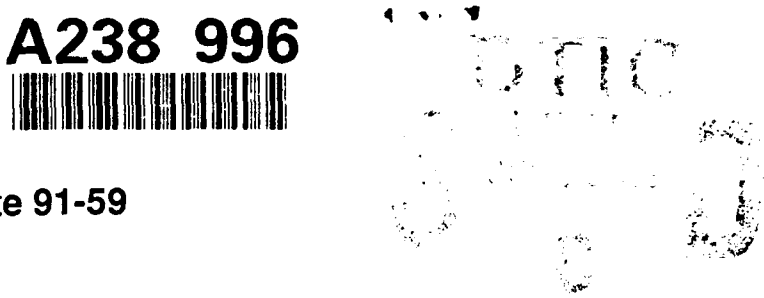


ARI Research Note 91-59

User's Manual for CREATRDB

Jack D. Baldwin
BDM International, Inc.

for

Contracting Officer's Representative
Michael R. McCluskey

Field Unit at Presidio of Monterey
Howard H. McFann, Chief

Training Research Laboratory
Jack H. Hiller, Director

June 1991

United States Army
Research Institute for the Behavioral and Social Sciences

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
Technical Director

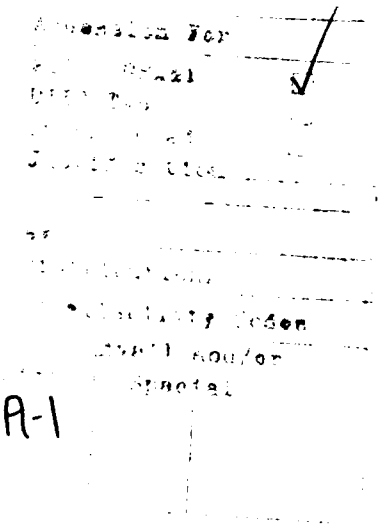
JON W. BLADES
COL, IN
Commanding

Research accomplished under contract
for the Department of the Army

BDM International, Inc.

Technical review by

Richard Crenshaw
Donald Wolff



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.

UNCLASSIFIED
ECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS --
a. SECURITY CLASSIFICATION AUTHORITY --	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
b. DECLASSIFICATION/DOWNGRADING SCHEDULE --	
. PERFORMING ORGANIZATION REPORT NUMBER(S) BDM/ARI-TR-0017-90	5. MONITORING ORGANIZATION REPORT NUMBER(S) ARI Research Note 91-59
a. NAME OF PERFORMING ORGANIZATION BDM International, Inc.	6b. OFFICE SYMBOL (*If applicable*) --
	7a. NAME OF MONITORING ORGANIZATION U.S. Army Research Institute
c. ADDRESS (*City, State, and ZIP Code*) 2600 Garden Road, North Building Monterey, CA 93940	7b. ADDRESS (*City, State, and ZIP Code*) Presidio of Monterey Field Unit P.O. Box 5787 Presidio of Monterey, CA 93944-5011
a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Research Institute for the Behavioral and Social Sciences	8b. OFFICE SYMBOL (*If applicable*) PERI-I
	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DABT56-88-C-0016
c. ADDRESS (*City, State, and ZIP Code*) 5001 Eisenhower Avenue Alexandria, VA 22333-5600	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO.: 63007A; PROJECT NO.: 794; TASK NO.: 3402; WORK UNIT ACCESSION NO.: C5

11. TITLE (*Include Security Classification*)
User's Manual for CREATRDB

12. PERSONAL AUTHOR(S)
Baldwin, Jack D.

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (*Year, Month, Day*)	15. PAGE COUNT
Final	FROM 90/08 TO N/A	1991, June	15

16. SUPPLEMENTARY NOTATION
Michael R. McCluskey, Contracting Officer's Representative

17. COSATI CODES			18. SUBJECT TERMS (*Continue on reverse if necessary and identify by block number*)
FIELD	GROUP	SUB-GROUP	National Training Center (NTC) VMS Relational database INGRES

19. ABSTRACT (*Continue on reverse if necessary and identify by block number*)

This document is a User's Guide intended for use by a database administrator responsible for creating mission databases using data collected at the National Training Center, Fort Irwin, CA.

The software is suitable for use on a Digital Equipment Corporation VAX computer as configured at the Presidio of Monterey Field Unit of the U.S. Army Research Institute for the Behavioral and Social Sciences. It is intended for use at the Presidio of Monterey Field Unit only.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Howard H. McFann	22b. TELEPHONE (*Include Area Code*) (408) 647-5316
	22c. OFFICE SYMBOL PERI-IO

D Form 1473, JUN 86 *Previous editions are obsolete.* SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

FOREWORD

This report illustrates use of the mission databases derived from data collected at the National Training Center (NTC), Fort Irwin, CA. It acquaints the researcher with the structure of the research database schema and the relationships between the tables contained therein.

The research described in this report was conducted by resident contract personnel at the Presidio of Monterey Field Unit (ARI-POM) of the U.S. Army Research Institute for the Behavioral and Social Sciences. ARI-POM's mission is to conduct research on unit training and performance at the Army's Combat Training Centers, such as the NTC. The research task that supports this mission is titled "Design Enhancements to CTC Digital Database and Analysis System."

USER'S MANUAL FOR CREATRDB

CONTENTS

LIST OF FIGURES

User's Manual for CREATRDB

1. General.

1.1 Purpose of User's Manual.

The objective of the User's Manual for CREATRDB is to provide the information necessary for the user to effectively use the automated information system to create mission databases derived from the National Training Center (NTC) data.

1.2 Project references.

Briscoe, J. A., & Baldwin, J. D. (1987, March). *Programmer's Guide to Data from the National Training Center* (draft ARI Research Product). Presidio of Monterey, CA: U. S. Army Research Institute Field Unit.

Briscoe, J. A., & Baldwin, J. D. (1987, April). *NTC Tactical Database Preliminary Design (Revised)* (ARI Research Note 87-75). Alexandria, VA: U. S. Army Research Institute. [DTIC # ADA180026]

Baldwin, J. D. (1988, July). *User's Guide to the ARI-NTC Mission Database* (draft ARI Research Note). Presidio of Monterey, CA: U. S. Army Research Institute Field Unit.

1.3 Terms and Abbreviations.

CIS	Core Instrumentation Subsystem is the hardware / software system currently installed at the NTC. It is where all the digital data is derived.
DBA	Database Administrator.
DBMS	Database Management System is software that provides for easy access to data by non-programmers.
INGRES	Software product of INGRESIncorporated. It is the DBMS that the Army Research Institute at the Presidio of Monterey (ARI-POM) is currently using to store the mission databases.
P/L	Position / Location. The five digit Universal Transverse Mercator coordinates in meters.
QUEL	QUEry Language used by the INGRES DBMS software.
UTM	Universal Transverse Mercator.
VAX	Virtual Address eXtended. This is the name used by the Digital Equipment Corporation for their family of computing machines.

ENCL 7

VMS Virtual Memory System. This is the name used by the Digital Equipment Corporation for their operating system used with the VAX family of computers.

1.4 Security.

This program shall be available to the database administrator for use at his/her discretion. Knowledge of the USER account and PASSWORD will limit its use to those certified by the DBA.

2. System summary.

2.1 System overview.

This program is intended to set up the batch job to be run on the VAX computer that will create a mission database from the CIS data. The program aids the user to set the start and end time of the mission, the logging rate for the position/location data for both the ground players and air players, and when the job will execute in batch (as in after hours processing).

2.2 System operation.

CREATRDB has three sources of inputs. They are: a) a master history file (mashist.dat), b) the MISSION table in the ARIDMS database, and c) user input to override program defaults. The outputs of CREATRDB are command files, 'dbname.com' with the commands and inputs to a batch job that builds a mission database.

2.3 System configuration.

This software is designed to operate on any of the Digital Equipment Corp. family of VAX computers running under VMS and having INGRES DBMS (v. 6.3) installed. At ARI-POM, the VAX 11/780 has two optical disks configured to the system. This is where the program will receive the raw CIS data (mashist.dat). The program may be invoked from any terminal attached to the VAX, and the output is written to a disk file 'DUA1:[tacdb.rotation]dbname.com'

2.4 System organization.

The software organization of CREATRDB is FORTRAN (v. 77) with embedded QUEL statements. The program uses the embedded QUEL statements to interface with the INGRES database structures.

2.5 System performance.

CREATRDB is an interactive program, and as such performance is not an issue. It may be stated though that as many jobs may be set up at a time as the user wishes, and the jobs will execute one at a time, in the order that they have been submitted to the batch system.

2.6 Contingencies and alternate modes of operation.

No provision for alternate modes of operation is provided.

2.7 Database/data bank.

CREATRDB uses an INGRES database, ARIDMS, to record information about the databases it has created or will create. The MISSION table is the receptacle of this data. The following is a description of this table and the columns that are entered by CREATRDB:

Name: mission
Owner: tacdb
Location: db_ingres
Type: user table
Row width: 89
Storage structure: heap

column name	type	length	key sequence
mstart	c	20	
mend	c	20	
mhistory	c	6	
msegment	integer	1	
mtype	c	10	
morg	c	15	
mtf	c	1	
airpl	integer	2	
gndpl	integer	2	
mdbname	c	12	

The other input file, MASHIST.DAT, is described in detail in the Programmer's Guide to Data from the National Training Center.

2.8 General description of inputs, processing, outputs.

Inputs: As stated in Section 2.2, there are three sources of input for CREATRDB. The primary source, MASHIST.DAT, provides the following information for the program:

a) **Mission start time** - time at which data logging began for this exercise. This value may be overridden by the DBA to trim the interval for which data is reported in the mission database being created.

b) **Mission end time** - time at which data logging ended for this exercise. This value may be overridden by the DBA to trim the interval for which data is reported in the mission database being created.

c) **Mission history name** - the history of the current rotation. May be overridden by the DBA but should always be correct as reported in MASHIST.DAT.

d) **Mission segment number** - sequence number of the training exercise during the rotation.

e) **Mission type** - This field is reported as entered at the NTC. Program will only accept standard mission types as defined by the data input screen edits (i.e.: D ATK for deliberate attack, DEF BP for defend battle position, etc.).

f) **Mission task force** - either A (armored) or M (mechanized).

In addition to inputs from MASHIST.DAT, the program constructs the database name from the above fields (c,d and f) and uses this name to search the MISSION table of ARIDMS to see if this database already exists. If it does, the program will not allow the creation of two databases with the same name. A message to this effect is displayed on the terminal to notify the DBA.

Any or all inputs to CREATRDB may be overridden by the DBA as necessary to create and maintain the mission database inventory.

Processing: CREATRDB places an entry in the MISSION table of ARIDMS and submits a command file into the batch queue that will initiate the creation of the database.

Output: The MISSION table of ARIDMS has a row appended to it, as described in Section 2.7 above. All columns are updated by the program except for 'morg', which is not known until the database is created in the batch cycle.

CREATRDB builds a data file, 'dua1:[tacdb]dbdata.dat', which contains the database name, location of the raw data to process and the start and end times to create a database. This file is used during the batch cycle and deleted upon job completion. For this reason, batch logs with a database name may not have created a database with the same name, because the batch processor executes processes on a first in, first out manner and the file it uses is on a last in, first out basis.

3. Functions related to technical operations.

3.1 Initiation procedures.

In order to process data from the NTC, it must be copied to an optical disk, and that disk must be mounted on the VAX system. Currently, we have two optical disk drives, ODA0 and ODA1. A catalog of NTC rotations is maintained by the support staff and is located in the main computer room, building 110. In order to process any NTC data, it must be on-line and available to the program.

3.2 Input requirements.

Each of the mission databases is a unique training exercise executed at the NTC. It is therefor necessary that the DBA establish correct and meaningful start and end times for each battle. Because of this requirement, it means that each data segment must be carefully inspected by the DBA.

This initial inspection of the data is usually performed at the time that the NTC data is placed on the optical disk. A program, 'REPORTDB' has been provided that prints the summary statistics in half hour intervals for just this purpose. This allows the DBA to specify the times of interest and bracket the data with new start and end times.

3.2.1 Input formats.

The following are the formats needed for input to CREATRDB:

Mission start time: valid date - time format as follows: dd-Mmm-yy hh:mm:ss field has a maximum length of 20 characters, with a leading blank and a trailing blank.

Mission end time: same as Mission start time above.

Mission history name: NTC assigned rotation specified with the following format: YYRROH where

- YY Fiscal year as 90, 91 etc.
- RR Rotation sequence number, from 01 to 14.
- O Organization. Either A (armored) or M (mechanized).
- H History number. Starting with zero, the number of different times the computer system has been restarted for this rotation.

Mission segment number: Training exercise sequence number, starting at 01 and going to a maximum of 148.

Mission type:	any one of the following: D ATK, H ATK, C ATK, DEF SEC, DEF BP, RECON, MTC.
Mission task force:	Either A (armored) or M (mechanized).
Air P/L rate (in seconds)	the number of seconds between position location readings recorded in the mission database. i.e 300 would be a reading every 5 minutes for each air player. This rate can range from 1 (once a second) to the maximum length of the exercise (32670 seconds).
Ground P/L rate (in seconds)	same as Air P/L rate above but for the slower traveling ground players. For both the air and ground p/l the default is 5 minutes or 300 seconds, which can be overridden for either or both with different rates.

3.2.2 Composition rules.

See 3.2.1 Input formats above for any composition rules.

3.2.3 Input vocabulary.

See 3.2.1 Input formats above for input vocabulary.

3.2.4 Sample inputs.

Inputs for the four data entry screens will now be described. The first screen, the Optical disk directory screen, for selecting the optical disk drive to find the raw NTC data appears in Figure 1. Currently, the ARI VAX 11/780 is configured with two optical disk drives, ODA0 and ODA1. These are the only valid entries for this screen.

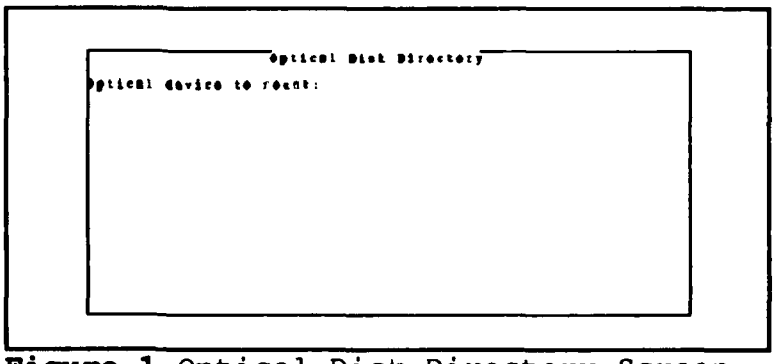


Figure 1 Optical Disk Directory Screen.

Once you have made your selection, a menu of directories will appear on the screen. Use the arrow keys, up or down, and highlight the rotation you wish to process. Pressing 'Enter' will

select the currently highlighted menu item. Figure 2 is an example of the displayed menu.

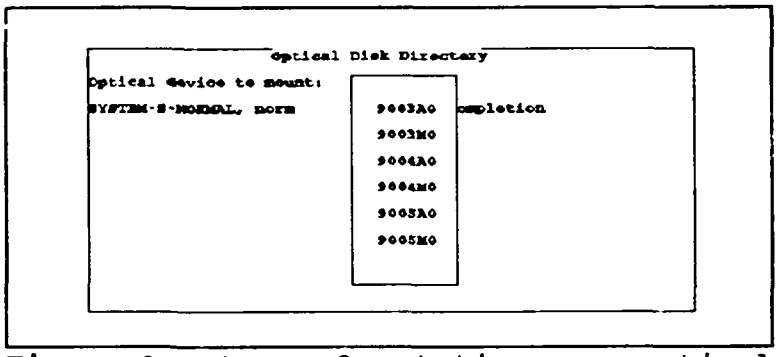


Figure 2 Menu of rotations on optical disk.

After you make your selection, a second screen (see Figure 3) will appear on your terminal. From this screen you select a particular training exercise within a rotation. The exercises are listed in sequential order, displaying the mission types and date/time as entered at the NTC. Again, using the arrow keys or the Page Up, Page Dn keys, you navigate your way through the data screen until you locate the desired exercise to convert to a mission database. When you have your cursor on the correct segment, select the Setup job menu item.

Another screen (Figure 4) will be displayed on the terminal. This data is derived from the master history file, MASHIST.DAT, for the training exercise you specified on the previous screen. The data displayed is the default values found in MASHIST.DAT. These

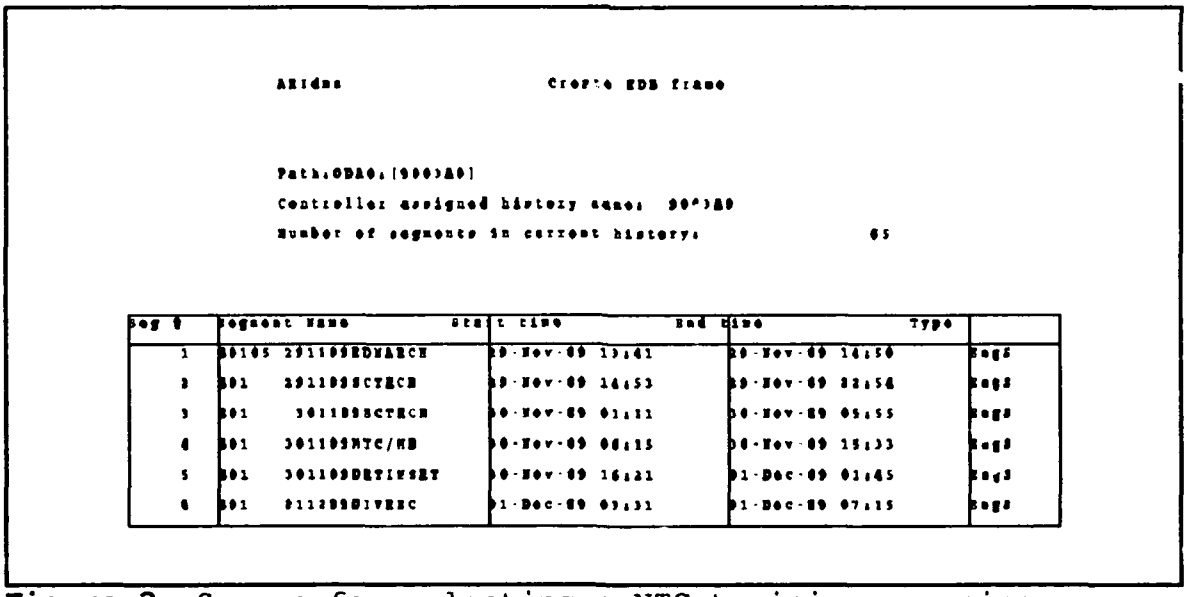


Figure 3 Screen for selecting a NTC training exercise.

data may or may not meet your needs for creating a mission database, and therefore may be overridden by you at this time. It is important to remember that the data will come from the segment specified on this screen, therefore the start and end times must be inclusive within the times displayed.

Upon review of Figure 4, we note the description given for the mission type of 'RCNFIGHT'. Experience tells us that 'RCN' is an acronym for a reconnaissance mission, and therefore this mission should be properly classified as a 'RECON' mission. It is important for the user to realize that it may take some intuitive guesswork to decipher the non- standard codes entered at the NTC.

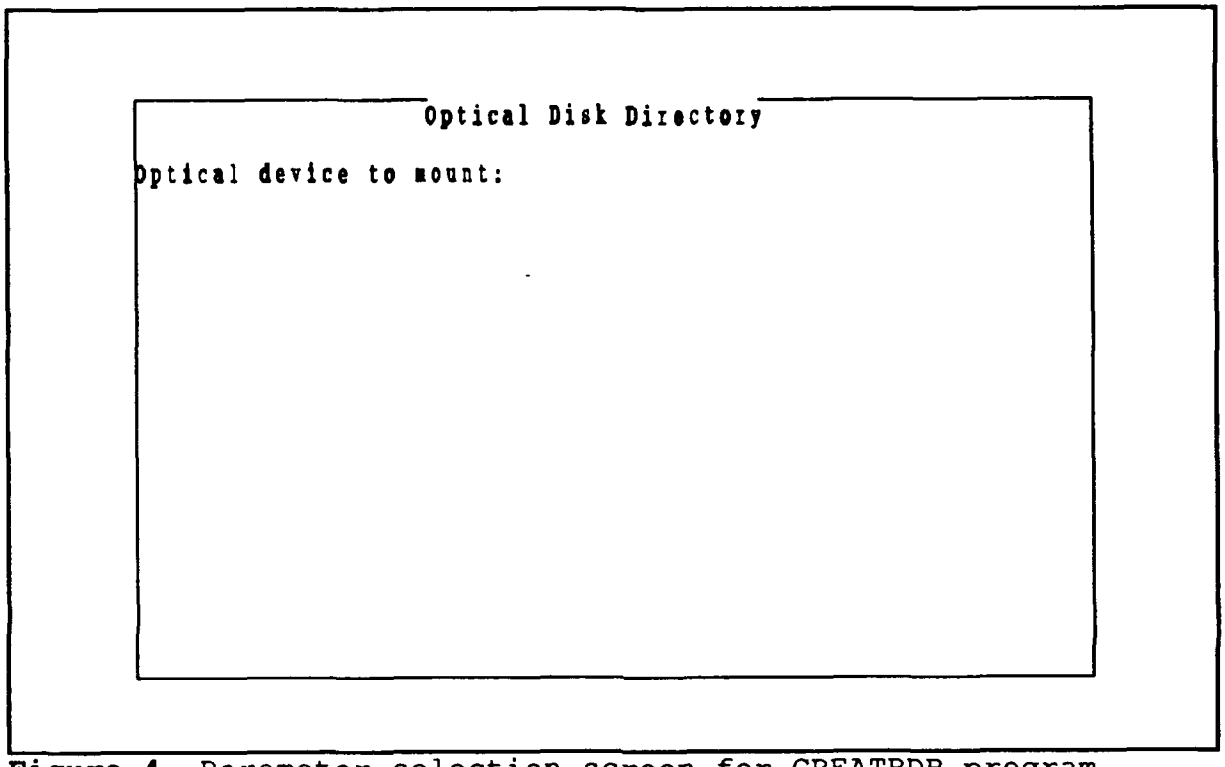


Figure 4 Parameter selection screen for CREATRDB program.

Once the inputs from the above screen are satisfactory, the user will select the 'Submit job' option. Figure 5 shows the resulting screen displayed to the user. Here, the user may override the batch job name, the log file name, the time the batch job will begin execution and if the log file will be printed or saved to disk (by not printing the log file). When this is completed, the program returns to the screen depicted in Figure 3, and the user is free to set up and submit another mission database creation job.

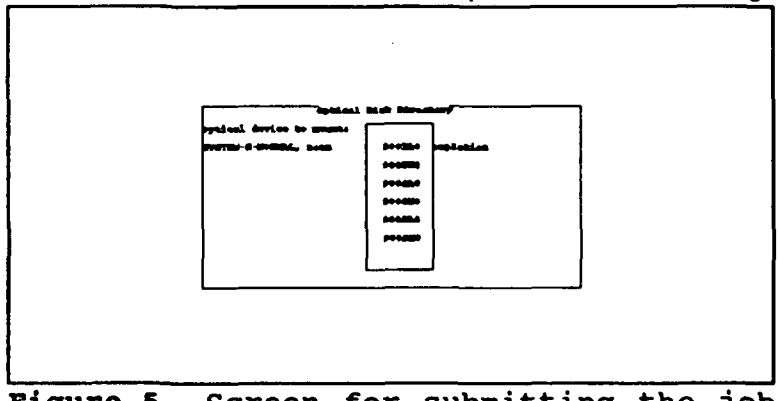


Figure 5 Screen for submitting the job into the batch queue.

3.3 Output requirements.

CREATRDB constructs an output file, dbdata.dat, that is used by a batch process to read, decipher and build an INGRES database with data from the NTC.

A single version of the file is created for each training exercise that is to be converted to a mission database. Under VMS, each of these files is given a unique version number, and the files retain these version numbers until they been used and then deleted after the database has been constructed.

Also, an entry is made in a parameter database, ARIDMS, that helps the system in the building of the database and for system maintenance of the mission database sets. This entry is used to determine if a database already exists, and to help catagorize the data within the mission database.

3.3.1 Output formats.

Two types of output are generated by CREATRDB. The first is a flat file (dbdata.dat) used in the building of the mission database. The second is a record in the MISSION table of the ARIDMS database.

The format of dbdata.dat is the following:

Record	Contents
1)	The nine character name assigned to the mission database to be constructed.
2)	VMS path identifer of raw NTC data. Its general structure is **ODA?:[HISTORY]** where ? is either 0 or 1 and HISTORY is the NTC assigned rotation / force combination, i.e.: 9001A0, 9001M0, etc.
3)	VMS path identifer of RDMS data. The general structure is **DUA1:[tacdb.rotation]** where rotation refers to the four character rotation number assigned at the NTC.

The columns of the MISSION table of the ARIDMS database are the same as those outlined in Section 3.2.1 Input formats.

3.3.2 Sample outputs.

The following is a sample of the file dbdata.dat:

```
NAA900311
ODA0:[9003A0]
dua1:[tacdb2.9003]
```

A sample of a row of data from the MISSION table looks like this:

mstart	mend	mhisto	mseg	mtype	morg	mtf	airpl	gndpl	mdbname
02-Dec-89 03:19:53	02-Dec-89 05:15:16	9003A0	11	RECON	1-008 X 1-032	A	300	300	N903A_02

3.3.3 Output vocabulary.

No discussion of output is needed for this program.

3.4 Utilization of system outputs.

The system outputs are only utilized by the batch program that uses the file, dbdata.dat. No further discussion is necessary of the system outputs.

3.5 Recovery and error correction procedures.

Should the program fail to construct a complete database, it is necessary to destroy the database as well as remove the entry in the MISSION table of the ARIDMS database. Once this is done, re-run the CREATRDB program to construct the mission database again.