 386 or 486 computer with adequate RAM and ROM storage. Microsoft® DOS/Windows™ is also required. Recommended minimum configuration is a 486 33MHZ with 8 Megabytes of RAM. Hard drives in the 500 Megabyte range adequately support the BCTPdb software and one to two WFX sets of data. Storage for additional WFX data sets is highly recommended. A standard mass storage device for the BCTPdb data is to be decided. The scanner being

used at present is the Envisions EVN6100 Color Scanner. Other scanning options aimed at increasing efficiency and reducing cost are being explored.

The BCTPdb data files fall into two categories. The first category are those files which work with the FoxPro® application to define the relationships between the data; window layouts; and dialog boxes. These files are updated by the system software engineer, when required, to provide additional functionality to the database or to correct software problems. An explanation of these files can be found in the *Data Dictionary.*

The second category of files are those associated with the BCTP data and are updated and/or loaded following the procedures outlined in this guide. The loader, working closely with the analyst, manages these files to fully exploit the relational capabilities of the database. These files are organized both by WFX rotation as well as across rotations and are entered after the data is received, archived, analyzed and processed for loading.

C. Conventions

Before you start using the BCTPdb system, it's important to understand the unique terms and typographical conventions used in the documentation. All standard Windows™ conventions are complied with. Users should have a working knowledge of Windows™ to operate the BCTPdb system.

1. General Conventions

The following formatting conventions used in the text identify special information.

Formatting Convention	Type of Information
Arrow bullet (⇨)	Step-by-step procedures. You can complete procedural instructions by using either the mouse or the keyboard. To choose a command from a menu you can use the mouse or press shortcut keys.
Underlined type	Words or characters you type or select. For example, if the guide instructs you to type cd bcdb you type the letters "cd" followed by a space and the letters "bcdb."
Bold type	Dialog window names and option buttons or selectors.

Italic type	Specialized terms, notes, or tips. Titles of other BCTPdb documents. Placeholder for items you must supply, such as filenames. For example, when the guide says to *type cd bcdb_name*, you type the letters "cd" followed by a space and then the name of a directory.

2. Keyboard Conventions

All key names are shown in small capital letters. For example, the Control key is shown as CTRL, and the Escape key is shown as ESC.

Keys	Comments
Shortcut keys	Keys are frequently used in combinations or sequences as shortcut keys. For example, SHIFT+F1 means to hold down the SHIFT key while pressing F1, and ALT, F, A means to press and release each of these keys in order.
RETURN key and ENTER key	These keys usually perform the same action. "Press ENTER" means that you can press either ENTER or RETURN unless specifically instructed otherwise.

3. Mouse Conventions

You can use either a single-button or a multiple-button mouse with the BCTPdb system. Descriptions of mouse use are characterized by the terms: *point, click, and drag.*

⇨ *Point* means to position the mouse pointer until the tip of the pointer rests on whatever you want to select on the screen.

⇨ *Click* means to press and then immediately release the mouse button without moving the mouse.

⇨ *Drag* means to point and then hold down the mouse button as you move the mouse.

SECTION 2

II. GUIDED TOUR

The reader will be introduced to the applications used to prepare documents and load the database in this section. It is not intended to make the loader or analyst an expert user, but rather to simply introduce the applications and their uses. Detailed information on how to use applications will be provided in Section 3 - Pre-processing Procedures, Section 4 - The Loading Process for Rotation Data Tables, and Section 5 - The Loading Process for Good Ideas and Trend Tables.

There are two types of programs used in the loading process; those that prepare data for loading (pre-processing) and the actual database (loading and user) application. Both types will be introduced in this section.

➢ Pre-processing applications consist of the following:

- *TextBridge™ OCR*
- *The Norton Desktop Editor*
- *Paint Shop Pro™, and Envisions TWAIN application*
- *Loadvdeo*
- *WordPerfect®*

➢ The Loading and Database User application is *Microsoft® FoxPro®.*

A. Pre-processing Applications

Three of the Pre-processing applications are used primarily to convert hardcopy documents into digital formats so that they can be loaded into the Database. The applications, their icons as they appear on the desktop, and a short description follow:

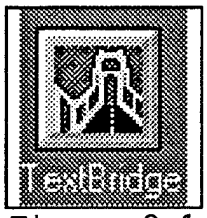


Figure 2-1

• *TextBridge™ OCR* is an OCR (optical character recognition) program used to convert image data into usable text files. Detailed information on its use is found in Section 3, page 3-6.

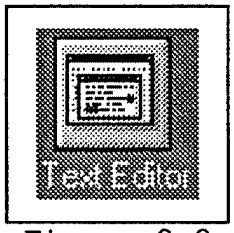


Figure 2-2

• *The Norton Desktop Editor* is used to clean up the text files produced by *TextBridge™*, since OCR software does not produce a 100 % faithful reproduction of original documents. Detailed information on its use is found in Section 3, page 3-9.



Figure 2-3

• *Paint Shop Pro™*, and the *Envisions TWAIN* application are used together to scan graphics and documents that are not of good enough quality or correct type to use the OCR software. Detailed information on how to use these applications is found in Section 3, page 3-11.

One application is used to prepare videotapes. The application, its

icon as it appears on the desktop and a short description follow on the next page:

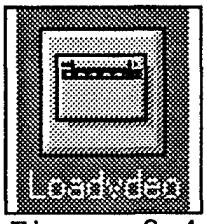


Figure 2-4

• The *Loadvdeo* program is used to provide the coding that makes video tapes easy for users to use. Detailed information on procedures for its use can be found in Section 3, page 3-19.

Word processing tasks are accomplished by using *WordPerfect*®.

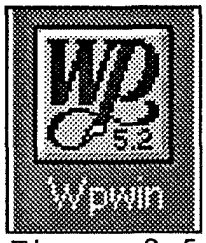


Figure 2-5

• *WordPerfect*® is used to create documents that the loader or analyst generates, and on occasion is used to read files provided on floppy disks. Refer to the *WordPerfect*® Reference for details on usage.

B. Loading and Database Applications

The Loading and Database User application is *Microsoft® FoxPro®*. It is represented by two different icons on the desktop, depending on what function it is being used for. Icons and functions follow:



Figure 2-6

This is the icon that starts up the *FoxPro®* application, and is used for loading the db. Details on use of the application for loading are covered in Sections 3, 4, and 5.

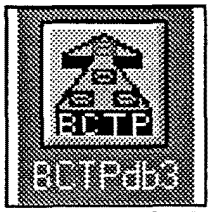


Figure 2-7

This is the icon that starts up the BCTPdb application. Details and instructions on the use of this application can be found in the *BCTPdb Users Guide*, and in sections 3, 4, and 5 of this manual.

SECTION 3

III. PRE-PROCESSING PROCEDURES

Most of the data being loaded into the relational database requires some kind of archiving type of pre-processing to make it capable of being loaded or to make it easy for end users to access the data in a relational manner. Hardcopy documents have to be digitalized by a scanning process before they can be loaded. Video tapes have to be reviewed and tagged using interfaces with video marking and replay equipment before they are useful. And data tapes have to be processed to extract the useful data and then downloaded into the database.

Subjects that are addressed in this section are:

- Planning: Sorting/Indexing
- Loading the scanner
- Scanning techniques for text
- Scanning techniques for graphics
- Video preparation
- Data tape Preparation
- Saving files
- Creating Rotation Data Tables

A. Planning: Sorting/Indexing

Assuming that the data has already been marked, tagged and put into envelopes during the archiving process, it still requires some organizing to make the scanning process and subsequent loading more efficient. A method that has proven to work well is to sort documents by their sequential doctrinal organization, and then to tag them using "post its". When tagging sections it is useful to tag it using the file name that it will be filed under as it is saved for retrieval. It is recommended that the loader create the directory and sub-directories that will be used to save files, before proceeding with scanning operations (see Saving Files on page 3-26). By doing so, the loader has established a convention which will facilitate saving files as the last step of the loading process. File names can be descriptive or as simple as using sequential numbers to maintain the document order. Each section is then scanned and saved as a file for retrieval during loading. While sorting the document, it is helpful to separate or at least mark those parts that will be scanned as graphics. Graphics are scanned using different software than text and are filed and retrieved differently than text. Each graphic is created and stored as a separate file, while text files are limited more by how much different information can be effectively managed within a file. Because a page may contain text and a graphic, it is sometimes necessary to scan that page twice, using two different procedures.

An example: An OPORD consists of the basic order, annexes, appendixes, and tabs. If you scanned the entire text portion of the

order into one file, it would be too big to easily manipulate during loading. However, if you break the order out into its basic sections, the basic order, the annexes, appendixes, and tabs, it becomes easy to work with. Using this method, an OPORD would end up being around sixty files. File naming should be kept simple to save keystrokes and time. See **Saving files**, in this section, for more information.

B. Loading the Scanner

All hardcopy documents have to be digitalized before they can be loaded into the database. This is accomplished by scanning. Operating a desktop scanner is very similar to using a desktop copying machine. At present the Envisions ENV6100 desktop scanner is being used to accomplish this task. The scanner is equipped with an Automatic Document Feeder (ADF) giving it the capability to scan up to 25 pages per loading or to scan single pages one at a time. Depending on the document, both capabilities will usually be used during document scanning operations. This section provides basic instructions extracted from the *Envisions ADF Operation Manual* on loading the ADF and loading single documents one at a time. For more detailed information on the scanner and its operations refer to the *Envisions Color Scanner Reference*, *ADF 30 OPERATION MANUAL*, Chapter 4, Operation.

1. Loading documents using the ADF

Most text documents will be scanned using the ADF. Step by step procedures follow:

1. Make sure that there is no paper on the window glass of the flat-bed scanner before using the ADF.

2. Straighten any curls or wrinkles and remove staples, paper clips or other material from the documents.

3. Place the documents facedown on the Paper Guide Plate, with the top of the pages feeding into the scanner first. The bottom page

will be the first page scanned.

4. Adjust the side guides to fit the document, make sure the ADF is closed, check to make sure the READY LED is on, and begin scanning following the procedures that follow in Scanning techniques for text.

2. Loading single documents

All graphic, hand written, and other documents that do not convert well during OCR processing will be scanned as single documents. Step by step procedures follow:

1. Remove the Paper Guide Plate, it is not used in this operation, and gets in the way.

2. Open the ADF cover.

3. Place the document facedown on the scanner window glass, with the top of the document pointed towards the frount of the scanner (for portrait documents) or pointed towards the left side of the scanner (for landscape documents). This is exactly like loading a copy machine for single page reproduction.

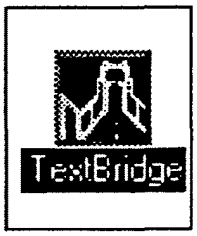
4. Close the ADF cover, and begin scanning following the procedures that follow in Scanning techniques for graphics.

C. Scanning Techniques for Text

Text scanning is accomplished using the *TextBridge*™ application and the Envisions scanner. For detailed, in depth information, refer to the *TextBridge*™ *OCR for Windows User's Guide*. Basic step by step procedures with standard default settings follow:

1. Load the document to be scanned (don't exceed 25 pages) into the scanner, following the procedures described above for the ADF.

2. *Click* the *TextBridge*™ icon found on the desktop. This will bring up the Main dialog window. See Figure 3-1.



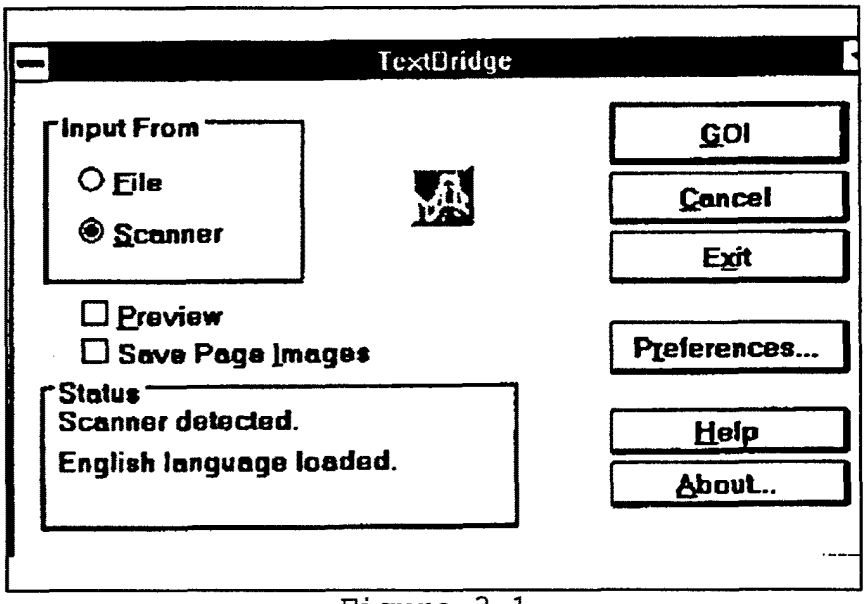


Figure 3-1

3.The default for ***Input From***, is Scanner, so go on to selecting Preferences by *clicking* ***Preferences***. This will display the Preferences dialog. See Figure 3-2.

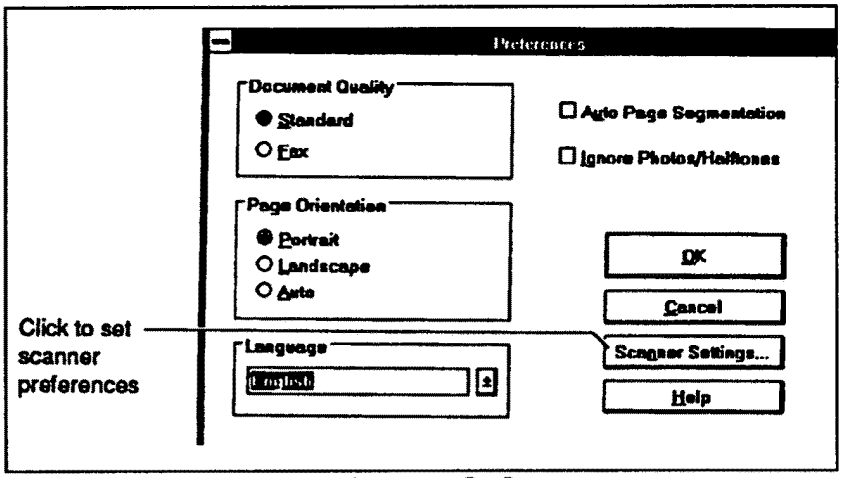


Figure 3-2

4. Once you set Preferences, they will remain as the default until they are changed. Default settings from top left to bottom right are:

Document Quality: Standard - unless the document is poor quality, like a fax. If its poor quality select Fax.

Page Orientation: Select as appropiate. If mixing Portrait and Landscape select Auto.

Language: English.

Auto Page Segment: Select if the page/s has more than one column.

Ignore Photos/Half: Select if document contains photos, tables, or art work. They will not OCR, and slow the OCR accuracy and speed.

5. Next, *click* ***Scanner Settings.*** This will display the Scanner Settings dialog. See Figure 3-3.

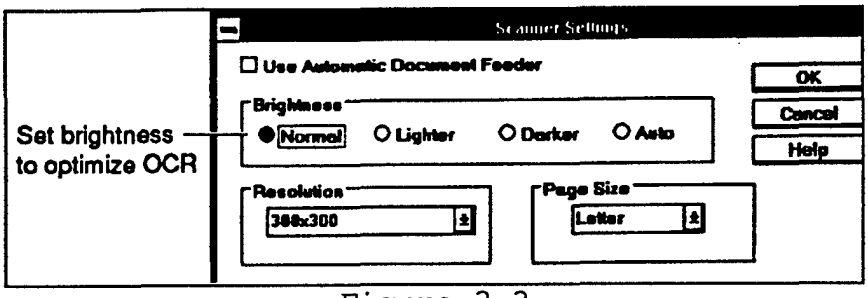


Figure 3-3

6. Settings for Scanner Settings are:

Select ***Use Automatic Document Feeder.***

Select ***Auto*** for ***Brightness.***

Resolution: 300X300

Page Size: As appropiate, usually Letter.

7. *Click **OK*** to exit each window in reverse order, back thru the previous screens. See Figures 3-2 and 3-1. The final Window will be the Main dialog Figure 3-1.

8. *Click **GO*** to begin the scanning and recognition process. The page(s) in the scanner are scanned and recognized until the ***Add More Pages*** dialog appears. See Figure 3-4.

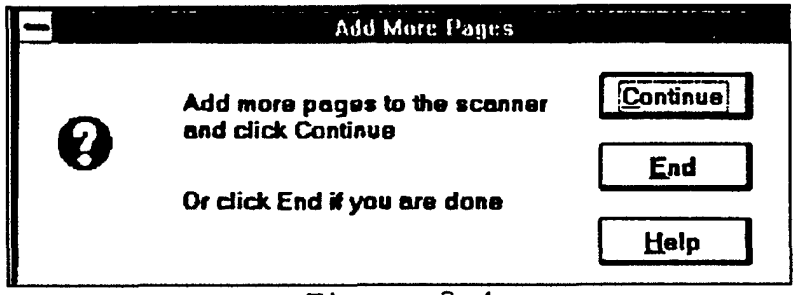


Figure 3-4

9. To continue scanning into the current file, add more pages to the feeder, then *click **Continue.*** To end scanning *click **End.*** When ***End*** is selected the ***Save As*** dialog appears. See Figure 3-5.

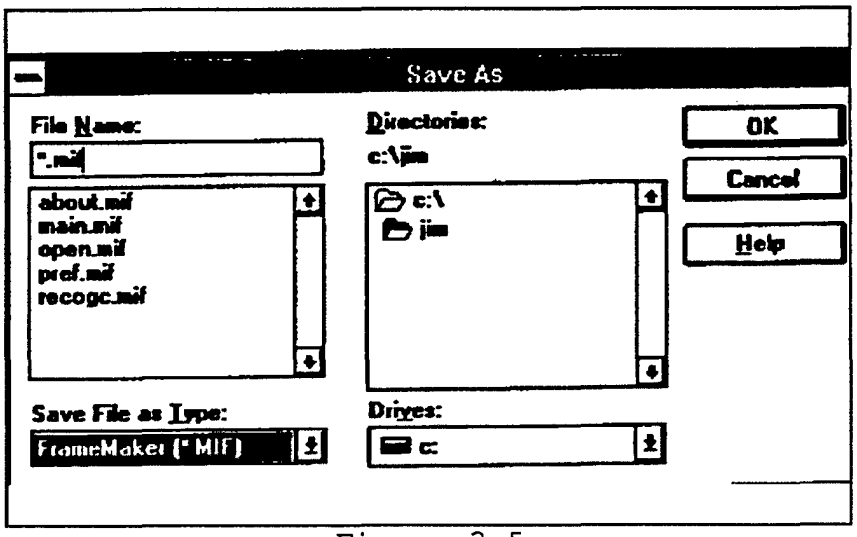


Figure 3-5

10. Specify the file name, destination disk (C), directory and sub-directory. Also specify ASCII-Smart.TXT as the output text format, using the ***Save File as Type*** pop-up menu. Then *click **OK*** to return to the Main dialog, to continue scanning or ***Exit.***

11. The last step in text scanning is cleaning up the text file. Depending on the quality of the document being scanned, the OCR program will recognize from 92 to 98 percent of the text characters. It will also recognize text found in graphics and leave it in the file. These excess text characters and text that was not correctly translated generally needs to be cleaned up to make the file reasonably usable. Steps in clean up are:

a .*Click* the *Desktop Editor* icon. 

b. From the menu bar *click* **File**. This will open a pull down menu. From that menu *click* **Open** , which open the ***Open File*** dialog. Follow normal *Windows* conventions and standard word processing procedures to retrieve, edit, save and exit the file and the ***Desktop Editor***.

c. The text file is now ready to be loaded into the database. See Loading Procedures for Scanned Documents, found on page 4-3 of Section 4.

D. Scanning Techniques for Graphics

Graphic scanning is accomplished using the *Paint Shop Pro*™ and *Envisions interface* application and the Envisions scanner. Basic step by step procedures with standard default settings follow:

1. Load the scanner with the document you wish to scan, following the instructions found in "loading single documents" in this section.

2. *Click* on the *Paint Shop* icon found on the desktop. The *Paint Shop Pro* dialog and menu bar will be displayed. See Figure 3-6..



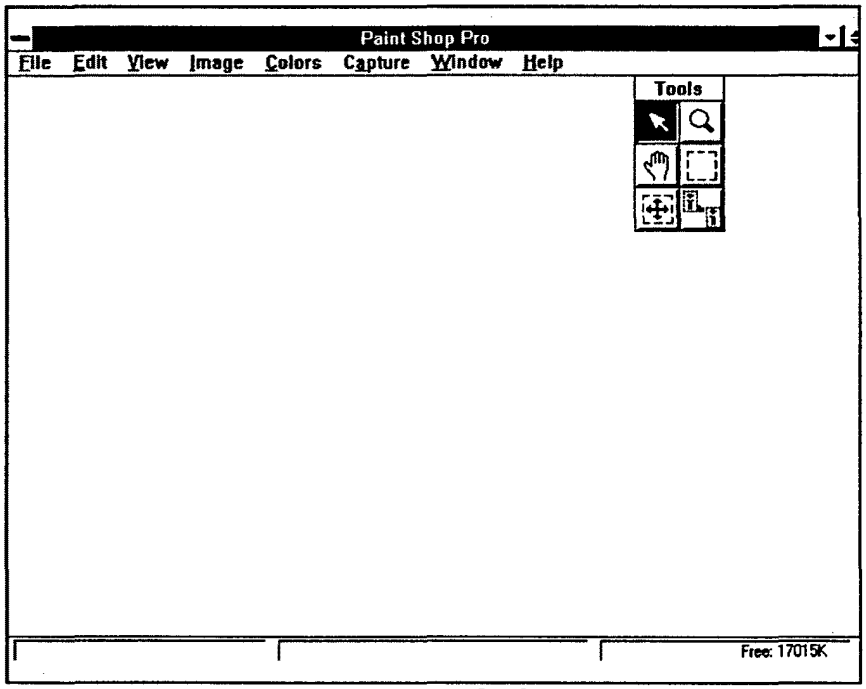


Figure 3-6

3. *Click **File*** and the File dialog will pull down. See Figure 3-7.

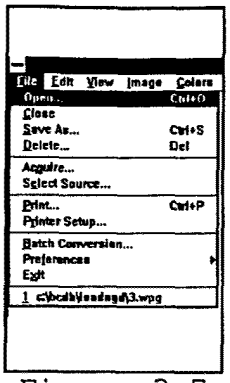


Figure 3-7

4. From the File dialog *Click **Acquire*** and the *Envisions* dialog will be displayed. See Figure 3-8.

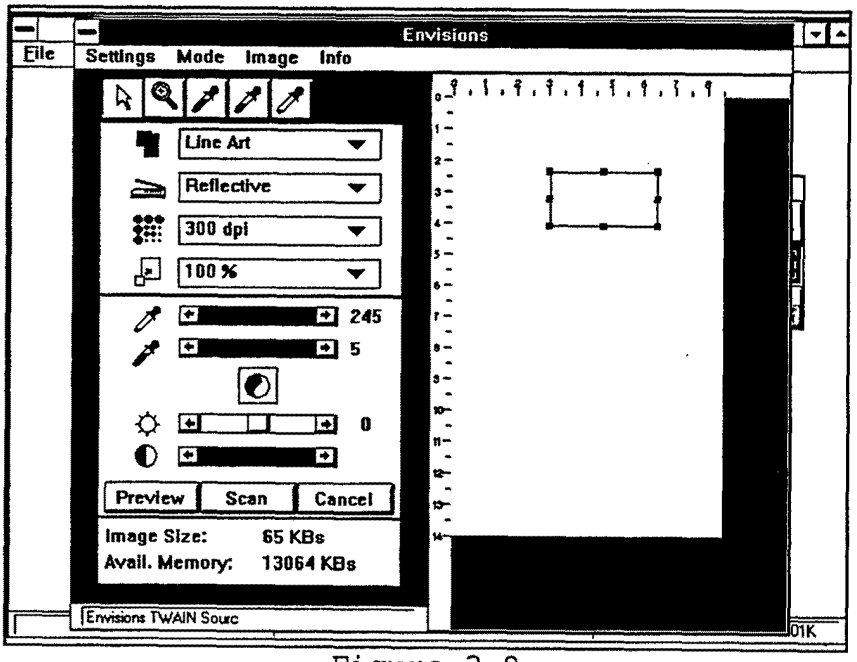


Figure 3-8

5. Scanning preferences are set using the *Envisions* dialog. Set preferences as follows:

a. To set for color or black and white scanning, *click* and *drag*

on the top pull down menu labeled ***Line Art*** in Figure 3-8. Keeping the mouse button depressed, scroll thru the selections. When the option you want is highlighted, release the mouse button.

Select **Color** if the graphic is color.

Select **Line Art** if the graphic is black and white.

b.The next pull down menu should be set to **Reflective**, using the same procedures described above.

c.The next pull down window should be set to **100 dpi**.

d. The bottom pull down window should be set to **100 %**.

6. Next, *click* the ***Preview*** button. The scanner will scan the document in a display mode. Once the scanner has completed the initial scan, it will display an image in the right hand viewer (outlined with the rulers). Using the mouse, *click* and *drag* to adjust the sizable cropping lines until the portion of the document you want to scan is outlined inside the cropping lines (This procedure is similar to sizing any window in a windows application.) See Figure 3-9 on the next page.

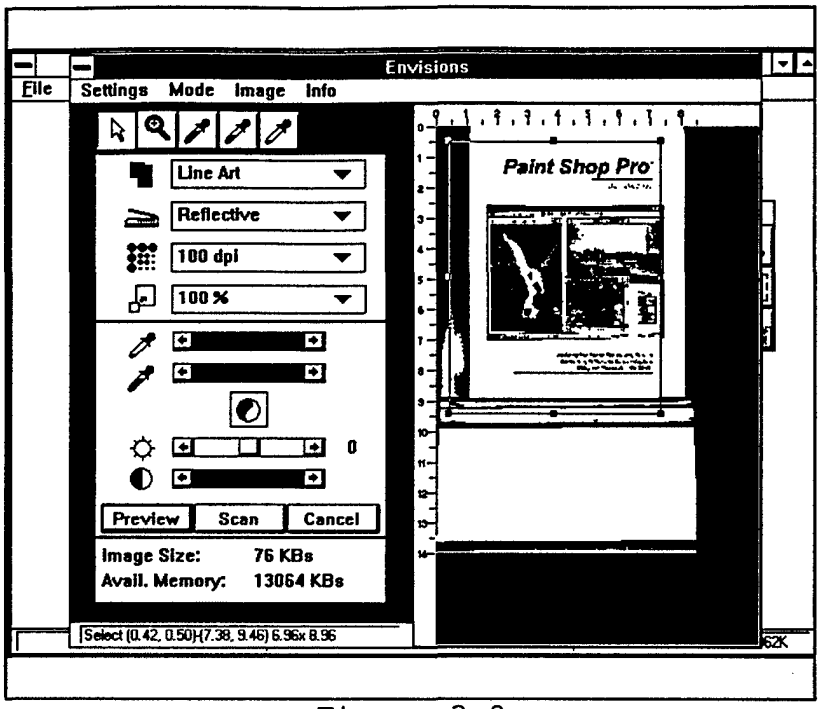


Figure 3-9

7. *Click* the **Scan** button and the image inside the cropping lines will be scanned.The scanning process is complete when the *Paint Shop Pro* dialog is again displayed, with a window that shows your scanned image. See Figure 3-10.

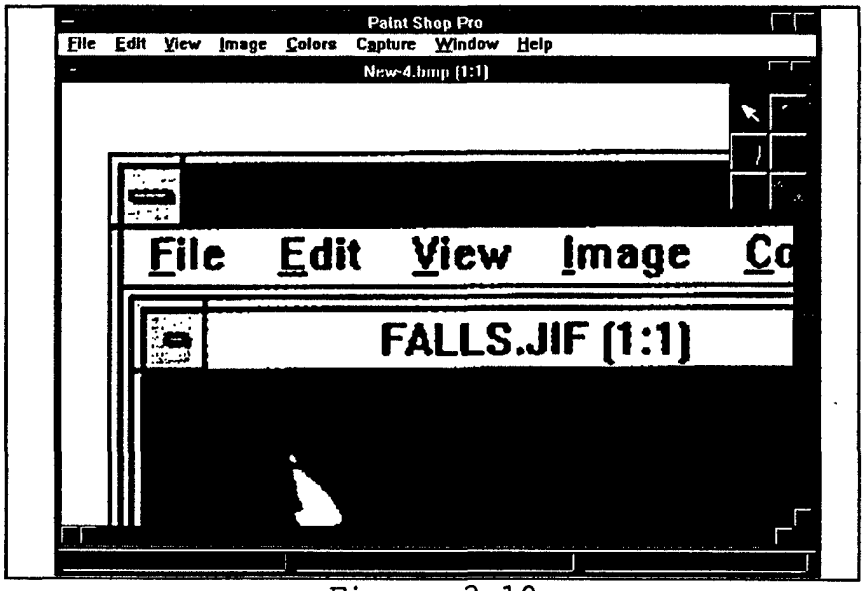


Figure 3-10

8. Now you will use the *Tools* box. See Figure 3-11. Since the only tools needed for this operation are the ***Arrow*** and ***Magnifying Glass***, that is all that will be addressed in this section. For detailed information on all the *Tools*, see page 2-8 in the *Paint Shop Pro* Users Guide.

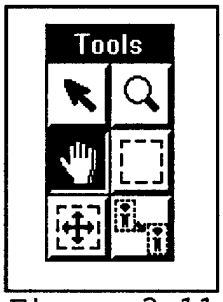


Figure 3-11

a. The ***Arrow Tool*** is the default selection of the *Tool Box*. It gives you the *arrow cursor* used to point and select various options. There is no operation of the ***Arrow Tool*** other than its use as the default cursor pointer.

b. The ***Magnifying Glass Tool*** is used to increase or decrease the zoom factor of an image display. You use the Tool by *clicking* the ***Magnifying Glass*** in the Tool Box. Move the cursor pointer to the area of the image that you want to increase or decrease. *Click* the left mouse button to increase magnification and *click* the right mouse button to decrease magnification. Each time you *click* either button over the image, it will increase or decrease in size, depending on which button you clicked.

9. Once you have checked your new graphic, it is time to make adjustments to the default values that *Paint Shop Pro* uses. Using the menu bar *click* ***Colors***. This will display a pull down menu. From that menu, *click* ***Decrease Color Depth***, and a second pull down menu will be displayed. Decrease Color Depth now. See Figure 3-12 on the next page.

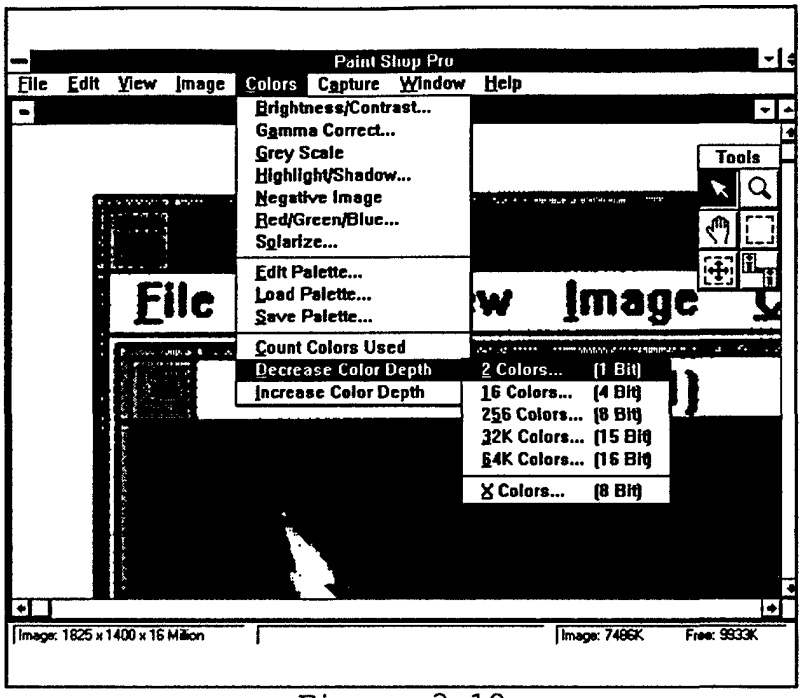


Figure 3-12

Desired Setting are:

a. For color graphics *click **16 Colors***.

b. For black and white graphics *click **2 Colors.***

10. Now, *click **File*** from the menu bar. Once again the *File* dialog will be displayed (refer to Figure 3-7). *Click **Save As*** and the *Save As* dialog will be displayed. See Figure 3-13 on the next page.

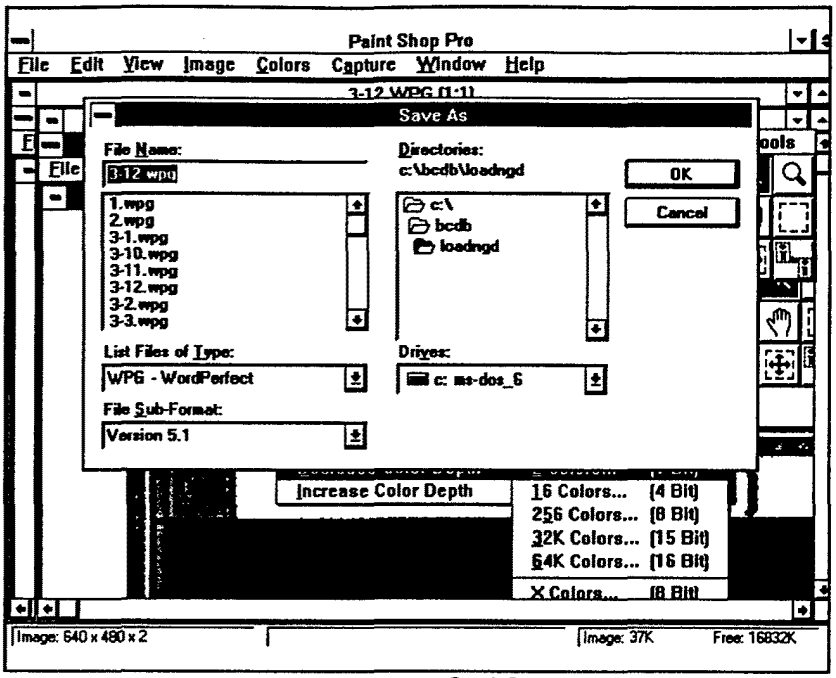


Figure 3-13

11. Save the file. Entries starting at the top left are as follows:

    a. *File Name:* Specify the file name.

    b. *List Files of Type: Click* the arrow for a pull down menu. *Click **TIF- Tagged Image File Format***. This will cause the File Sub-Format selection to display. *Click* the arrow and *click **LZW Compressed***, if it does not display as the default.

    c. Check to make sure *Directories:* and *Drives:* are indicating the proper file storage locations and *click **OK***. This will return you to the *Main* dialog, where you can repeat the process or ***Exit*** from the File dialog.

    d. The graphic file is now ready to be loaded into the database. See Loading Procedures for Scanned Documents, found on page 4-3 of Section 4.

E. Video Preparation

Video tape preparation must be done by a military analyst familiar with operational terms and graphics and Division and Corps operations. Preparation is accomplished by the analyst watching the tape and making notes and then using the *LOADVDEO marking interface* application to create the tape file. Step by step procedures and defaults follow:

1. Load the tape. Make sure the tape is fully rewound and that the time counter on the VCR is set to 0. Start the tape, using the VCR controls. The tape should be reviewed to record the time segments of the different BOS and other categories that will be used to recall specific portions of the tape. The 10 topics that the tape segments will be broken out into are:

Battle Description
Maneuver
Fire Support
Air Defense
Command & Control
Intelligence
Engineer
Combat Service Support
Opposing Forces
Other

As the tape plays, note the start and end times of the tape segments for each topic area. This information is displayed on the VCR tape/time counter. Topics will often overlap. This will present no problem, as long as accurate notes are kept. You should also be recording any keywords, acronyms, and other notes that would aid in describing that section of tape.

To recap; the military analyst needs to know the following:

- What topics were discussed.
- The start points where each topic was discussed.
- The end points where the topic discussion ended.
- Keywords, acronyms, phrases that help describe what was discussed, and that an analyst might use to retrieve that conversation.

2. After the tape has been reviewed and notes recorded, rewind the tape back to the start, and make sure the tape counter is reset at 0. *Click* the *Loadvdeo icon* found on the desktop screen.



This will display the *VCR Tape Reference Identifier* dialog. See Figure 3-14.

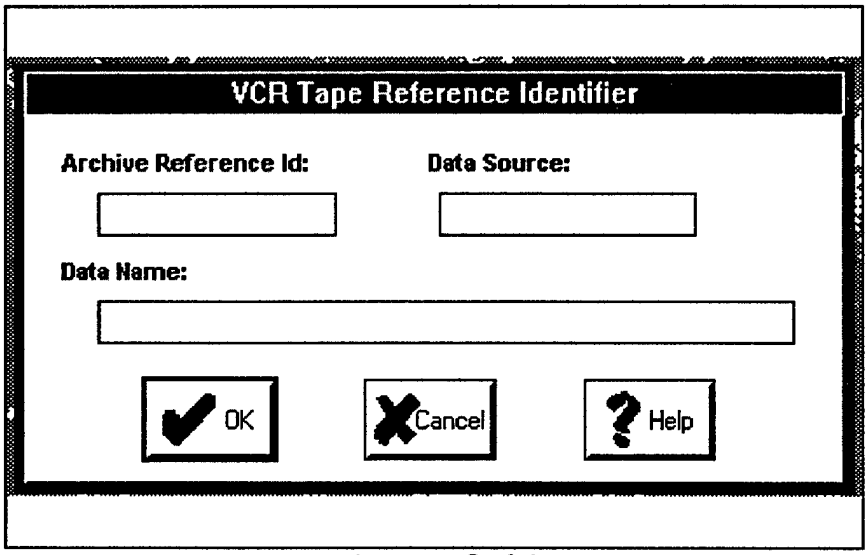


Figure 3-14

3. Enter the proper information for the three data fields as follows:

Archive Reference Id: Enter the archive reference ID code found on the video tape. See Appendix F, Archive Reference ID Codes, for coding information.

Data Source: Enter the name of the event that the tape has recorded. See Appendix C, Standard Loading Conventions, of this guide for standard names.

Data Name: Enter the name of the tape. See Appendix C, of this guide for standard names.

4. *Click OK* and the *Mark VCR Tape Topics* Interface will display. See Figure 3-15 page.

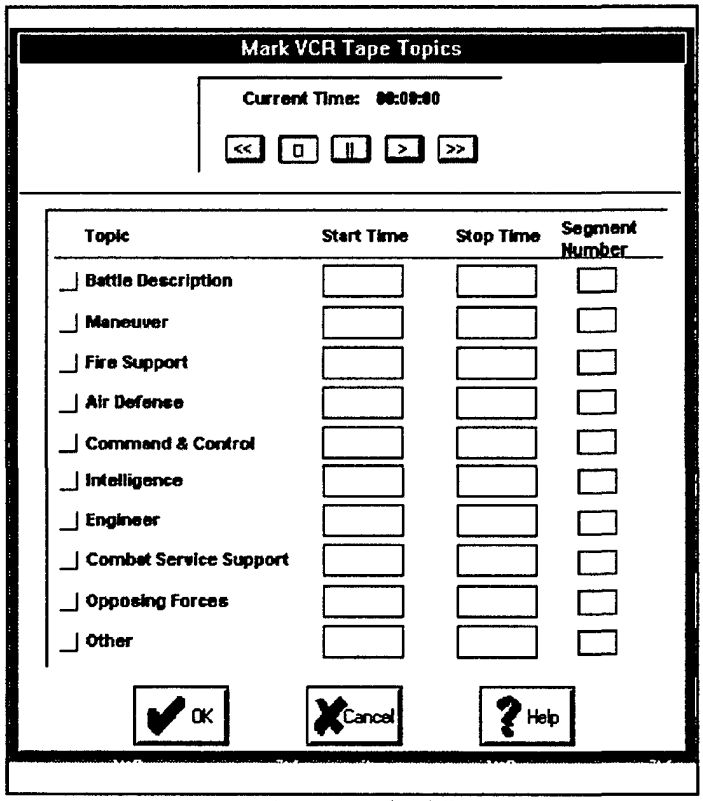


Figure 3-15

This interface displays the tape time, controls the VCR, and is used to save data for each segment of tape as it is tagged by topic. The tape time is displayed to the right of **Current Time:** where 00:00:00 is shown in Figure 3-15. The VCR control buttons are like the standard home VCR, except you press them by clicking on them with the mouse. The VCR buttons from left to right are: **Rewind, Stop, Pause, Play, and Fast Forward.**



In this illustration, the stop button is selected.

To start the videotape and the tagging process *click* the **Play** button. **Topics** are selected by *clicking* on the check box to the left of them, and deselected by *clicking* on the same check box again. Each time a **Topic** check box is selected the *Start Time* box to the right of it displays the time of the tape (this is assuming that the play button has been *clicked* on). When the same **Topic** check box is deselected by *clicking* on it again, the *Stop Time* box displays the current tape time, and the VCR stops playing. The *Segment Number* box displays the sequence number for how many times that **Topic** has been selected and deselected. In other words, the first time a **Topic** is selected and then deselected, the *Segment Number* is 1; the second time is 2; and so on. Each time a new sequence number is displayed, a new record is created that associates that time on the tape with a text memo field that is created using the **Comments** dialog. This dialog is displayed whenever a **Topic** is deselected. See Figure 3-16.

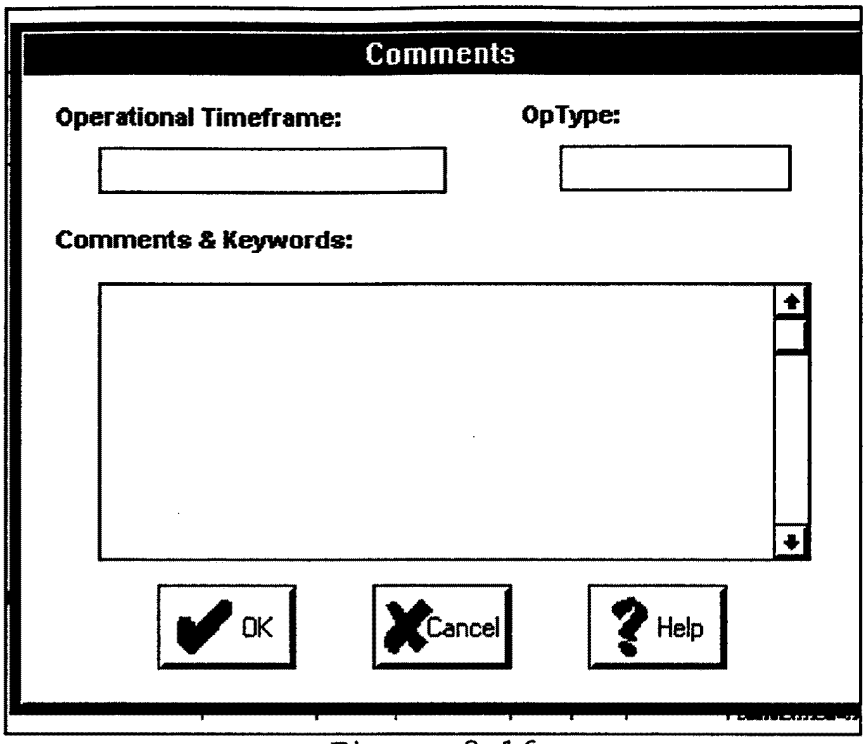


Figure 3-16

5. Enter the proper information for the three data fields as follows:

Operational Timeframe: Enter the appropriate timeframe for this segment, if you can associate it with a timeframe in the actual operation (ie: Phase I). See Appendix C, of this guide for standard names.

OpType: Enter the appropriate operations type for this segment, if you can associate it with an operation (ie: Attack). See Appendix C, for standard names.

Comments & Keywords: Enter the comments and words that describe this segment of tape and the topics discussed (ie: Topic is Intelligence BOS. Subjects = BDA, sharing intell information, LRSD, etc.)

6. *Click **OK*** and the *Mark VCR Tape Topics* interface will be displayed again (See Figure 3-15). Repeat the procedure in step 4 and 5 (see Figure 3-16) until the entire tape has been completely run and all segments filed. When you have completed tagging the tape, *click **OK*** at the bottom of the *Mark VCR Tape Topics* and the application will close. *An important note* is: if you *click **Cancel*** while using the *Mark VCR Tape Topics* dialog screen all data will be lost. This will require you to start this process all over again, from the beginning. You can *click **Cancel*** while using the *Comments* dialog. Doing so closes out the comments dialog without saving the current entry, and returns you to the *Mark VCR Tape Topics* dialog.

7. There are no file saving steps to complete in this application. The Video files are ready to be loaded into the database using the Loading Procedures for Video Tapes, found in Section 4.

F. Data Tape Preparation

Data tapes, which contain the objective data, are currently prepared by the project programmer. What follows is the current status for preparing data tapes for loading. It has been written assuming a stable system, both in terms of the input files and the table structures which will be filled. It presumes that the conversion programs have been written for each kind of objective data wanted, that the FoxPro tables which will contain the objective data have been designed and implemented, and that the format of the input objective data is stable. In fact, the BCTP environment has been evolving rapidly, which will probably require several changes be made before full operational status is achieved.

Preparing and loading objective data into the BCTP Prototype Database consists of the steps, as shown in Figure 3-17:

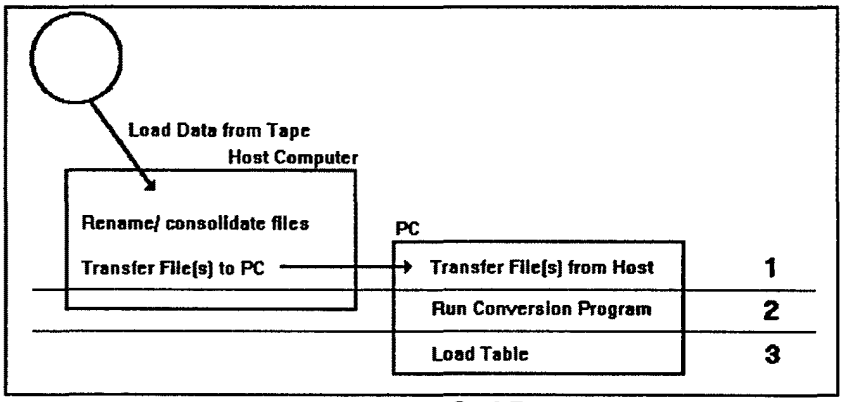


Figure 3-17

Step 1. Retrieve the data from its source to a compatible host, rename/ consolidate files as necessary, and transfer ASCII files to a PC.

Step 2. Use the specific conversion tool to convert/ extract the data from the ASCII files to FoxPro compatible comma delimited files.

Step 3. Fill the relevant FoxPro tables (see Section 4. Loading Rotational Tables).

Steps 1 and 2 are described in detail below. The specific commands used for a representative sample are shown within the text (in bold italics). The example shown involves converting the Blue Combat Attrition WAARS Report, which was created on a VAX, to the B_CBTATT table for one rotation. Portions of the input and intermediate files from the 4ID Blue Combat Attrition Report, followed by the ASCII text file for the same page of data was used to build C:\BCDB\93DHHA01\B_CBTATT.DBF.

Step 1. Retrieve the data from its source to a PC

BCTP objective data are generated either on a SUN minicomputer or on the VAX which hosts the CBS model. The data must first be read from tape (SUN cartridge or VAX reel) into a host computer compatible with its original computer. Then the data must be transferred to a PC to transform the original data from its native format into a format which will facilitate its conversion into a FoxPro table. This initial process will consist of the following steps:

(1) Restore the data from the backup tape to the host computer. The command shown is specific to the VAX. Some variation of the tar command must be used to restore SUN files.

BACKUP/LOG MFA0:4ID.BCK/SELECT=CBATTR_BLU.OUT [.BCTP...]

(2) Consolidate the files from all time periods (there were 15) into one file named consistently with PC requirements. The initial file names consist of 10 character plus a 3-character extension. Further, there were 34 identically named files in different subdirectories. This step copies all the 34 files into one file which may be transferred over to a DOS-based PC file with the same name.

COPY [...]CBATTR_BLU.OUT CBATTR.ALL

(3) Now the 34 files have been consolidated into one file which may be transferred to the PC. The file is transferred using an FTP (File Transfer Protocol) transfer from one computer to another. In general the transfer is controlled from the PC using the following commands. A short description of each command is included.

Command	Description
FTP	Start FTP program on PC
O VAX	Access FTP server on vax computer
A	Indicate ASCII file transfer is desired
CD [.BCTP]	Change to directory containing cbattr.all
LCD \BCTP	Change PC directory to receive file
GET CBATTR.ALL	Transfer the file
BYE	Terminate FTP session

Step 2. Use the relevant conversion tool to convert/ extract the data

A specific data conversion program will be available for each unique objective data source. Conversion programs have been written in Turbo Pascal and must be executed in a DOS environment (or DOS window). The conversion program serves three purposes:

(1) It filters the BCTP data to eliminate unwanted and/or redundant data.

(2) It reformats individual data elements to make them consistent with elements in other BCTP tables to allow relating different tables.

(3) It collects the data into lines of text which correspond exactly to records in the table format defined for that data source, adding appropriate punctuation to facilitate the loading process.

The conversion program will generally require two inputs, the data path and name of the input file(s) transferred to the PC from the SUN or VAX, and the data path and name of the output file which will be used to load the FoxPro table. The command line which builds the input file for the Combat Attrition table is:

CBTATT C:\CBTATT.ALL C:\BCDB\CBTATT.TXT

G. Saving files

It may be helpful to address the subject of saving files, since it is the last step in the process of text and graphic scanning. This section is being written with the assumption that users already know how to create directories, sub-directories, and files in a *Windows™- Norton Desktop* environment. How to perform those functions will not be addressed. What will be addressed is the current file structure being used now. This information is being provided so that there is a standardized structure that will allow anyone to find specific files quickly.

The current method being used is to create sub-directories under c:\bcdb for each unique WFX's files and then to create sub-directories within that directory for each document to be loaded. Individual files are then saved under their appropiate sub-directory. For example: The basic OPORD for the 69BDE of the 35 ID was saved as 1.txt; Annex C (4 pages) were all graphic files, so they were saved as:c.tif,c2.tif,c3.tif and c4.tif; and Annexes A and B were text files, so they were saved as a.txt and b.txt. The path for these files is:

c:\bcdb\35id\69opord\<filename>. See Figure 3-18 for a picture of the directory/sub-directory/file structure.

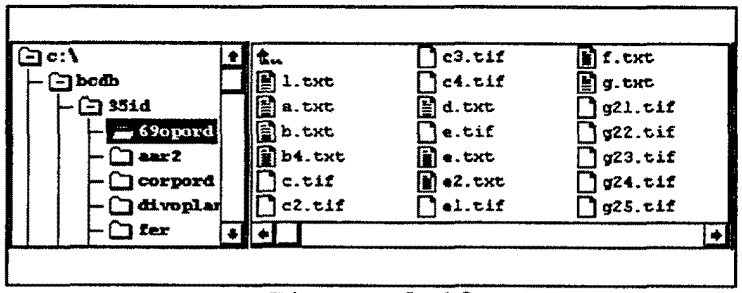


Figure 3-18

Additional information to keep in mind is:

- It will save time, during loading, if all directory and file names consist of as few characters as possible. Each graphic file will have its' entire path typed into a field during loading.
- The current OCR software only allows about 50 pages in a text file, so you will want to consider that limitation as you scan and save text files.
- Text files can be deleted, after loading into the database, (however they take up so little space that it is probably worth the time it would take to do it.)
- Graphic files must remain saved in their directories/sub-directories, because the database application searches for them by the path they were saved into.

H. Creating Rotation Data Tables

Before you can load data for a rotation, you must create a Rotation Data Table, using the FoxPro® application. This involves three steps: Creating a new record in the Rotation Table, Adding a new rotation sub-directory to the db, and creating an empty Data Table for the new rotation. Step by step procedures follow.

Step 1. Creating a new record in the Rotation Table.

From the FoxPro® *start-up screen*, select **File**, by *clicking on* **File** from the *main menu bar*. This will activate a *pulldown window*, from which you select **Open**, by *clicking* on **Open**. This will display the **Open dialog box** (See Figure 3-19).

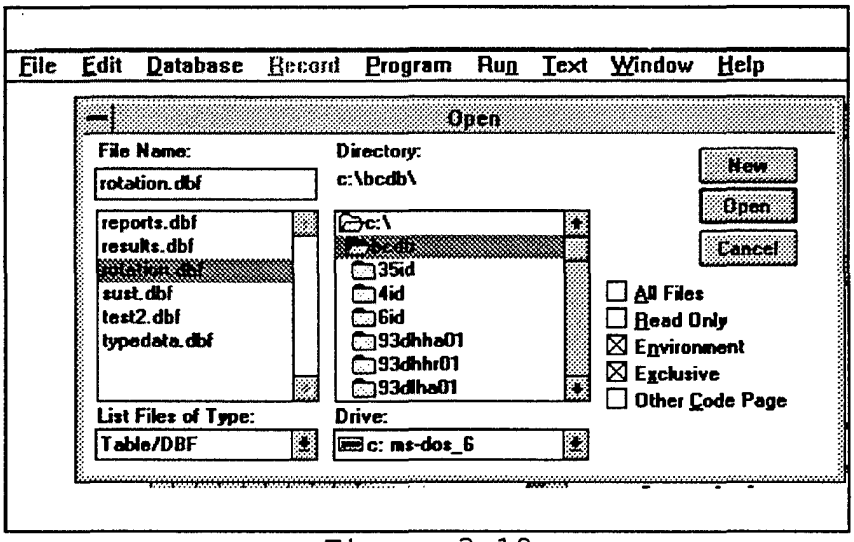


Figure 3-19

Follow these steps:

a. From the **Directory** selections (middle of box), *double click on* **c:**, then *double click on* **bcdb**.

b. In the **List Files of Type**: (bottom Left of box) **Table/DBF** should be selected.

c. From the **File Name** selections (Left side of box), *double click on* **rotation.dbf**. This will cause the dialog box to disappear and the *start-up screen* to reappear with the **Command dialog box** displayed. (See Figure 3-20)

d. From the **Main Menu Bar**, click on **Database**. This will display a *pull-down* menu.

e. From the *pull-down* select **Browse**. This will bring up the **Rotation Table**. See figure 3-20 below.

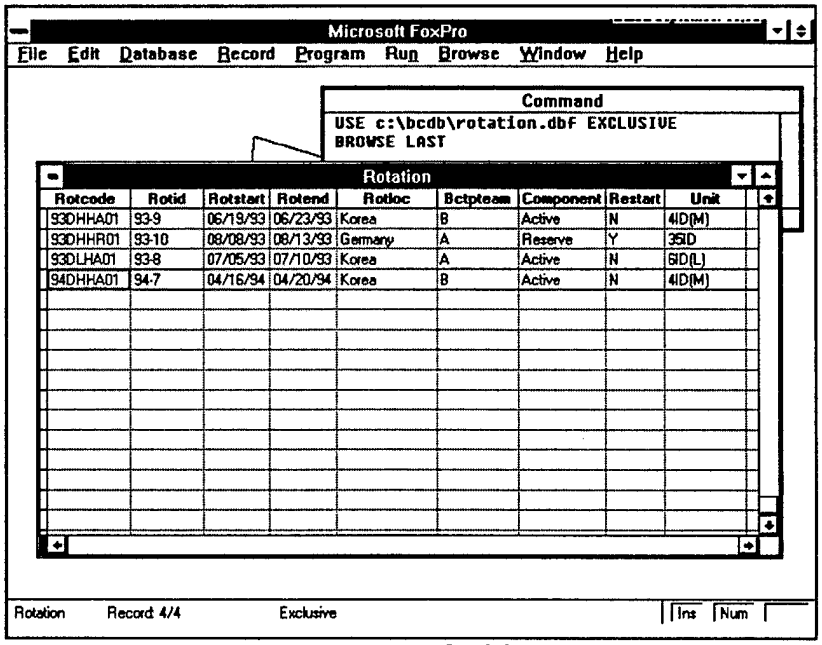


Figure 3-20

f. To Create and load the new record follow these steps:

1). *Use* the key combinations **Ctrl + N** to create an empty record.

2). Then fill in the fields, bulleted below for each new record:

- **Rotcode** - Rotation code: Use *Appendix F, Archive Reference ID Codes* for instructions.

For the rest of the fields, use the FER to extract the appropiate data. Choices (underlined) follow the field name.

- **Rotid** - Rotation Number assigned by BCTP
- **Rotstart** - Rotation Start Date:
- **Rotend** - Rotation End Date:
- **Rotloc** - Rotation Location: Korea, or Germany, or SWA, or LIC-LatAM
- **Bctpteam** - BCTP Team: A or B at present.
- **Component** - Active or Reserve: Loader must know Active/Reserve units
- **Restart** - Yes(Y) or No (N): Extract form reading the seven minute War.
- **Unit** - Unit name from FER

Step 2. Add the Rotation Sub-directory (Rotation Code) to the bcdb directory.

Using the **Rotcode** or Rotation code (see figure 3-20) that was created in step 1 above, create a new sub-directory under c:\bcdb. For example, the new sub-directory for the fourth record in the Rotation Table at Figure 3-20 is 94dhha01. So, the directory/sub-directory path would be: c:\bcdb\94dhha01.

Step 3. Create an empty Data Table for the new Rotation.

Going back to the FoxPro® *start-up screen*, select **Window**, by *double clicking* from the *main menu bar.* Then select **Command Ctrl+F2** , by *double clicking*, from the *pull-down* menu.
This will bring up the **Command Box**, as shown in Figure 3-21 below.

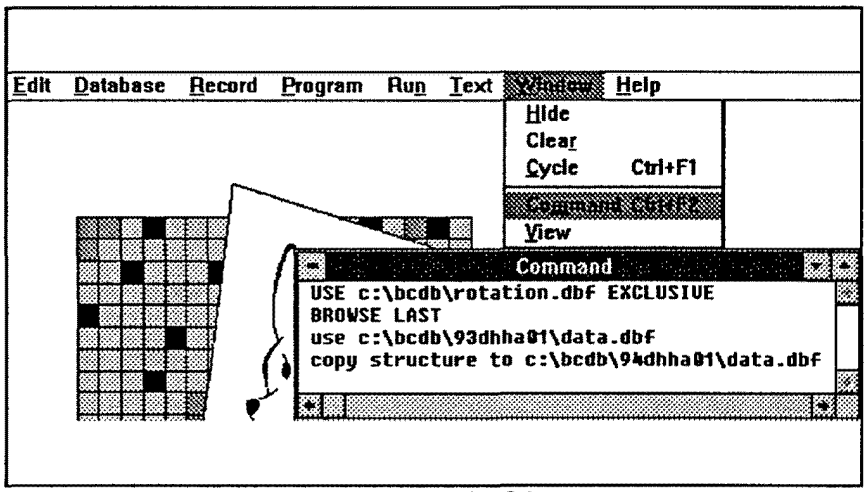


Figure 3-21

Type, in the **Command Box,** the following lines, as shown in figure 3-21:

use c:\bcdb\93dhha01\data.dbf

copy structure to c:\bcdb\the rotcode from step 2\data.dbf

Now *type*, pack and press the enter key.

The new Rotation data record, sub-directory and data table are created and ready to be loaded. Go to Section 4, The Loading Process for Rotation Data Tables, for information on loading procedures.

Step 4. Check Your Work.

To verify that the new Rotation Data Table was created, exit the loading program and enter the BCTPdb program. Select the Research button from the BCTPdb WELCOME Screen. You should be able to find the new rotation in the Rotation Selection Interface. Leave the interface by selecting the OK button and allowing the all default to remain active. From the investigation set *click on* the new rotation number and press the Rotational Information button to read and verify that data was entered correctly.

SECTION 4

IV. THE LOADING PROCESS FOR ROTATION DATA TABLES

Once data has been processed into some kind of usable digital form (see Section 3, Pre-Processing Procedures), it is ready to be loaded into the database. This is accomplished by entering the data into tables; either a Rotation Data Table, the Good Ideas Table, or one of the three Trends Tables. This section will deal with loading data into Rotation Data Tables. Section 5, The Loading Process for Good Ideas and Trend Tables, will address the Good Ideas and Trends Tables.

Before data can be loaded for a new rotation, the loader must create a new Rotation Data Table by following the procedures detailed in Section 3, Creating Rotation Data Tables. Each rotation has its' own unique Rotation Data Table which is identified by its' Rotation Code (Rotcode). The Rotation Data Tables are the data displayed when the Database user selects Research from the BCTPdb Welcome screen.

Rotation Data Tables can usually be loaded by a trained, military experienced, data entry individual working closely with a military analyst, who provides analysis, guidance and assistance with quality control (ie: laying out the doctrinal sequence for Unit Generated Data, providing guidance when units do not follow doctrinal layout procedures, and checking the data table for errors and consistency. The analyst will also generate new products from the data provided for loading.

There are three different loading procedures which will accommodate loading the various types of digital data. They will be addressed in this section and are:

- Loading Procedures for Scanned Documents
- Loading procedures for Digital Data
  - Digital Tapes
  - Floppy Disks
- *Loading Procedures for Video Tapes - TBP when finalized.*

A. Loading Procedures for Scanned Documents

In section 3, Pre-processing Procedures, the scanning of documents and the subsequent creation of text and graphic files was discussed. When loading these files into the data tables, there are some minor differences in what is entered in specific fields, but on the most part they are handled the same. Differences will be explained in greater detail in Appendix C, Standard Loading Conventions. The procedures for loading scanned documents follow:

1. From the FoxPro® *start-up screen*, select File, by *clicking on* **File** from the *main menu bar*. This will activate a *pulldown window*, from which you select **Open**, by *clicking* On **Open**. This will display the **Open dialog box**. See Figure 4-1.

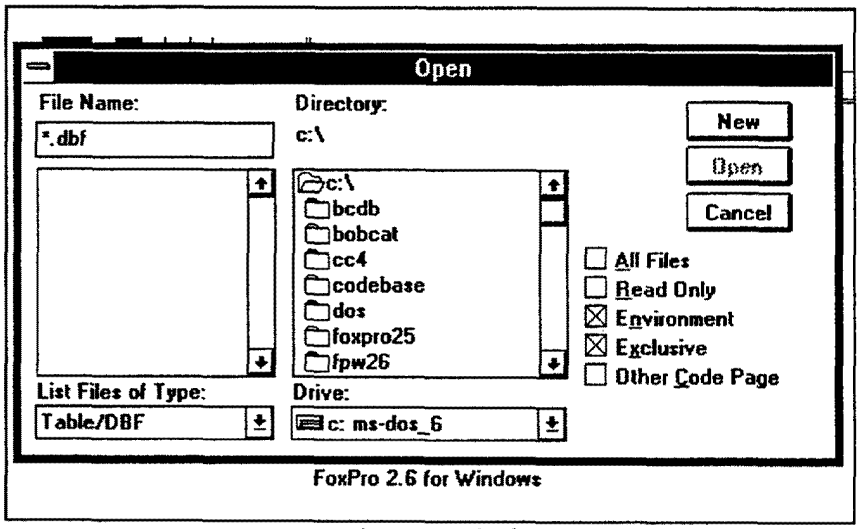


Figure 4-1

Follow these steps:

a. From the **Directory** selections (middle of box), *double click on* **c:**, then *double click on* **bcdb**. Now scroll down the directories until the **Rotcode** for the rotation to be loaded is

found. *Double click* on the **Rotcode** (an example Rotcode is 94dhha01)

b. In the **List Files of Type**: (bottom Left of box) **Table/DBF** should be selected.

c. From the **File Name** selections (Left side of box), *double click on* **data.dbf**. This will cause the dialog box to disappear and the *start-up screen* to reappear.

d. From the **Main Menu Bar**, click on **Database**. This will display a *pull-down* menu.

e. From the *pull-down* select **Browse**. This will bring up the **Data** Table for the selected rotation. See figure 4-2 below.

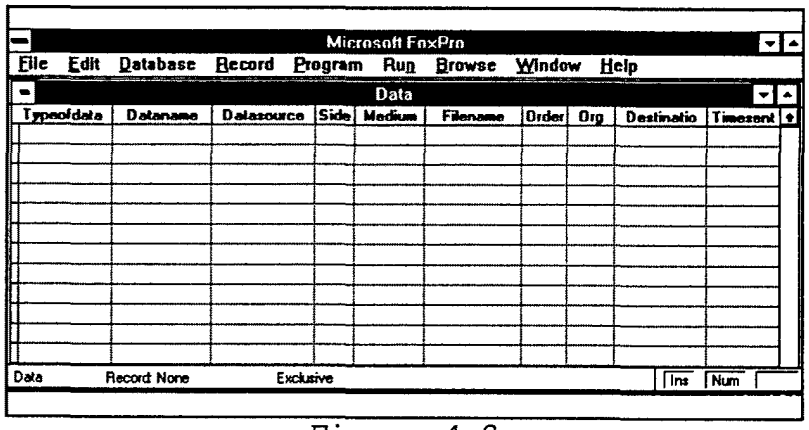


Figure 4-2

Since the Rotation Data Tables are very large, it is difficult to display the entire table at once. However, the fields are sizable, by *clicking on* and depressing the **mouse key** at the field name dividing lines. *Hold* the **mouse key** until the field is at the desired

width and then *release* the key. *Use* the **scroll bars** to *scroll vertically and horizontally* thru records and fields. By adjusting the field sizes and scrolling to the far right side of the table, the user can view the rest of the table as displayed in Figure 4-3.

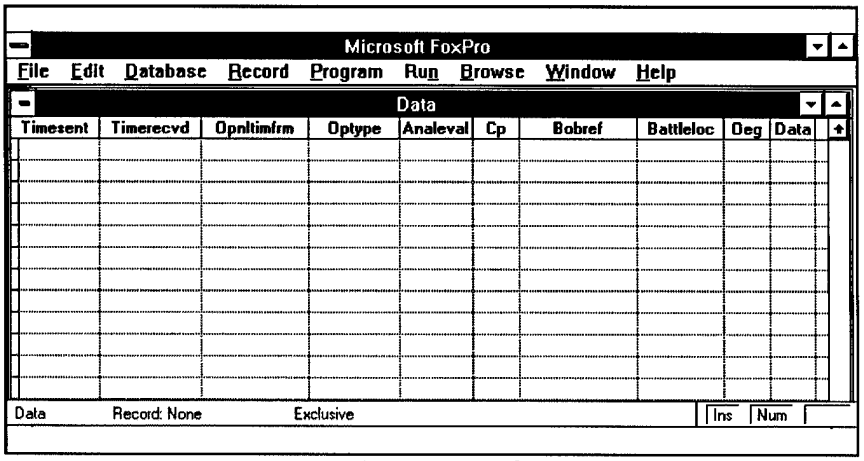


Figure 4-3

2. To Create and load the new record follow these steps:

   a. *Use* the key combinations **Ctrl + N** to create an empty record.

   b. Then *type* in or load the data fields, following the standard loading conventions found in Appendix C, Standard Loading Conventions.

3. To view the records with the fields displayed vertically rather than horizontally follow these steps:

   a. Going back to the **Main Menu Bar**, click on **Browse**. This will display a *pull-down menu.*

   b. From the menu, *click on* **Change** and the table will be displayed as shown in Figure 4-4, on the next page.

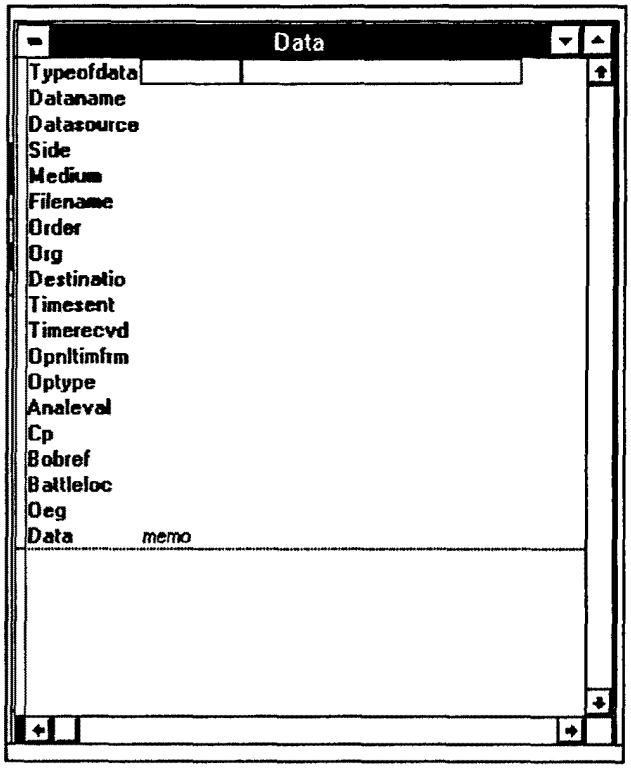


Figure 4-4

An example of a completed record for Rotation Data Table 93dhha01 is shown as Figure 4-5 below.

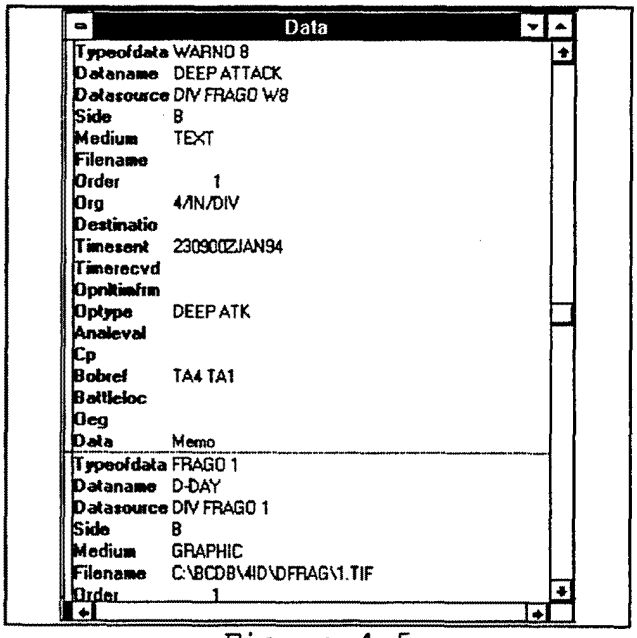


Figure 4-5

4. To return to viewing the records with the fields displayed horizontally, follow these steps:

a. Going back to the **Main Menu Bar**, click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Browse** (which will be displayed where **Change** was in the previous step) and the table will again be displayed as shown in figures 4-2 and 4-3.

5. The last step is to check your work. Do this by exiting the loading program and entering the BCTPdb program. From the Welcome Screen, select the Research button. From the Rotation Selection interface make sure your rotation data file falls within the rotation selection criteria, then, *click on* the OK button. If you have loaded correctly, the new rotation data will be displayed in the data display window as you select the appropiate selector button to view the new data.

B. Loading Procedures for Digital Data

Digital data is the data provided either on digital tapes (form the CBS system) or on floppy disks (from the WFX unit, the OPFOR, or the BCTP team). Digital tape loading procedures are still evolving, but are provided to document their current status. Floppy disks are loaded into the data tables in the same manner as Scanned Documents. However, there are some special considerations that the loader must be aware of, and they are covered in this section.

1. Loading Procedures for Digital Tapes

Currently, the Data tapes are prepared and loaded by the project programmer. This section is a continuation of the Data Tape Preparation process described in section 3. The example text files that were created in section 3 are input into the tables created earlier using the following steps:

1. Open the empty table. If the table has not yet been created for the rotation being processed, it must be created by using the FoxPro **COPY STRUCTURE** command:

USE C:\BCDB\93DHHA01\B_CBTATT.DBF

2. On the command line, enter:

APPEND FROM<filename>DELIMITED

where filename is the fully qualified name of the text file. This command will create one record in the table for each line in the input file. An example of a complete command is:

APPEND FROM C:\BCDB\CBTATT.TXT DELIMITED

2. Loading Procedures for Floppy Disks

The procedures for loading Floppy Disks data are the same as for Scanned Documents (see page 4-3) provided the loader completes the following steps:

1. Load the floppy disks document/documents onto the c: or harddrive of the loading computer, following the procedures described in section 3, Saving Files.

2. It is recommended that the files on the disk be converted, from whatever word processing program was used to create them, into an *ASCII Smart* text file, since *FoxPro®* will only read ASCII files. An important note here is that tables, charts, and figures will not convert well (if at all) into ASCII text files. Consequently the loader must save them as graphic files, *before converting the files* to ASCII. Two methods of creating graphics that have proven to work well are:

   a. Print the pages containing the chart, table, or figure and then scan it to create a *.tif* file (see section 3, Scanning techniques for graphic files).

   b. The second method, which is usually faster, is to use the *Print Screen* capability of *Windows™* to copy each desired graphic to the clipboard, then to use the *Paint Shop Pro™* application to **Paste** the clipboard and create *.tif* files (see the *Paint Shop Pro™* documentation for detailed procedures).

SECTION 5

V. THE LOADING PROCESS FOR GOOD IDEAS AND TREND TABLES

This section was written separate from section 4, The Loading Process for Rotation Tables, because the tables described here are different and serve a separate purpose than those used for loading Rotation tables. Rotation tables are specific for each rotation, while the Good Ideas and Trends Tables are continuous, across all rotations. Good ideas and Trends Tables are already created, and exist as a continuous part of the database. Unlike Rotation Tables, the analyst or loader does not create them for every new rotation. As data from a new WFX becomes available, the analyst and/or loader simply opens the existing tables and loads the data. The Good Ideas and Trends tables are the data displayed when the Database user selects Good Ideas or Trends from the BCTPdb Welcome screen. They must be updated as each new rotations data becomes available to keep the Trends data current, and meaningful.

The Good Ideas Table can usually be loaded by a trained, military experienced, data entry individual working closely with a military analyst, who provides analysis, guidance and assistance with quality control. The analyst may generate new products from the good ideas provided for loading, and from analysis of WFX materials. The Trends tables should be loaded by a military analyst.

The Loading Procedures for the following tables are addressed in this section:

- Good Ideas
- Trends

- Performance Trends (AAR Trends)
- FER Trends
- *Objective Data Trends - TBP when finalized.*

A. Loading Procedures for the Good Ideas Table

The Good ideas Table can be loaded by the loader, as its function and procedures for loading are similar to the Rotation Tables. The data field selections are similar to Rotation Tables, however the path to the table and the standard loading conventions contain some differences. Step by step procedures follow:

1. From the FoxPro® *start-up screen*, select **File**, by *clicking on* **File** from the *main menu bar*. This will activate a *pulldown window*, from which you select **Open**, by *clicking* On **Open**. This will display the **Open dialog box** (See Figure 5-1).

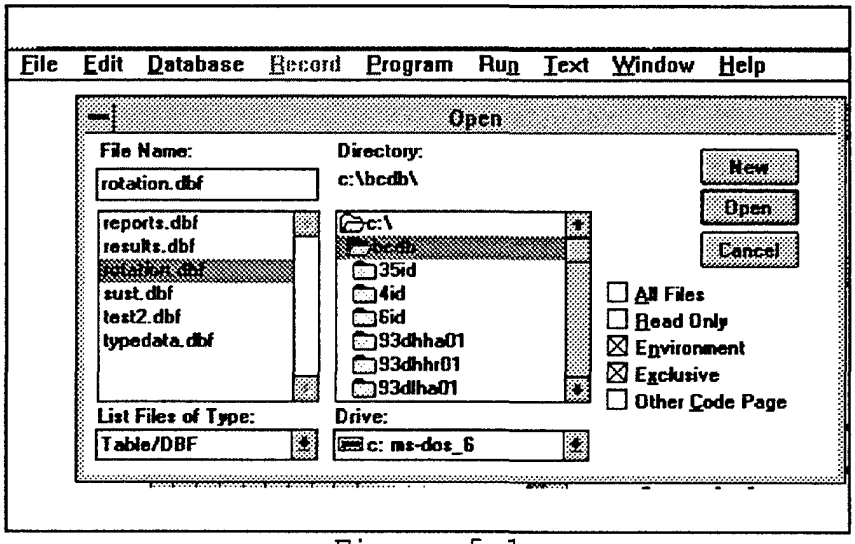


Figure 5-1

Follow these steps:

a. From the **Directory** selections (middle of box), *double click on* **c:**, then *double click on* **bcdb**. Now scroll down the directories until **support** is found. *Double click* on **support.**

b. In the **List Files of Type**: (bottom Left of box) **Table/DBF** should be selected.

c. From the **File Name** selections (Left side of box), *double click on* **gi.dbf**. This will cause the dialog box to disappear and the *start-up screen* to reappear.

d. From the **Main Menu Bar**, click on **Database**. This will display a *pull-down* menu.

e. From the *pull-down* select **Browse**. This will bring up the **Gi Table**. See figure 5 -2 below.

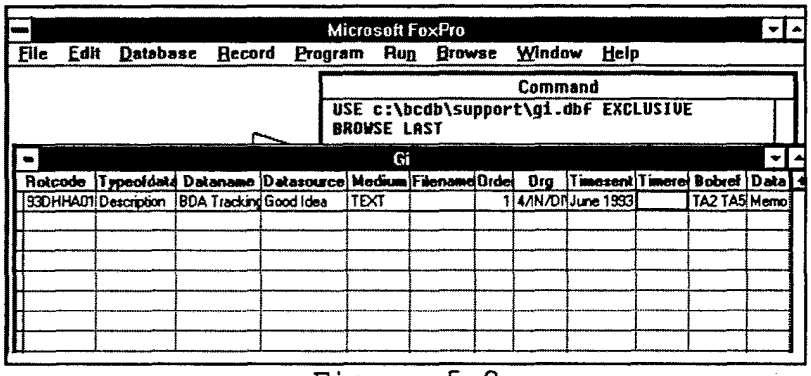


Figure 5-2

The fields are sizable, by *clicking on* and depressing the **mouse key** at the field name dividing lines. *Hold* the **mouse key** until the field is at the desired width and then *release* the key. *Use* the **scroll bars** to *scroll vertically and horizontally* thru records and fields.

2. To Create and load the new record follow these steps:

a. *Use* the key combinations **Ctrl + N** to create an empty record.

b. Then *type* in or load the data fields, following the standard loading conventions found in Appendix C, Standard Loading Conventions.

3. To view the records with the fields displayed vertically rather than horizontally follow these steps:

a. Going back to the **Main Menu Bar**, click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Change** and the table will be displayed as shown in Figure 5-3, below.

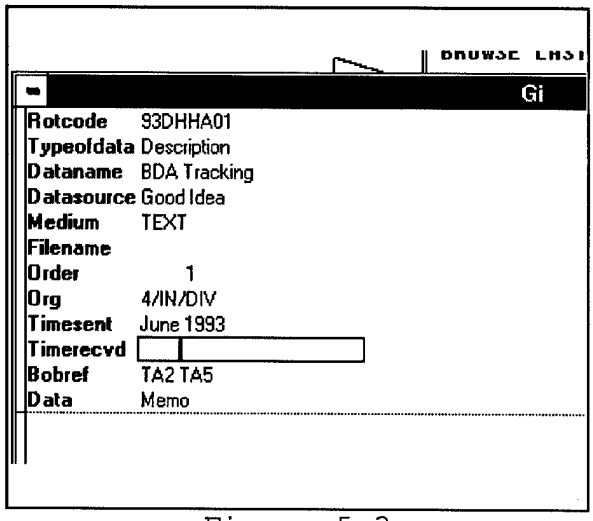


Figure 5-3

4. To return to viewing the records with the fields displayed horizontally, follow these steps:

a. Going back to the **Main Menu Bar**, click on **Browse**.

This will display a *pull-down menu.*

b. From the menu, *click on* **Browse** (which will be displayed where **Change** was in the previous step) and the table will again be displayed as shown in figure 5-2.

5. The last step is to check your work. Do this by exiting the loading program and entering the BCTPdb program. From the Welcome Screen, select the Good Ideas button. From the Good Ideas Category Selection interface select the OK button. If you have loaded correctly, the new rotation code will be displayed as you scroll thru the data records.

B. Loading Procedures for Trends Tables

There are three types of Trends Tables. They are:

- Performance Trends (Taar.dbf)
- FER Trends (Tfer.bdf)
- Objective Data Trends (*TBP*)

The Performance and FER Trends Tables should be loaded by a military analyst, familiar with BCTP and current Army doctrine. The Objective Data Trends are still in the development stage, and are currently loaded by the programmer. The procedures for loading Performance and FER Trends follow:

1. Loading Performance Trends

The Performance Trends are extracted from the Sustain and Improve slides found in the rotation FER (Final Exercise Report) in the AAR section. An entry (record) is made into the Performance Trends Table for every sustain and improve comment addressed. These comments are coded by Rotation, BOS, and Sustain or Improve. The steps used to load this table follow:

1. From the FoxPro® *start-up screen*, select **File**, by *clicking on* **File** from the *main menu bar.* This will activate a *pulldown window*, from which you select **Open**, by *clicking* On **Open**. This will display the **Open dialog box** (See Figure 5-1 on page 5-2). Then follow these steps:

   a. From the **Directory** selections (middle of box), *double click on* **c:**, then *double click on* **bcdb**. Now scroll down the directories until **support** is found. *Double click* on **support.**

b. In the **List Files of Type**: (bottom Left of box) **Table/DBF** should be selected.

c. From the **File Name** selections (Left side of box), *double click on* **taar.dbf**. This will cause the dialog box to disappear and the *start-up screen* to reappear.

d. From the **Main Menu Bar**, click on **Database**. This will display a *pull-down* menu.

e. From the *pull-down* select **Browse**. This will bring up the **Taar Table**. See figure 5-4 below.

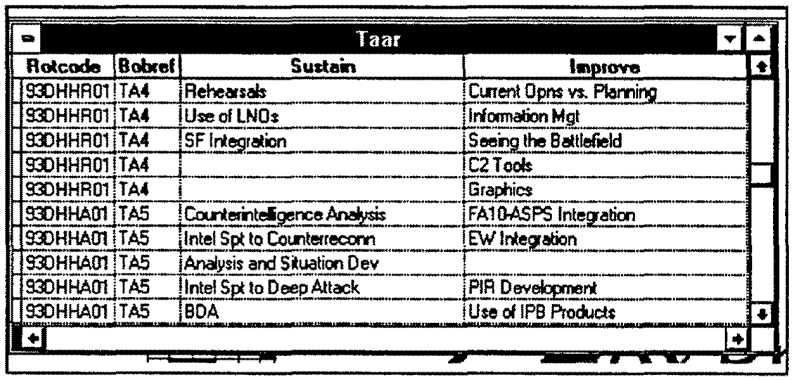


Figure 5-4

The fields are sizable (though probably not needed with this table), by *clicking on* and depressing the **mouse key** at the field name dividing lines. *Hold* the **mouse key** until the field is at the desired width and then *release* the key. *Use* the **scroll bars** to *scroll vertically and horizontally* thru records and fields.

2. To Create and load new records follow these steps:

a. *Use* the key combinations **Ctrl + N** to create an empty record for every entry to be made. Each Sustain or Improve comment will become a new record.

b. Then *type* in the data fields for each entry as follows:

- **Rotcode:** Rotation code: Use *Appendix F, Archive Reference ID Codes* for instructions, and enter for each Sustain or Improve comment. (ie: 93DHHR01 is the Rotcode for the 35IDs' rotation from 1993).
- **Bobref:** Using the Blueprint of the Battlefield, type a code for each entry that properly identifies the BOS for the subject addressed. The codes/choices (underlined) are:
  - TA1: Maneuver
  - TA2: Fire Support
  - TA3: Air Defense
  - TA4: C2 / Battle Command
  - TA5: Intelligence
  - TA6: Mobility and Survivability
  - TA7: Combat Service Support
- **Sustain:** The individual bulleted sustain remarks from the AAR slides.
- **Improve:** The individual bulleted improve remarks from the AAR slides.

*A note on the **sustain/improve** remarks:* Keep names short and constant. At times you may have to shorten or translate the comments into a category/comment that is used consistently, and means the same thing.

3. To view the records with the fields displayed vertically rather than horizontally follow these steps:

a. Going back to the **Main Menu Bar**, and click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Change** and the table will be displayed as shown in Figure 5-3, above.

4. To return to viewing the records with the fields displayed horizontally, follow these steps:

a. Going back to the **Main Menu Bar**, click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Browse** (which will be displayed where **Change** was in the previous step) and the table will again be displayed as shown in figure 5-2.

5. The last step is to check your work. Do this by exiting the loading program and entering the BCTPdb program. From the Welcome Screen, select the Trends button. From the Trend Selection interface select the Performance Trends by BOS button, then press the OK button. From the AAR Trend Selection press the OK button. If you have loaded correctly, the new rotation code will be displayed in the Rotations display window as you *click on* selected Improve/Sustain Topics.

2. Loading FER Trends

The FER Trends are extracted from the FER by an experienced military analyst meticulously reading the BOS Observations found in the rotation FER (Final Exercise Report). An entry (record) is

made into the FER Trends Table for each BOS and sub-BOS observation addressed. These observations are coded by Rotation (like the Trends data), BOS and/or sub-BOS, and then evaluated and coded as a positive, negative or neutral trend comment. The steps used to load this table follow:

1. From the FoxPro® *start-up screen*, select **File**, by *clicking on* **File** from the *main menu bar*. This will activate a *pulldown window*, from which you select **Open**, by *clicking* On **Open**. This will display the **Open dialog box** (See Figure 5-1 on page 5-2). Then follow these steps:

a. From the **Directory** selections (middle of box), *double click on* **c:**, then *double click on* **bcdb**. Now scroll down the directories until **support** is found. *Double click* on **support.**

b. In the **List Files of Type**: (bottom Left of box) **Table/DBF** should be selected.

c. From the **File Name** selections (Left side of box), *double click on* **tfer.dbf**. This will cause the dialog box to disappear and the *start-up screen* to reappear.

d. From the **Main Menu Bar**, click on **Database**. This will display a *pull-down* menu.

e. From the *pull-down* select **Browse**. This will bring up the **Tfer Table**. See figure 5-5 on the next page.

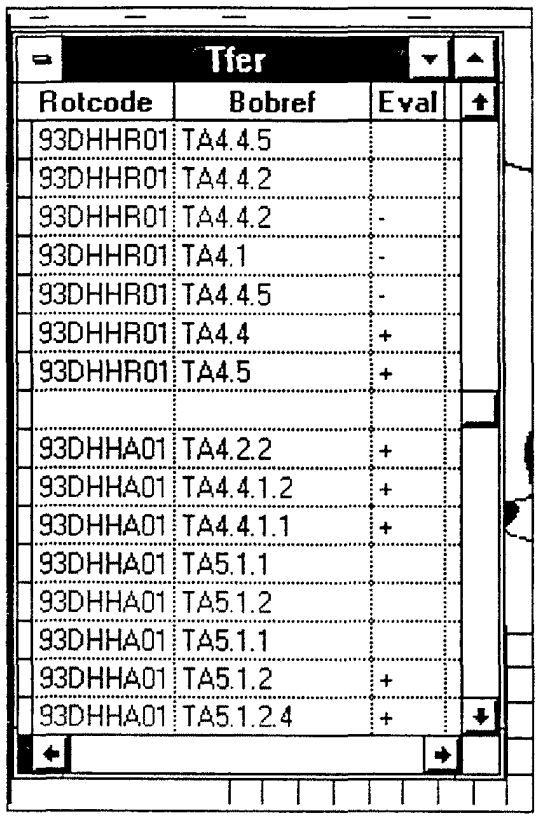


Figure 5-5

Just like the tables before, the fields are sizable (though probably not needed with this table), by *clicking on* and depressing the **mouse key** at the field name dividing lines. *Hold* the **mouse key** until the field is at the desired width and then *release* the key. *Use* the **scroll bars** to *scroll vertically and horizontally* thru records and fields.

2. To Create and load new records follow these steps:

   a. *Use* the key combinations **Ctrl + N** to create an empty record for every entry to be made. Each BOS and/or sub-BOS comment will become a new record.

b. Then *type* in the data fields for each entry as follows:

• **Rotcode:** Rotation code: Use *Appendix F, Archive Reference ID Codes* for instructions, and enter for each BOS/sub-BOS comment. (ie: 93DHHR01 is the Rotcode for the 35IDs' rotation from 1993).

• **Bobref:** Using the O/C's coding, from the Blueprint of the Battlefield, type the code for each entry (a separate entry is required for each code number) that properly identifies the BOS and/or sub-BOS for the comment addressed. The codes are extracted from the FER, just as the O/C's entered them. (ie: TA4.2.1 is a code that may be used when commenting on a units ability to assess their situation).

• **Eval:** After reading the comment/comments, the analyst records a +,or -, or makes no entry, depending on if the comment was positive, negative or neutral for every BOS and/or sub-BOS noted..

3. To view the records with the fields displayed vertically rather than horizontally follow these steps:

a. Going back to the **Main Menu Bar**, and click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Change** and the table will be displayed as shown in Figure 5-3.

4. To return to viewing the records with the fields displayed horizontally, follow these steps:

a. Going back to the **Main Menu Bar**, click on **Browse**. This will display a *pull-down menu.*

b. From the menu, *click on* **Browse** (which will be displayed where **Change** was in the previous step) and the table will again be displayed as shown in figure 5-2.

5. The last step is to check your work. Do this by exiting the loading program and entering the BCTPdb program. From the Welcome Screen, select the Trends button. From the Trend Selection interface select the Performance Trends IAW Blueprint of the Battlefield button, then press the OK button. From the FER Trend Selection press the OK button. From the FER Trends for Maneuver interface select the TA1 button. If you have loaded correctly, the new rotation code will be displayed in the table.

VI. REFERENCES

1) *Research Plan for Battle Command Training Program (BCTP) Database Development,* U.S. Army Research Institute, 17 August 1993.

2) *Battle Command Training Program (BCTP) Front End Analysis,* U.S. Army Research Institute, 22 January 1993.

3) *Battle Command Training Program (BCTP) Database Concept,* U.S. Army Research Institute, 22 January 1993.

4) *Battle Command Training Program (BCTP) Requirements Analysis,* U.S. Army Research Institute, 22 January 1993.

5) *BCTP Data Conference Read Ahead-Package,* U.S. Army Research Institute, 15 December 1992.

6) *Microsoft® Windows™* User's Guide, Microsoft Corporation, 1992.

7) *Microsoft® FoxPro® User's Guide,* Microsoft Corporation, 1993.

8) *TextBridge™ OCR for Windows User's Guide,* Xerox Imaging Systems,Inc., 1993.

9) *Paint Shop Pro™ for Windows User's Guide,* JASC, Inc., 1993.

10) *Envisions Color Scanner Reference,* Envisions Solutions Technology, 1993.

11) *BCTPdb User's Guide*, BDM Inc., 1994.

12) *BCTPdb Archiving Guide*, PRC Inc., 1994.

13) *BCTPdb Data Dictionary*, BDM Inc., 1994.

APPENDIX A

SETTING PREFERENCES

This appendix is a quick reference for Preference Settings proven to be effective in the software applications used to load the BCTPdb. Only those areas that the loader should be concerned with are addressed. More information for the specific applications can be found in their related User Guides or References.

Preference Settings are addressed for the following applications:

- *TextBridge™ OCR*
- *The Norton Desktop Editor*
- *Paint Shop Pro™* and *Envisions TWAIN application*
- *FoxPro®.*

➢ *TextBridge™ OCR*

Detailed Preference settings can be found in the *TextBridge™ OCR* Users Guide on Pages 3-2 to 3-4. Quick reference settings are:

Preferences:

***Document Quality*:** Standard, unless poor quality - then Fax.

Page Orientation: As appropiate.

Language: English.

Auto Page Segment: Select, if the page/s have more than one column.

Ignore Photos/Half: Select, if the document contains photos, tables charts, or art work.

Scanner Settings:

Use Automatic Document Feeder: Select.

Brightness: Select Auto.

Resolution: 300x300.

Page Size: As appropiate, usually Letter.

➢ *The Norton Desktop Editor*

Detailed Preference settings can be found in the *Norton Desktop for Windows* Reference on Pages 9-24 to 9-28. Quick reference settings are:

Document Preferences:

Tab Spacing: 4

Right Margin: 65

Word Wrap: Select.

Auto Indent: Select.

Expand Tabs with Spaces: Deselect.

Save as Default Settings: Select.

➢ *Paint Shop Pro™* and *Envisions TWAIN application*

• Detailed Preference settings can be found in the *Paint Shop Pro™* Users Guide on Pages 3-11 to 3-14. Quick reference settings for *Paint Shop Pro™* are:

Preferences - File Saving:

File-Save As: Select.

File-Batch Conversion: Select.

File-Exit: Select.

Windows-Close All: Select

JIF/JPG Compression Level: Leave at default.

DPI:

PCX: 100

TIFF: 100

WPG: 300

• Quick reference settings for *Envisions TWAIN application* are:

See Section 3, Page 3-11 to 3-12 of this guide.

➢ *FoxPro®.*

Detailed Preference settings can be found in the *FoxPro®* Users Guide on Pages U3-14 to U3-15. Quick reference settings are:

Edit Preferences: This can only be set when a memo editing window is active.

Save Options: will not be addressed, Leave at default.
Justification: Left.
Use These Preferences as Default for Memos: Select.
Drag-and-Drop Text Editing: Select.
Wrap Words: Select.
Auto Indent: Select.
Status Bar: Deselect.
Tab Size: 4

APPENDIX B

STANDARD LOADING CONVENTIONS

This appendix provides the user with the standard loading conventions that have been developed to date. It will help the reader understand what and how data is used to achieve relational functionality that is critical in fully exploiting the power and capabilities of a relational database.

The information contained in this appendix pertains to the Rotation Data Tables described in section 4, and to the Good Ideas Table found in section 5.

Subjects addressed in this appendix are:

- An Explanation of the Relational Database
- Rotation Data Tables Loading Conventions
- Good Ideas Table Loading Conventions
- How to Load Data (memo) Fields
- Miscellaneous Loading Notes

➢ An Explanation of the Relational Database

The BCTP Database is organized as a collection of related FoxPro/ Windows tables. The data may be stored either locally on a user's DOS/Windows 3.1 compatible computer, or in a Windows-compatible network in a read-only configuration. Numeric and fixed-length character data are stored in Dbase-like files with an extension of DBF. Indeterminate-length text data are stored in memo records, which are written to files with an extension of FPT. The current sizes of both the .DBF and .FPT files are documented in the *Database Data Dictionary.*

The *BCTP Prototype Database Data Dictionary* is organized by the individual FoxPro tables which, in concert with the user interface, comprises the BCTP Prototype Database. Separate sections for each table are designed to be replaced as the prototype evolves over time into an operational product. Note that the sizes given are as of 7/1/94, and may change as development and database loading activities continue.

By its relational nature, different BCTP Prototype Database tables may be related by matching identical or similar values in fields in the different tables. The table below reflects the fields which are most likely to be used in matching different tables. It is not necessary for fields in different tables to have identical names; the contents are matched. In cases where the SIDE field is enclosed in parentheses, the SIDE is determined by the name of the table. See the table on the next page.

FieldType→ TableName↓	UNIT	TIME	LOCATION	SIDE	WEAPON
DATA	ORG, DESTINATIO	TIMESENT TIMERECVD		SIDE	
R_ADARPT	UNIT TIME	LOCATION	(R)	WEAPO N	
BLUE_AIR	UNIT	TIME	LOCATION	(B)	SYSTEM
B_ARTILL	UNIT	TIME	LOCATION	(B)	WEAPON
B_MED	UNIT	STARTTIME ENDTIME		(B)	
B_ATTRIT	UNIT	TIMESTART TIMEEND		(B)	
CBSTAT	UNIT	STATTIME		SIDE	CAUSE
R_ARTILL	UNIT	TIME	LOCATION	(R)	WEAPON
WIPE_OUT	UNIT	TIME	LOCATION		
INTEL RINTEL	DET_UNIT	DET_TIME	LOCATION	SIDE	

➢ Rotation Data Tables Loading Conventions

The Rotation Data Tables are built from the following documents:

Unit Generated products
Unit Performance products
CBS/AARS products
AAR Video

They are made up of the following Fields:

Field	Field Name	Type	Width
1	TYPEOFDATA	Character	20
2	DATANAME	Character	45
3	DATASOURCE	Character	15
4	SIDE	Character	1
5	MEDIUM	Character	10
6	FILENAME	Character	35
7	ORDER	Numeric	3
8	ORG	Character	15
9	DESTINATIO	Character	15
10	TIMESENT	Character	12
11	TIMERECVD	Character	12
12	OPNLTIMFRM	Character	15
13	OPTYPE	Character	30
14	ANALEVAL	Numeric	2
15	CP	Character	5
16	BOBREF	Character	30
17	BATTLELOC	Character	10
18	OEG	Character	5
19	DATA	Memo	10

Field Descriptions

The sections below describe each field in the Rotation Data Tables. Where it is needed for clarification, or there are limited acceptable entries, the range of values or examples are presented. When several similar items are present, the listings of values have been abbreviated by signifying the presence of multiple items by a lower case n (e.g. ANNEX n would be used to demonstrate ANNEX A). In cases where the number of unique values is very large, the listing of values has been omitted. The fields that must contain an entry for every record are indicated with an asterisk *.

- **Field: TYPEOFDATA ***

This field indicates the general category of the data record, such as a section of an OPORD, a FRAGO, or a specific product. TYPEOFDATA is used as a key field in several queries. Because of this, this is one of the fields where the values may be a critical element of a search or query. *Any additions, deletions or changes to this field must be coordinated with the programmer.*

Range of values:

AAR1
AAR1 OPFOR
AAR2
AAR2 OPFOR
ADA
ANALYSIS
ANNEX n
ANNEXES
APPENDIX n
ATK GUID MATRIX
ATTACHMENT n
BattleObs
C2
CHANGE n
CHECKLIST
COA ANALYSES
COMBAT INSTR
COMBAT INSTRUCTIONS

COMPARISON
CSS
DECISION CONTROL
DESCRIPTION
DIRECTIVE MEASURES
DISCONNECTS
EX DIR UPDATE
EXECUTION MATRIX
FRAGO n
GENERAL MEASURES
HPT LIST
INCOMING INFORMATION
INFORMATION EXCHANGE
INTELLIGENCE
MOB/SURVIVABILITY
O/C TEAM
Obs/Comments
OPFOR MANNING
OPFOR TEAM
OPFOR
OPORD EXTRACT
OPORD
OTHER
OUTGOING INFORMATION
OVERVIEW
RESULTS
SAMPLE OVERLAY
SCENARIO
SITUATION ASSESSMENT
TAB n
TEMPLATE
TIMELINE
UNIT
VOL n CHAPTER n
VOL n COVER
VOL n CONTENTS
WARNO
WARNO n

• **Field: DATANAME ***

This field refines the category specified by the TypeOfData field. It contains information such as the specific section title of unit products and a more detailed title for graphics. It is used as a key field.

• **Field: DATASOURCE ***

This field is intended to be the most general of the document qualifiers. It reflects the highest level of aggregation of documents/sections. It is used as a key field. Because of this, this is one of the fields where the values may be a critical element of a search or query. *Any additions, deletions or changes to this field must be coordinated with the programmer.*

Range of values:

AAR1
AAR2
ACCES
AJS
AVN BDE OPORD
AVN BDE FRAGO n
CAA OPORD
CF OPORD
CNTROFF OPORD
CORP REPORT
CORP FRAGO n
CORP OPORD
DEF OPORD
DISCOM OPORD
DIV FRAGO W
DIV FSOP
DIV REQUEST
DIV REPORT
DIV FRAGO n
DIV OPORD
DIV FRAGO
DIV FRAGO Wn
EAC REPORT
FER
FRAGO RECON

FRAGO n
nADA REPORT
nBDE OPORD
nBDE REQUEST
nBDE FRAGO Wn
nBDE FRAGO W
nBDE REPORT
nBDE FRAGO n
nCAV OPORD
nMAR FRAGO n
nMAR OPORD
ORDERS X-WALK
REPORT
TIMELINE
WHITE CELL

• **Field: SIDE ***

The SIDE field is used as a qualifier for kinds of data which might apply to either the Opfor or Blue side, such as unit-generated data.

Range of Values : O or B

• **Field: MEDIUM ***

The MEDIUM field indicates the form of the referenced data. If MEDIUM is TEXT, then the textual information is stored in the memo DATA field. If MEDIUM is GRAPHIC, field FILENAME contains the fully qualified file name of the graphics file. For a MEDIUM of VIDEO, the FILENAME field contains a video tape identification.

Range of Values : TEXT
GRAPHIC
VIDEO

• **Field: FILENAME *** (only for graphics and video files)

The FILENAME field contains the fully-qualified file name of the graphic image identified by the remainder of the record, when MEDIUM is GRAPHIC. FILENAME contains a short video tape identification for records where MEDIUM is VIDEO.

Range of Values : Each graphic image consists of a unique file name such as: C:\BCDB\35ID\DIVOPLAN\A3AC1.TIF; video clips contain a short video tape identification such as: 93DHHR01-V001.

- **Field: ORDER ***

The ORDER field is a numeric field indicating the logical order of related records. ORDER may indicate time sequencing, as in graphics images, or ordering of document sections. ORDER applies to records with identical DATASOURCE values.

- **Field: ORG ***

The ORG field contains the organization (Unit) identification of the unit preparing the product in the case of unit-generated material or the identification of the unit being evaluated in the case of performance data.

Example Range of Values :

1-167/CAV/SQDN
1//BDE
10/ADA/BDE
11/KPA/CORP
116/CAV/BDE
149//BDE
17/FA/BDE
3//BDE
35/AVN/BDE
35/IN/DIV
4/AVN/BDE
4/IN/DIV
6/IN/DIV
67//BDE
69//BDE
8/MAR/BDE
8//CAA
CENTRAL FROUNT
DISCOM/BDE
EAC
III//CORP
X//CORP

• **Field: DESTINATIO**

The DESTINATIO field is intended to document the recipient of a message or order. Its format is the same as the ORG field described above.

• **Field: TIMESENT** * (must have for video files)

The TIMESENT field is used to document the time some activity occurred, such as the send time of a message. It is also used to show the start time of a video segment.

Range of Values: TimeSent may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

• **Field: TIMERECVD** * (must have for video files)

The TIMERECV field is used to document the time some activity occurred, such as the receive time of a message. It also used to show the end time of a video segment.

Range of Values : TIMERECVD may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips.

• **Field: OPNLTIMFRM**

The OPNLTIMFRM field is used to document the battle phase.

Example Range of Values:

CURRENT BATTLE
PHASE 1
PHASE I
PHASE I/ II
PHASE I/ II/III
PHASE I/II
PHASE I/II/III
PHASE II
PHASE III
Phase I/II

• **Field: OPTYPE**

OPTYPE documents the type of the operation to which the DATA record applies.

Example Range of Values:

ATTACK
ATTACK DEFEND
ATTACK DEFEND CATK
BHO
CATK
DEEP ATK
DEEP ATTACK
DEFEND ATTACK
DEFEND
DEFENSE
Move Defend
MOVE PASSAGE OF LINES ATTACK
MOVE DEFEND CATK
MOVE
MOVE DEFEND CATK
MOVE DEFEND
MOVE DEFEND ATTACK
SCREEN

• **Field: ANALEVAL**

The ANALEVAL field is intended to allow an analyst to enter a qualitative evaluation of the information contained in the remainder of the record. It is not currently used.

• **Field: CP**

The CP field shows the command post to which information in the current record applies. It is not currently used.

Range of Values : CP

• **Field: BOBREF ***

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values :

TA1, TA2, TA3, TA4, TA5, TA6, TA7. *A note:* Enough character space has been allowed to enter subfunction reference numbers (ie: TA1.2.1.2)

• **Field: BATTLELOC**

The BATTLELOC field indicates the relative position on the battlefield. It is not currently used.

• **Field: OEG**

Operational Exposure Guidance. (Not currently used)

• **Field: DATA ***

The DATA field is a memo field which contains the text of the product or document, or a description of the graphic or video clip. In general, the DATA field contains the data of interest, as defined by the remainder of the record. See How to Load Data (memo) Fields below for more details.

Range of Values: The range of values in the DATA field ranges from a few words to several pages of textual data.

➢ Good Ideas Table Loading Conventions

The Good Ideas Table is built from documents that have been created by O/Cs, analysts, Units, SMEs, or anyone else who has access to BCTP WFX information, or has captured an idea that should be shared with the Army.

It is made up of the following Fields:

Field	Field Name	Type	Width
1	ROTCODE	Character	8
2	TYPEOFDATA	Character	20
3	DATANAME	Character	45
4	DATASOURCE	Character	15
5	MEDIUM	Character	10
6	FILENAME	Character	35
7	ORDER	Numeric	3
8	ORG	Character	15
9	TIMESENT	Character	12
10	TIMERECVD	Character	12
11	BOBREF	Character	30
12	DATA	Memo	10

Field Descriptions

The sections below describe each field in the Good Idea Table. Where it is needed for clarification, or there are limited acceptable entries, the range of values or examples are presented. The fields that must contain an entry for every record are indicated with an asterisk *.

• Field: ROTCODE *

This field is used to code the rotation.

Range of values: See Appendix F, Archive Reference Codes.

• **Field: TYPEOFDATA ***

This field indicates the general category of the data record such as: description or a specific product.

Range of values: Up to 20 character description of the data record.

• **Field: DATANAME**

This field refines the category specified by the TypeOfData field. It contains information such as the specific section title of unit products and a more detailed title for graphics.

• **Field: DATASOURCE**

This field is intended to be the most general of the document qualifiers. It reflects the highest level of aggregation of documents/sections. It can be used to tell what the entry is (ie: Good Idea) or where the data came from (ie: Doctrine SME or the Name of the contributor).

• **Field: MEDIUM ***

The MEDIUM field indicates the form of the referenced data. If MEDIUM is TEXT, then the textual information is stored in the memo DATA field. If MEDIUM is GRAPHIC, field FILENAME contains the fully qualified file name of the graphics file. For a MEDIUM of VIDEO, the FILENAME field contains a video tape identification.

Range of Values : TEXT, GRAPHIC, VIDEO.

• **Field: FILENAME *** (only for graphics and video)

The FILENAME field contains the fully-qualified file name of the graphic image identified by the remainder of the record, when MEDIUM is GRAPHIC.

FILENAME contains a short video tape identification for records where MEDIUM is VIDEO.

Range of Values : Each graphic image consists of a unique file name such as: C:\BCDB\35ID\DIVOPLAN\A3AC1.TIF; video clips contain a short video tape identification such as: 93DHHR01-V001.

- **Field: ORDER ***

The ORDER field is a numeric field indicating the logical order of related records. ORDER may indicate time sequencing, as in graphics images, or ordering of document sections. ORDER applies to records with identical DATASOURCE values.

- **Field: ORG ***

The ORG field contains the organization (Unit) identification of the unit where the data was collected.

Example Range of Values :

1-167/CAV/SQDN
1//BDE
10/ADA/BDE
116/CAV/BDE
149//BDE
17/FA/BDE
3//BDE
35/AVN/BDE
35/IN/DIV
4/AVN/BDE
4/IN/DIV
6/IN/DIV
67//BDE
69//BDE
8/MAR/BDE
DISCOM/BDE
III//CORP

• **Field: TIMESENT ***

The TIMESENT field is used to document the time that the good idea was collected.

Range of Values: TimeSent should be entered as: Month and year.

• **Field: TIMERECVD**

The TIMERECV field is used to document the time some activity occurred, such as the receive time of a message. It also used to show the end time of a video segment. It is not currently being used.

Range of Values : TIMERECVD may either be in the 12 character form DDHHMMZMMMYY for message traffic, or the HH:MM:SS format for video clips or Month and year.

• **Field: BOBREF ***

The Blueprint Of the Battle (BOB) reference indicates a relationship of one or more sections of TRADOC Pamphlet 11-9 to the data contained in the current record.

Range of Values :

TA1, TA2, TA3, TA4, TA5, TA6, TA7. *A note:* Enough character space has been allowed to enter subfunction reference numbers (ie: TA1.2.1.2)

• **Field: DATA ***

The DATA field is a memo field which contains the text of the product or document, or a description of the graphic or video clip. In general, the DATA field contains the data of interest, as defined by the remainder of the record. See How to Load Data (memo) Fields below for more details.

Range of Values: The range of values in the DATA field ranges from a few words to several pages of textual data.

➢ How to Load Data (memo) Fields

Loading most of the data fields is a relatively simple process. After consulting with the analyst and agreeing on a logical use/loading structure, simply type in the information called for in the data field descriptions provided in the preceding pages.

The process for loading the last field - Data is a little more complex. The *memo* field found under the Data field heading is where all textual information to be displayed in the database is entered into the .FPT files. Entering information in all of the proceeding fields is the process that makes the memo field data relational to the rest of the database.

Text data can be entered by two methods:

- The first and simplest is to *double click* on the *memo* field which will display the Data.data window, and then to simply type in the text entry. You can tell if a *memo* field has text in it by the looking at the first letter in *memo*. If it is in lower case (*memo*), it does not contain data. If it is upper case (*Memo*), it contains data.

- The second requires the user to manipulate the screens so that the Table, the Data.data window, and a text editor or word processing program are all displayed simultaneously. See figure C-1 on the next page.

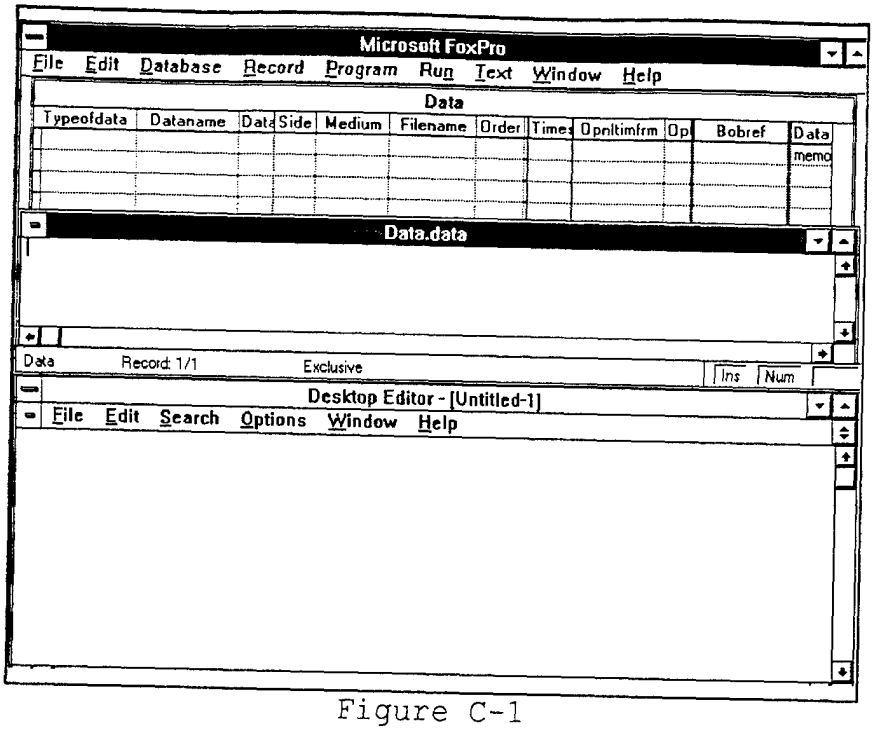


Figure C-1

Once the screens are arranged as above the user retrieves the appropiate text files using the text editor (as above) and using the copy or cut feature selects the text to be loaded. The selected text is then loaded using the *FoxPro*® Data.data window and the **Paste** function.

➢ Miscellaneous Loading Notes

• Text files that were saved to the hard drive can be deleted from the hard drive once they have been loaded to the database.

• Graphic files cannot be deleted, and any time they are moved to another directory, the database (FILENAME Field) must be updated with the new path.

• The databases search logic is designed to find files in their original document order layout. In other words , an OPORD is, by doctrine written as:

- OPORD with sub headers as:
  - Situation
  - Mission
  - Execution
  - Service Support
  - Command and Signal
- Annexes
- Appendices
- Tabs

APPENDIX C

TROUBLESHOOTING

If you have problems with any of the database commercial software applications, you should first read the appropiate help, questions & answers, or troubleshooting sections provided in your application manual. If you cannot resolve the problem, call the technical support number found in your application manual.

For problems associated with the BCTPdb and application, check your preference settings in all appropiate applications (see appendix B, Settings Preferences). If this does not resolve your problem contact one of the following:

BCTPdb Database Administrator (ARI-FLVN)
Attn: Terry P. Bartkoski
Army Research Institute Field Unit
P.O. Box 3407
Fort Leavenworth, KS 66027-0347
AVN (552-4933)
Commercial (913) 684-4933
Fax (913) 684-3290

BCTPdb Database Administrator (ARI-POM)
P.O. Box 5787
Bldg 104
Presidio of Monterey, CA 93944
AVN (929-3329)
Commercial (408) 372-3329
Fax (408) 647-5309

APPENDIX D

DATA TYPES & MEDIA

This appendix describes the data sources, the data media and how they are organized for the database user to access them. It provides the user an understanding of the range and types of data that are included in the database and their relational nature. Data sources and formats vary between BCTP teams and WFXs. The BCTP is an evolving training tool. Therefore the database administrator, archivist, loader and analyst must continue to monitor the available data sources and those that are provided to insure that the most worthwhile data is collected, archived, loaded and analyzed.

BCTP considers all WFX data as inherently sensitive. Certain data types have information that may require special access requirements due to either controversial content, personal information, or overall training readiness evaluations. Additionally, certain WFX's are classified and are therefore both sensitive and classified.

The data types available from each WFX are categorized into eight subject areas. The reader will see that a number of data sources are often used in more than one subject area. The subject areas and the data types they contain are:

- **Unit Generated**: Documents and Products that are produced by the WFX and OPFOR unit.

- **Unit Performance**: Documents and Videos produced by O/Cs, BCTP and Analyst that address WFX results.

- **Rotational Information**: Documents that provide background facts and information briefed to the exercise director and that put the WFX in context.

➢ **Objective Battle Data**: Statistical data that is produced by the simulation and can be used to conduct original analysis.

➢ **Battle Description**: Battle information that is produced by any source and contains a playback or description of the battle.

➢ **Player Unit Profile**: Information on the WFX unit that could help put the unit itself in context. *This data is not currently available.*

➢ **Good Ideas**: Documentation of successful concepts, ways of doing business, and lessons learned that are provided by O/Cs, SMEs, contractors or others.

➢ **Trends**:

- FER analysis: Analyst generated tables that quickly highlight the emerging BOS trends across rotations and time.
- Objective Data: Statistical computer generated data that is loaded into charts to display emerging trends across rotations and time, within the context of the simulation.

➢ Unit Generated Data

Exercise Unit generated Plans/Orders, FRAGOs, Maps and Overlays:

• Description of data: These data include the plans, orders, FRAGOs, requests, reports, maps and overlays of the unit being trained.

• Media: Various stapled and loose hardcopy documents, acetate overlays, VGTs and Floppy disks.

OPFOR generated data:

• Description of data: These data include the plans, orders, FRAGOs, requests, reports,maps and overlays used by the OPFOR to conduct the WFX.

• Media: Various stapled and loose hardcopy documents, acetate overlays, VGTs and Floppy disks.

➢ Unit Performance Data

After Action Review (AAR) video tapes:

• Description of data: These data include video tapes taken during the AARs (normally 2). Topics that are included are unit strengths and weaknesses, areas to sustain or improve and supporting VGTs and briefing charts.

• Media: 2 - 4 video tapes.

Army Command and Control Evaluation System (ACCES) data:

• Description of data: These data include detailed observer notes and final reports evaluating C2 operations/functions.

• Media: Hardcopy report and Floppy disks.

Final Exercise Report (FER):

• Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battlefield Operating Systems observations, After Action Review Products from both AARs, World Class OPFOR information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.

• Media: Bound hardcopy document.

O/C crosswalk of the unit Operations Plan:

• Description of data: The crosswalk is a comparison, conducted by O/C's, of the training units' operations plan against the higher headquarters plan. It contains comparisons by BOS and helps identify to the O/C's, strengths and weaknesses in the unit plan.

• Media: Stapled hardcopy document.

Observer/Controller (O/C) notes and checklists:

• Description of data: These notes could include observations of unit and/or staff section performance that is an indicator of training strengths and weaknesses as well as the informal O/C AAR s conducted with appropiate staff sections.

• Media: Various loose hardcopy notes, charta and VGTs *(At present, this data is not available)*

➢ Rotational Information

Exercise Control 5 day cartoon:

• Description of data: These data include EXCON provided graphic drawings of the battlefield with OPFOR/WFX unit positions as of the exercise start through days 1-5 and the end of the exercise.

• Media: 5 - 7 pages of hardcopy drawings.

Exercise Control briefing slides:

• Description of data: These data include EXCON provided information on weather, terrain, OPFOR vs. WFX unit status (strength), correlation of forces and means (COFM), and a Montage of unit locations.

• Media: Various loose hardcopy VGTs and documents.

White Cell directives:

• Description of data: This would be any instructions that change the WFX unit or OPFOR structures (i.e., additional units), boundary charges, scripted events, etc.

• Media: Various hardcopy notes, if provided. *(At present, this data is not available)*

➢ Objective Battle Data

Warfighter After Action Report System (WAARS) or After Action Review (AARS) tape:

• Description of data: These data provide comparisons of WFX units vs. OPFOR actions and results by BOS. It includes: WFX unit and OPFOR combat damage reports, attrition reports, personnel casualty reports, unit supply reports, maintenance reports, medical reports, artillery reports, air mission reports, etc.

• Media: The WAARS tape consists of one, ten-inch, nine track reel to reel tape. The AARS tape consists of one 8mm data tape.

➢ Battle Description

After Action Review (AAR) video tapes:

• Description of data: These data include video tapes taken during the AARs (normally 2). Topics that are included are: Battle Summary, OPFOR Summary, BOS observations and discussion, areas to sustain or improve and supporting VGTs and briefing charts.

• Media: 2 -4 video tapes.

Workstation Reporting System (WRS) tape:

• Description of data: This is a log that contains those events considered as significant by the workstation controller and are generally arranged by BOS. Comments would include: personnel transfers, movement orders, notes on time FRAGOs were received, contact reports with small units, workaround information, units under SOF attack, ammo delivery projections, units being overrun, etc.

• Media: Digital Data tapes

Final Exercise Report (FER):

• Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battle Summaries, Battlefield Operating Systems observations, After Action Review Products from both AARs, World Class OPFOR information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.

• Media: Bound hardcopy document.

Timeline:

• Description of data: The timeline is an extract of significant events that occurred during the rotation. It is extracted from the FER Tactical Outcomes by an analyst or from ACCES data.

• Media: Created by an Analyst or provided Hardcopy document

Battle Replay:

• Description of data: The graphic replay of the computer simulation battle.

• Media: SUN Raster Graphics files.

➢ Player Unit Profile

TBP when and if this data is collected.

➢ Good Ideas

Good Ideas:

• Description of data: Any documentation of successful concepts, ways of doing business, and lessons learned that are provided by O/Cs, SMEs, contractors, analysts or others.

• Media: Hardcopy documents, floppy disk, VGTs, Charts, Tables - any media.

➢ Trends

- **FER analysis:**

  Final Exercise Report (FER):

  • Description of data: The FER contains an overview of the exercise (key dates, scenario and tactical outcomes), Battle Summaries, Battlefield Operating Systems observations, After Action Review Products from both AARs, World Class OPFOR information (campaign plans and OPFOR commanders comments for the AARs), and a listing of video tapes being provided to the unit for the AARs.

  • Media: Bound hardcopy document.

- **Objective Data:**

  Warfighter After Action Report System (WAARS) or After Action Review (AARS) tape:

  • Description of data: These data provide comparisons of WFX units vs. OPFOR actions and results by BOS. It includes: WFX unit and OPFOR combat damage reports, attrition reports, personnel casualty reports, unit supply reports, maintenance reports, medical reports, artillery reports, air mission reports, etc.

  • Media: The WAARS tape consists of one, ten-inch, nine track reel to reel tape. The AARS tape consists of one 8mm data tape.

APPENDIX E

ARCHIVE REFERENCE ID CODES (ARCHREFID)

Characters used to code rotations are found in the first five Data Elements below (yyettcnn). Characters used to code and archive different media are found using the entire table. (yyettcnn-m-sss). Details on use follow the table.

DATA ELEMENT	CHARACTERS	CODE OPTIONS
Year	character 1-2	YEAR - 93
Echelon	character 3	C - CORPS D - DIV B - BDE
Rotation type	character 4-5	HL - HEAVY/LIGHT LH - LIGHT/HEAVY HH - HEAVY/HEAVY LL - LIGHT/LIGHT NA - NOT APPLICABLE
Component	character 6	A - ACTIVE N - GUARD
Rotation sequence number	character 7-8	01 - 99
Media type	character 9	V - VCR TAPE S - STREAMING TAPE 9 - 9 TRACK TAPE D - DAT TAPE H - HARDCOPY O - OVERLAY F - FLOPPY DISK

Media sequence number	character 10-12	001 - 999

Rotation codes are used to designate the year, echelon (CORPS, Division, or Brigade), rotation type (see table), component (active or guard), and the sequence that particular type rotation was loaded. The rotation code 93DHHA01, translates as: the first WFX rotation loaded of an active division conducting a heavy/heavy WFX in 1993.

Media sequence numbers refer to the number of data sources of a particular type. For example: the first VCR tape is V-001, the second is V-002. The first floppy disk is F-001, etc.

The ArchRefID, 93DHLA01-V-001, translates as: the first video tape from the first WFX rotation loaded of an active division conducting a heavy/light WFX in 1993.

GLOSSARY

AAR	After Action Review
AARS	After Action Review System
ACCES	Army Command and Control Evaluation System
AD	air defense
ADA	Air Defense Artillery
ADF	Automatic Document Feeder
ADM	atomic demolition munitions
ADP	automatic data processing
AFA	architecture of the future Army
AFCENT	Allied Forces, Central Europe
AG	army group
AJS	Automated Journal System
AMOPS	Army Mobilization and Operations Planning System
AO	area of operations
AOR	area of responsibility
ARI	Army Research Institute
ASAT	anti satellite
BCTP	Battle Command Training Program
BCTPdb	Battle Command Training Program Database
BFMA	battlefield functional mission area
BICM	Battlefield Intelligence Collection Model
BOS	Battlefield Operating System(s)
C2	Command and Control
C2I	command, control, and intelligence
C2W	command and control warfare
C3	command, control, and communications
C4	command, control, communications and computers

CBRS	Concept Based Requirements System
CBS	Corps Battle Simulator
CFE	Conventional Forces Europe (negotiations)
CINC	commander-in-chief
CINCEUR	Commander-In-Chief, Europe
CINCLANT	Commander-In-Chief, Atlantic
CJCS	Chairman, Joint Chiefs of Staff
CMTC	Combat Maneuver Training Center
CMO	civil-military operations
COA	Course Of Action
COFM	Correlation Of Forces and Means
COMMZ	communications zone
COMSEC	communications security
CONUS	Continental United States
CRC	conus replacement center
CS	combat support
CSS	combat service support
CTC	Combat Training Center
CTCdb	Combat Training Centers Database
CW	continuous wave
DA	Department of the Army
DARMS	developmental Army readiness and mobilization system
DCA	Defense Communications Agency
DISA	Defense Information Systems Agency
DLA	Defense Logistics Agency
DNA	Defense Nuclear Agency
DOD	Department of Defense
DTG	Date Time Group
ECCM	electronic counter-countermeasures
ECM	electronic countermeasure

ENG	Engineer
EOD	explosive ordnance disposal
EPW	enemy prisoner of war
ESM	electronic support measures
EUCOM	European Command
EW	electronic warfare
EXCON	Exercise Control
FER	Final Exercise Report
FLVN	Fort Leavenworth, Kansas
FM	field manual (Army)
FORSCOM	Forces Command
FRAGO	Fragmentary Order
GT	generic task
Hardcopy	papercopy
HCA	humanitarian and civic assistance
HNS	host nation support
HPT	high-payoff target
HQ	Headquarters
HQDA	Headquarters, Department of the Army
HS	home station
HVT	high-value target
IPB	intelligence preparation of the battlefield
JAG	judge advocate general
JCS	Joint Chiefs of Staff
JOPES	Joint Operational Planning and Executing System
JRTC	Joint Readiness Training Center
JTF	joint task force
KIA	killed in action
LOC	lines of communication
MACOM	major command

METL	mission essential task list
METT-T	mission, enemy, terrain, troops available - time
METT	mission, enemy, terrain, and troops available
MOBPERSACS	mobilization personnel structure and composition system
MOPP	mission-oriented protection posture
MPC	military payment certificates
MS	mobilization station
MTBSP	mobization troop basis stationing plan
MTP	mission training plan
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological and chemical
NCA	national command authorities
NDU	National Defense University
NEO	noncombatant evacuation operations
NTC	National Training Center
O/C	Observer/Controller
OB	order of battle
OCONUS	outside continental United States
OCR	Optical Character Reader
OPFOR	Opposing Force
OPLAN	operations plan
OPORD	operations order
OPSEC	operations security
PA	public affairs
PACOM	Pacific Command
PAM	pamphlet
POD	port of debarkation
POE	port of embarkation
POM	preparation for overseas movement
POM	Presidio of Monterey, California

PPBES	planning, programming, budgeting, and execution system
PPBS	planning, programming, and budgeting system
PSP	Proficiency Sustainment Package
PSYOP	psychological operations
PTRS	postmobilization training support requirement
Q-36 or Q-37	Types of U.S. Army counterfire radars
RATT	radio teletype
RC	reserve component
RCU	RC unit
SACEUR	Supreme Allied Commander, Europe
SAO	security assistance organization
SCUBA	self-contained underwater breathing apparatus
SECDEF	Secretary of Defense
SIGSEC	signals security
SIOP	Single, Integrated Operational Plan
SME	Subject Matter Expert
SN	code for national military Strategic Blueprint functions
SOF	special operations forces
SOP	standard operating procedure
SPF	Special Purpose Forces
ST	code for theater Strategic Blueprint functions
TA	theater army
TA	code for Tactical Blueprint functions
TBP	to be published
TLE	target location error
TM	technical manual
TOW	tube-launched, optically tracked, wire guided
TRADOC	United States Army Training and Doctrine Command
U.S.	United States
UAV	unmanned aerial vehicle

USAID	U.S. agency for international development
USIA	U.S. information agency
USR	unit status report
USTRANSCOM	United States Transportation Command
VA	veterans administration
VCR	Video Cassette Recorder
VGT	View Graph Transparency
W/D	withdrawal
WAARS	WarFighter After Action Reporting System
WESTCOM	Western Command
WFX	WarFighter Exercise
WIA	wounded in action
WRS	workstation reporting system
WW	world war
WWMCCS	world wide military command and control system

USER NOTES

USER NOTES

continued

BCTPDB
IMPROVEMENT SUGGESTIONS

This form has been provided so that users have an easy, convenient method to record suggestions that can be used in the systems continuous improvement process. It can be reproduced as necessary. Please supply complete and as detailed information as you can.

Describe the problem or area that should be improved.

_____

_____

_____

_____

_____

Is this area addressed in this guide? (Select One Below)
(Yes) (No) If Yes:
where?_____

What would be the best fix for this problem or area?

_____

_____

_____

_____

What other suggestions do you have for improvement of this system?

_____

_____

_____

_____

_____

Name_____

Phone_____

Date_____