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COMPUTER-MANAGED INSTRUCTION FOR TANK COMMANDERS
19K BNCOC MICROTICCIT SITE MANAGER AND OPERATOR'S MANUAL

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The Fort Knox Training Technology Field Activity (TTFA) was established to explore training technologies, and their application to the Army's training programs. The specific focus of the Ft. Knox TTFA is the improvement of the effectiveness and efficiency of training provided through the Basic Noncommissioned Officer's Course (BNCOC) for training M1 tank commanders (MOS 19K). One of the major activities undertaken by the Fort Knox TTFA is the development of a computer-based instruction system for 19K BNCOC. (over)

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20. Abstract (continued)

The system includes a computer-managed instruction (CMI) system that relates to the administration and management of the 19K BNCOC course, and computer-assisted instruction (CAI) which provides task-specific remedial training necessary for students entering the 19K BNCOC course. This manual serves as a reference tool and documentation for the 19K BNCOC operators who manage the CMI system and the CAI components. All of the instructions and documentation in this manual assume that the user has a MicroTICCIT System II with TICCIT version 38.17 installed.

Preface

The Fort Knox Training Technology Field Activity (TTFA), a consortium within the Department of the Army consisting of representatives from the Training and Doctrine Command (TRADOC), the United States Army Research Institute (ARI), and the United States Army Armor Center (USAARMC) has been established to explore and apply training technologies to the Army's training programs. The specific focus of the Fort Knox TTFA is the improvement of the effectiveness and efficiency of training provided through the Basic Noncommissioned Officer's Course (BNCOC) for training M1 tank commanders (MOS 19K).

One of the major activities undertaken by the Fort Knox TTFA is the development of a computer-based instruction system for 19K BNCOC. The system includes a computer-managed instruction (CMI) system that relates to the administration and management of the 19K BNCOC course, and computer-assisted instruction (CAI) which provides task-specific remedial training necessary for students entering the 19K BNCOC course.

"The 19K MicroTICCIT Site Manager and Operator's Manual," is intended to serve as a reference tool and documentation for the 19K BNCOC operators who manage the CMI system and the CAI components. The guide is included as Appendix B of the Final Report of the Computer-Managed Instruction for Tank Commanders (Contract Number: MDA 903-84-C-0479) Appendix A to this report, "The 19K BNCOC MicroTICCIT Tutorial and Reference Manual for Instructors" is a companion document and is intended to serve as a reference tool for 19K BNCOC instructors.

Important: **All of the instructions and documentation in this manual assume the user has a MicroTICCIT System II with TICCIT version 38.17 installed.**

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Introduction to 19K BNCOC Courseware and Computer Managed Instruction System on MicroTICCIT

TICCIT System Components

The main computer for the MicroTICCIT System II is Data General's Eclipse S/20 microprocessor. The system has a 50 megabyte hard (fixed) disk for storing programs and data. It also includes a console or terminal (the Dasher model) which the TICCIT operator uses to communicate with the Data General (DG) .

RDOS, the Data General Operating System

Data General's operating system is RDOS (Real-Time Disk Operating System). A real-time operating system can concurrently monitor and control multiple events occurring at the same time, e.g., students using the same courseware at several different workstations.

The RDOS prompt which indicates that it is running and ready to accept commands is "**R.**"

Command Line Interpreter (CLI)

The Command Line Interpreter (CLI) is a software interface that allows the TICCIT operator to communicate with the Data General computer using a relatively simple set of commands. A TICCIT version of the CLI is available to operators at the MicroTICCIT terminal.

MicroTICCIT Workstations

A MicroTICCIT workstation consists of an IBM-PC (with one or two disk drives), a Sony color display screen, a light pen, and a Sony videodisc player. The workstation is designed to display TICCIT courseware. It can also be used as a terminal by TICCIT authors and operators.

The Network Controller

One MicroTICCIT workstation is used as the Network Controller. This workstation has only one disk drive. The operator uses this workstation to bring TICCIT "down." If the Network Controller is shut down (turned off), the entire system comes down; so users at other workstations need to be warned before the Network Controller is shut off.

The TICCIT Operating System (MPOS)

The TICCIT operating system (also called MPOS) runs TICCIT courseware and TICCIT utility programs. The TICCIT prompt is "?." Control is transferred from RDOS to MPOS using the UP. MC file (a macro on the Master Directory). The TICCIT operating system is referred to alternatively as either MPOS or simply TICCIT.

Courseware Authoring Languages

Two courseware authoring languages operate in the TICCIT environment: ADAPT and APT. APT is an earlier authoring language which is now used mostly to create TICCIT maps and certain files used for TICCIT tests. ADAPT includes a few file management commands, but is primarily designed to create courseware. Hazeltine manuals also refer to another courseware authoring language "TAL." This software has been replaced by ADAPT.

System Utilities

A number of utility programs are included with the System II which are used by the TICCIT operator for data reduction activities and reports and for other tasks related to site management. Operators access these utilities either on-line (at the MicroTICCIT terminal) or off-line (at the Data General console). Most of the utilities required for site management are included in this manual. Check the Hazeltine manuals for additional information.

On-Line and Off-Line Instruction

In the BNCOC instructional environment, part of the instructional program will be conducted using MicroTICCIT courseware. In that context, we refer to *on-line* instruction when the student uses MicroTICCIT and *off-line* instruction when the student is taught away from MicroTICCIT, either in a classroom or in the field.

TICCIT Registration

Importance of Registration

There is probably nothing more important to understanding TICCIT and successfully managing a MicroTICCIT site than understanding registration. To use MicroTICCIT, you must be registered in at least one course. Only a system user with an operator or programmer authorization code can access the Registration Editor and register another user in a course. At each MicroTICCIT site, a person should be designated as the "official" TICCIT operator. That person should be responsible for registration procedures and recordkeeping.

User ID Numbers

The operator assigns each user a unique ID number which has from 1 to 9 digits when the user is registered into the first course. Users have the same ID number for each course. Each user can be registered in a maximum of ten courses. Users enter this ID number when they log on the system.

User Passwords

During registration, users may be assigned a 4 character password (numbers, characters, or a combination of both). If a password is assigned, the user must enter it when he logs on. User passwords provide some degree of protection against other users logging on to a course using a false ID and completing lessons or taking tests as that user. However, in an environment where students will be logged on by instructors and where tests are restricted, a password is probably more trouble than it's worth. It is not recommended that passwords be assigned to users other than TICCIT operators.

User Modes

During registration in each course, the operator assigns a user "mode." The two most common modes are student (ST) and instructor (IN). The mode is extremely important to the proper use of the 19K BNCOC courseware and the CMI system. All student users **must be** assigned a student mode because TICCIT only collects performance data for those users. No performance data are collected by the system for users registered in the instructor mode. All BNCOC instructors will be assigned the instructor mode in order to be able to access the 19K BNCOC CMI utilities (e.g., off-line data entry, print Master Record). A user may have a different mode for each course in which he is registered, but NOT a different authorization code. Authorization codes are described below.

Course Numbers

The course number is also entered during the registration process. Users must enter this number when they log on. A course number can be from 1 to 3 digits. The 19K BNCOC course for students has been assigned the number "19." The Off-line Data Entry and Print Master Record utilities for use by instructors are part of TICCIT Course 20. Course numbers are assigned arbitrarily by authors during the development process and could be changed by the TICCIT operator. No two courses on the system can have the same number, of course.

Section Numbers

Students must be enrolled in a section in Course 19, 19K BNCOC for Tank Commanders, in order for instructors to use the Course 20, the 19K BNCOC CMI System. Students must also be assigned a section number in order for instructors to access class data from the TICCIT utility, Student Progress Reports. Instructors should <u>not</u> be enrolled in a section as no data should be collected about their actions on the system. Sections are numbered from ØØ to 99. Thus, up to 100 different sections of students could be enrolled in a single TICCIT course. A student cannot be registered in more than one section for the same course.

TICCIT operators need to understand that <u>TICCIT</u> does not require a section number in order for a user to access a TICCIT course; however, to use the 19K BNCOC CMI System a section number <u>must</u> be assigned. Section assignments are also required if instructors want to use TICCIT's Student Progress Report utility for class reports.

Assigning a section number has the effect of separating students into different classes within a TICCIT course. Different section numbers can be assigned to different groups so that separate BNCOC Master Record reports can be produced.

Authorization Codes

During registration, users are also assigned an authorization (security level) code. The authorization code determines which TICCIT menus may be accessed by the user (e.g., Instructor Menu, Student Menu, Operator Menu, etc.). The authorization code may be different than the user mode. In other words, an author may register himself in a course as a student, but still maintain a higher authorization level. Regardless of the different modes that a user is assigned, however, each user has only one authorization level on the system.

TICCIT operators must be aware that if no authorization code is entered during registration, the system will assign the user to the lowest level (i.e.,student). TICCIT operators must be careful to enter the correct authorization code for all users each time there is a change in registration.

TICCIT Course 0

Instructors, authors, operators, and programmers are usually registered in a TICCIT course called **Course 0**. Students are not usually registered in **Course 0**. Students will be able to access the Student Menu by using the **ATT'N** function.

When a user logs on to **Course 0**, he will see the "Supermenu" which lists five sub-menus:

1. **Author Menu**
2. **Operator Menu**
3. **Instructor Menu**
4. **Programmer Menu**
5. **Student Menu**

The user's authorization level determines which sub-menus he may access. The highest security level is a Systems Programmer (SY). Users with that authorization code may access any part of the system.

The lowest authorization code is Student (ST). These users can access the Student Menu and any course for which they are registered.

Only authorized TICCIT operators should have access to the Operator Menu where the Registration Menu and other important utilities are located. These utilities should **never** be used by people who do not know what they are doing, particularly when a course is being used by students during a BNCOC cycle. **Many unpleasant things can happen** such as completely wiping out the permanent data areas for an entire class, or making all the courseware inaccessible.

Instructors will need to access the Instructor Menu in order to access Student Progress Reports. Ordinarily, they should not have access to the Author Menu unless they have been trained to use the ADAPT programming language.

TICCIT Passwords

In addition to the unique user password which would be entered during the logging on process, there are two other types of TICCIT passwords: the Proctor Password and the System Operator's password.

The Proctor Password

The Proctor password is from 1 to 6 characters. These characters may be upper or lower case. It is required to access Proctor functions for unauthorized users. For example, an author or instructor who is logged on a course may directly access the Proctor functions without using the passwords. Students, however, cannot. BNCOC instructors will use the Proctor password to give students access to restricted tests. There will be many different user passwords but there is **only one Proctor Password** on the System at any given time.

When using the Proctor password, users must type it exactly as it was assigned, using upper or lower case as necessary.

The System Operator's (SYSOP) Password

The System Operator's (SYSOP) password has 4 characters. It is actually just the user password of this "special" user whose user ID is "1." The default password assigned by Hazeltine is usually LORD. That password can and should be changed periodically. However, the SYSOP **should not** be registered in any other courses other than **Course Ø**. The SYSOP's authorization code should always be 177777 (the highest possible code).

The TICCIT operator should have his own unique ID number. He should only log on as User #1 in an emergency; otherwise, he should use his own ID number. The reason for this is that any change in registration runs the risk of a mistake which could make access to certain parts of the system impossible. For example, if the TICCIT operator, logged on as User 1, registered himself in a course to check it out, and did not enter an authorization code, his authorization would be changed by default to Student. Thus, when he attempted to log on again in Course Ø, he would receive the message: **You are not authorized for that option.**

Changing Passwords

All three types of passwords may be changed and **should be changed** at regular or irregular intervals by the TICCIT operator at each site. User passwords are changed using the registration process. A TICCIT utility is provided to change the PROCTOR password. Students may change their own passwords using an option from the Student Menu. Operators can find out what the current password is for any user using the Registration utility which allows them to examine registration information.

TICCIT Courseware Structure

TICCIT courses have a hierarchical structure: COURSE, UNIT, LESSON, SEGMENT. That is, a course is divided into units; units are divided into lessons; and lessons are divided into segments.

- A TICCIT course can have a maximum of 30 units.
- A unit can have from 1 to 30 lessons.
- A lesson can have as many as 99 segments.

TICCIT only records information about the course, its units, and its lessons. It records nothing about the segments.

ADAPT is the language used to write TICCIT courseware. Another language called APT is used to create course maps and test control files. The CMI System and the MicroTICCIT courseware developed for 19K BNCOC use menus, not maps, to locate parts of the courseware.

A TICCIT course has 3 components: the courseware, its graphics, and its Permanent Data Area (PDA) course template. The PDA stores information about the structure of a course. These three types of files are linked together to form a TICCIT course.

Two forms of each piece of courseware are stored on the system disk: source and object. The source courseware is the version the author accesses from the ADAPT Editor. Each piece of courseware must be processed in order for a student to access the instruction. Processing creates the object version. The object (or processed) version is what the student sees.

To edit or change courseware, authors must change the source version and then reprocess the courseware. The source is written using ADAPT and APT. The object files are stored in machine language.

If disk space is limited, a MicroTICCIT site could delete the source code from the disk. The source code could be stored on a tape and loaded back on the system if necessary. Graphics are also stored in source (the author version) and object code (the student version). Remember, all source code must be processed before the student can access the courseware.

The Permanent Data Areas and Student Performance Data

The Permanent Data Area (PDA) is a file that stores the course template. This file stores information about the structure of a course, such as how many units or lessons make up the course. When a user is registered for a course, TICCIT uses the "course PDA" to create a unique user data file. The user data file consists partly of information about the course structure. It also stores information about the user's progress through the course as well as information about the user's authorization level and user mode. The user data file name has a .PD extension. A user has a unique .PD file on the disk for each course in which he is registered.

Student Performance Data is stored in a .PD file, the user's own unique data file associated with a course. In addition to information about the user such as his authorization level, his user mode, his ID number, TICCIT also stores information about his performance such as whether he has passed a test, how many attempts were made, and his test scores. Naturally, TICCIT cannot store this information unless the test is taken on-line.

Off-line test results can be entered at the MicroTICCIT terminal using **Course 20**, an ADAPT course developed by InterAmerica Research Associates. This program will enter both test results (GO or NOGO) and test attempts (1 to 3) directly into the user's .PD file. The program does not store the student's score.

You can print the BNCOC Master Record using **Course 20**. One of the programs in **Course 20** reads all of the information in the students' .PD files. It gathers results of both the student's on-line coursework and the off-line test results entered by the instructor. The data are stored in a special file which can be printed at the MicroTICCIT terminal using the system's line printer.

TICCIT Data Collection and Reporting

Student Progress Reports

TICCIT has a utility called Student Progress Reports. Users can access this utility from the Instructor Menu. Information about the students' progress, both individually and as a class, can be displayed on the MicroTICCIT terminal. Users can also print reports using the system's line printer. To access student records, the operator or instructor must know the course number and the students' section number. To access the records of an individual student, the student's ID number must be entered.

TICCIT's Student Progress Report utility will not display complete information about the off-line test results that entered using **Course 20**. This utility is designed to collect and display results of only on-line student activities.

Logging Data

Logging tapes can be used to gather information about every student response while they are logged on MicroTICCIT. These data are used to produce **Item Analysis** reports. An item analysis report provides information about group performance on individual items of a test or activity. Instructors can find out which items are missed most frequently, for example. To collect logging data, the TICCIT operator must place a tape in the system's tape drive and indicate to the system that logging is desired. The system will then collect and store data automatically.

The Notes Utility

If instructors or other authorized personnel want to collect information about a course from the users, users can enter comments using the TICCIT Notes utility. Users press the **NOTE** key on the MicroTICCIT left keypad. TICCIT displays a screen where the user can type his comment. The user can leave the message "Signed" or "Unsigned". TICCIT stores the user's location in the course and the message. Notes data can be printed using the TICCIT Notes on-line utility.

Roles of TICCIT Users

TICCIT Proctors

Someone should be on duty in the TICCIT lab who is knowledgeable about the course content and the structure of the course on MicroTICCIT. **Proctor** is a term used to name such a person. Proctors need to know how to give students access to restricted tests. They need to know how to bring TICCIT **UP**, how to load videodiscs, where to find related course materials, etc. Ordinarily, only the TICCIT operator should bring TICCIT DOWN, however. Proctors need to know how to **use** MicroTICCIT, but they do not need technical knowledge about its operating systems or the programming languages on the system. The Proctor can be an instructor or the TICCIT operator.

TICCIT Operator

A TICCIT operator is the technical person who knows how to operate and manage a TICCIT site. An operator controls the registration process; he loads the TICCIT courseware. Sometimes he may need to make modifications to the courseware. An operator needs to know how to use the ADAPT and APT programming languages. He needs specialized knowledge of the TICCIT operating system. He also needs to know how to use RDOS, the Data General operating system. TICCIT operators perform daily back-ups of the system and other routine tasks.

TICCIT Data Storage

As a TICCIT operator, you will need to be familiar with the octal numbering system (base 8), ASCII codes, and the TICCIT decimal system. All of these are referenced in this manual as well as the Hazeltine TICCIT manuals. TICCIT utility programs and all files at the machine level are stored in binary, of course. However, when you retrieve files using TICCIT utilities, you will find the data displayed in octal. For example, the authorization codes of all users are reported in octal when you use the Registration utility. As stated above, the SYSOP's authorization code is 177777_8. The subscripted number "8" indicates its octal denotation. When a number is reported in decimal, no subscript is used.

Text files are stored on the system in ASCII code. Thus, when you translate the octal code to decimal, you still have to know the ASCII representation of numbers and letters. TICCIT decimal code is similar to ASCII, but not exactly the same. Operators should have charts displaying these codes available as well as a basic understanding of these coding systems. Charts with ASCII codes and TICCIT decimal codes are included in the Hazeltine manuals.

How This Manual is Organized

The MicroTICCIT Site Manager and Operator's Manual is divided into several parts as follows:

Part I is specifically designed to assist the TICCIT operator in the task of transferring courseware either to another system or to a backup tape. Operators may need to archive courseware on tapes if there is a space problem on the system disk.

Part II describes procedures for installing Course 19, "19K BNCOC For Tank Commanders."

Part III describes the procedures for installing Course 20, "The 19K BNCOC CMI System." This course allows instructors to enter off-line test results and to print the BNCOC Master Record.

Part IV, Day-to-day Operations, is a set of specific task-oriented instructions which should provide help for most of the tasks that the TICCIT operator will need to perform routinely at the 19K BNCOC MicroTICCIT site.

Part V, Courseware Management, includes procedures related to transferring and installing MicroTICCIT courseware.

Part VI, Data Management, includes instructions for using the Notes and Item Analysis utilities which may be needed for evaluation purposes.

Part VII, TICCIT Hints, consists of information about TICCIT and procedures for a few specialized TICCIT utilities.

Part VIII, RDOS Hints, is a brief guide to using RDOS, the Data General operating system. Operators will need to refer to the RDOS manuals published by Data General for more detailed information.

Part IX, Revising Course 19, contains instructions for making changes to Course 19, 19K BNCOC for Tank Commanders.

Part X, Revising Course 20, has instructions for making changes to Course 20, the 19K BNCOC CMI System.

Part XI, Creating a TICCIT Test, includes information about developing a test on MicroTICCIT. These instructions will also assist the TICCIT operator if revisions to MicroTICCIT tests are needed.

Part XII, Courseware Documentation, consists of information about the color palettes used to develop Course 19 and Course 20. Information about the symbols tables and other technical information is also included.

Part XIII, Recordkeeping, includes some sample forms that the operator can use to manage the site.

This Manual also includes a glossary of terms and a detailed index.

Using This Manual

Here are a few tips that will help you as you use this manual.

1. We have tried to use the terminology in the manual consistently. For example, when we expect you to use one of the TICCIT function keys, we use the word "press." For example, "press **ENTER.**" The name of the function key to use appears in bold.

2. If we expect you to enter data using the regular keyboard, we say "type." For example, "type DMØ", means that you should type those characters.

3. If we expect you to enter a response using the light pen, we say "mark." For example, "Mark **TUTORIAL**", means to use the light pen to touch the icon on the MicroTICCIT display screen.

4. We usually guide you from the first menu (Supermenu) through all of the levels of sub-menus in our procedures. When we say "Select," you will be expected to type the number of the appropriate menu item and press **ENTER**. To move forward to the next screen, TICCIT generally wants you to press **GO**. Likewise, you press **BACK** to return to a previous screen. Most TICCIT utilities have **ADVICE** (help) screens. You can always try to get some help by pressing **ADVICE**. If there is none available, nothing is lost.

5. You can get into "big trouble" by doing certain things. For example, the command "Delete" on the CLI or File Utility menus does not offer you a second chance. Once a file is gone, it is gone forever (unless, of course, you want to load in your backup tapes). Certain files are extremely important and are not recreated by the system. It is always best to think first, and act later.

6. Always write down your procedures as you perform your tasks If what you did works, you have documentation to add to this manual. If it doesn't work, the history will help Hazeltine's customer service personnel help you figure out what went wrong.

Suggested References

ADAPT System Functions © 1984 by Hazeltine Corporation.
ADAPT Reference Manual © 1984 by Hazeltine Corporation.
Introduction to RDOS © 1983 by Data General Corporation.
Introduction to TICCIT Operations © 1984 by Hazeltine Corporation.
RDOS/DOS Command Line Interpreter © 1983 by Data General Corporation.
TICCIT System Utilities © 1984 by Hazeltine Corporation.

Part I: Transferring Courseware

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Transferring Courseware

Introduction

These instructions are tailored for transferring 19K BNCOC CMI System courseware to tape; however, they may be applied to any MicroTICCIT courseware.

You transfer courseware to tape when:

- you want to send the courseware to another site, or
- you want to archive courseware at your location.

Files on the tape

- **MTØ** is the name of the tape drive device.

- The Data General RDOS System automatically sets up the locations on the tape starting with Ø. Number your tape files from Ø to N. Do not skip numbers.

- Keep a list of the files and their contents and write them on two labels. Put one label on the tape itself and one on the plastic tape container. See the example below.

- MTØ: Ø (BNCOCPIXS)
- MTØ: 1 (BNCOCPIXS -- copy)
- MTØ: 2 (BN-.CW)
- MTØ: 3 (BN-.CW -- copy)

Transfer Steps

- Dump two copies of the courseware to tape.

- Dump two copies of the graphics to tape.

- Be sure to include Makecourse instructions for the receiving site.

Detailed instructions are included on the next pages.

Dumping Courseware To Tape

Introduction

These procedures are completed on-line (at the MicroTICCIT terminal).

Procedures

- **Turn the tape drive on if necessary.**
- **Check your tape to be sure it is not write protected.**
- **Put the tape in the tape drive.**

- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (Type "19")
- Type: DMØ: BNCW[1]
- Press **EXIT**.
- Select DUMP (Type "9 ")

FILE 1: MTØ:Ø (Type MTØ:Ø and press **ENTER**.)[2]
FILE 2: BN-.CW (Type BN-.CW and press **ENTER**.)[3]

Press **ENTER again** to begin the DUMP. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are dumped.[4]

Backup Copy

- Repeat the process above. When the FILE 1: prompt appears, type the next tape file name, e.g. MTØ:1.

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1 DMØ is the Master Directory name for the TICCIT System II. "BNCW" is the source courseware directory for **Course 19,** 19K BNCOC for Tank Commanders. To use these instructions for dumping other courseware, replace the prefix "BN" with the name of the course to dump.

2 MTØ:Ø is the name you will assign to the tape file which will contain the source courseware for **Course 19**. MTØ is the name of the tape device. "Ø" is the name of the file. Several files may be stored on the same tape. Number the files consecutively.

3 BN-.CW is the name of the source courseware files that you are going to dump into MTØ:Ø. "BN" is the name of the course. You may replace those letters with the name of another course you wish to dump. This format will dump the entire course. Using the wildcard character "-" will dump all files which start with the letters "BN" and end with the extension ".CW."

4 The name of each file will appear at the bottom of the screen as it is dumped. You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are dumped on the disk. You may use this procedure when you dump courseware from other MicroTICCIT projects which will be placed in the 19K BNCOC course structure.

Quick Method

- Before you press **ENTER** to begin the dump, press **RULE**. (You will see a different display.)
- **TAB** to the prompt: LISTING FILE.
- Type an "*" beside the prompt.
- Press **ENTER** to return to the first screen.
- Press **ENTER** again to begin the dump. All files will be dumped to the tape file without any further action from you.

TICCIT Labels

A COURSE NAME is always two letters. TICCIT files or modules that store courseware have TICCIT labels which correspond to their location within the course. Examples:

BN010203.CW Unit 1, Lesson 2, Segment 3
BN050313.CW Unit 5, Lesson 3, Segment 13

Makecourse

At the receiving site, the TICCIT operator may need to create a course using the Makecourse utility. Be sure to include instructions for Makecourse with the courseware you are transferring.

Next Step

Next dump the source graphics on to the tape.

Dumping Part of a Course

If you want to dump part of a course, you will not type BN-.CW beside the "FILE 2" prompt. Remember that using the wild card "-" dumps all of the files beginning with the prefix "BN."

Below are examples of the labels you would type to dump only particular parts of a course:

BN010101.CW (unit 1, lesson 1, segment 1)
BN01-.CW (dumps all lessons and segments in unit 1)
BN0102-.CW (dumps all segments in unit 1, lesson 2)

Dumping Graphics To Tape

Introduction

Source graphics for a TICCIT course are dumped in separate files on the tape. If the courseware you are transferring has no graphics, then you can skip this entire section. These procedures are very similar to those for dumping source courseware except that you will dump files stored on the source graphics directory which have an extension of "SG."

Procedures

- Check to be sure the tape is not write-protected.
- Turn the tape drive on if necessary.
- **Put a tape in the tape drive.**

- Log on Course Ø and select the **Author Menu**.
- Select #4, **Graphics Utilities**.
- Select #4, **Dump Source Graphics** (SG DUMP).

Enter information on the display that follows:

OUTPUT (DUMP) FILE:	MTØ.Ø [5]
LISTING FILE (Optional):	DMØ: Filename [6]
LOCATION SPECIFIER:	BN [7]
NEW LOCATION SPECIFIER:	BN [8]
SOURCE GRAPHICS DIRECTORY:	TGRAPHIC [9]
DUMP LINKS?	[Y] [10]
DUMP UNPROCESSED FORM OF GRAPHICS?	[Y] (Always dump unprocessed form of graphics files.)
VERIFY DUMP TO SCREEN?	[Y] (Displays each title in file)
SELECT GRAPHICS TO DUMP?	[Y] (Dump selected graphics)

Message:	Graphic to Dump: TICCIT file name [Press **ENTER** to dump the file.]
Final Message:	Selected Graphics Have Been Dumped.

---

[5] Type name of the tape drive device and number of the tape file that will store your dumped graphics. The tape file number in the example is "Ø." Assign unique numbers to files so that you do not write over a file.

[6] The listing file will save the names of the graphics files. Type a filename of your choice using the usual filenaming conventions.

[7] The location specifier is the name of the course holding the graphics to dump. Type the course name to dump all of the course graphics. Dump graphics from a part of the course by typing BN.1 or BN.2.3 (etc.).

[8] Transfer graphics to a different course or a different location within a course, by typing the new location specifier here. You can leave this blank.

[9] Type the name of the directory that contains the source graphics.

[10] If your graphics are linked within the course, it is extremely important to dump the link files. Respond Y (Yes) to this question to be safe.

Backup Copy

Repeat the procedures above. Change the tape file name, e.g. from MTØ:1 to MTØ.2. Use the Quick Method described below.

Quick Method

Indicate N (No) beside **Verify Dump to Screen** and No beside **Select Graphics to Dump** to dump all graphics in a course. You will not see the names of files at the bottom of the screen. They will be dumped without any further action from you.

Makecourse

At the receiving site, the TICCIT operator will need to create a course using the Makecourse utility. Be sure to include instructions for Makecourse with the courseware you are transferring. Part II and III of this manual have instructions for installing courseware.

Dumping Part of the Course

Change the "location specifier" to indicate the part of the course containing course graphics to dump.

BN.1.1.1 (unit 1, lesson 1, segment 1)
BN.1 (dumps graphics for all lessons and segments in unit 1)
BN.1.2 (dumps graphics for all segments in unit 1 lesson 2)

Part II: Installing 19K BNCOC For Tank Commanders, Course 19

Table of Contents

Installing The 19K BNCOC CMI System

Introduction

These instructions are tailored for installing the 19K BNCOC CMI System. These instructions are for installing **Course 19**. See Part III for instructions for installing **Course 20.**

Courseware to Install

- **TICCIT COURSE 19 (19K BNCOC for Tank Commanders)**
- **TICCIT COURSE 20 (19K BNCOC Computer Managed Instruction System)**

Files on the Tape

- MTØ:Ø (BN-.CW)
- MTØ:1 (BN-.SG)
- MTØ:2 (BN-.CW -- copy)
- MTØ:3 (BN-.SG -- copy)
- MTØ:4 (DE-.CW)
- MTØ:5 (DE-.SG)
- MTØ:6 (DE-.CW -- copy)
- MTØ:7 (DE-.SG -- copy)

Installation Steps

- Create **Course 19** using Makecourse.[1]
- Load courseware for **Course 19** (BN-.CW).[2]
- Load the graphics for **Course 19** (BN-.SG).
- Batch process the courseware at all levels.
- Process the graphics.
- Register users for **Course 19.** Assign a Section Number.
- Create **Course 20** using Makecourse.
- Load the courseware for **Course 20** (DE-.CW).
- Load the graphics for **Course 20** (DE-.SG).
- Batch process the courseware at all levels.
- Process the graphics.
- Register users for **Course 20.**
- Create a TICCIT Roster File for students registered in **Course 19.**
- Access **Course 20** and create a BNCOC Master Record File for students registered in Course 19. A separate file must be created for each section.

Important!

Read through the entire set of instructions in Part II and Part III before beginning the installation.

---

1 Makecourse must be completed before processing the courseware and graphics.

2 The courseware and graphics may be loaded from tape either before or after creating the course template using the Makecourse utility. We suggest installing the CMI system in the sequence given in this Manual.

Makecourse Instructions For Course 19

Introduction

The purpose of the Makecourse utility is to create a template file for your course. The template stores information about the structure of the course.

Important!

You cannot have duplicate course numbers on your system. If another course has already been assigned the number "19," you will have to use another number when creating this course.

Replacing An Existing Course

If you already have **Course 19** on your system and you are only updating the courseware, you will **not** need to create a new course template unless the updated version has a larger number of units or lessons than the previous version. **In that case, skip the procedures below and go on to the next section, "Batch Processing Courseware."**

Procedures

- Select the **Author Menu** from the Supermenu.
- Select the **Author Utilities Menu**.
- Select **Makecourse**.
- Select **Build a New Course From Scratch** (Item #3).
- Respond to each of the prompts with the information given below.

Course Number 19
Course Name BN
Course Title 19K BNCOC FOR TANK COMMANDERS

Module Range

CAUTION: Read these instructions completely before responding to this prompt. Typing the actual numbers of a module range will delete all existing courseware in that module range. Be sure you know what you are doing!

- A new module range requires the establishment of a module directory.
- The safest route is to **enter the course number of an existing course at your site.**

Number of Units

11 (Enter a K in "11" spaces.) Press **GO** to continue.

Number of Lessons

(Enter a K in the number of spaces indicated below for each unit.) Press **GO** for next unit.

Unit 1 -- 18
Unit 2 -- 5
Unit 3 -- 9
Unit 4 -- 8
Unit 5 -- 4
Unit 6 -- 2
Unit 7 -- 2
Unit 8 -- 2
Unit 9 -- 9
Unit 10 -- 1
Unit 11 -- 1
Press **SKIP** to advance to the next frame.

Start Window

Accept the default value and press **GO** to continue.

Number of Active Windows

Type **"9"** and press **ENTER**.
The number you choose relates to the maximum number of active lessons students will be allowed to work in at any one time. We suggest allowing the maximum number unless you have reasons for doing otherwise.

Graphics/Audio Directory

Enter **"1"** unless otherwise instructed by the TICCIT Site Manager or Hazeltine's Customer Service Department. This directory must exist at your site. See the Hazeltine TICCIT operations manuals for instructions about creating directories.

Source Courseware Directory

Enter **DEFAULTTAL** unless you have installed a different courseware directory at your site.

Source Graphics Directory

Enter **GRAPHICS** unless you have installed a different source graphics directory at your site.

Number of Objective-Test Attempt Blocks

Accept the default value and press **GO** to continue.

Extended Data Area

The 19K BNCOC course has no extended data area. Press **EXIT** to record the structure for this course.

Courseware Template File Name

You will see the following message on your screen which indicates that the course structure for this course has been recorded on your disk.

PDA019000 created[3]

Next Step

After the course template has been created, process the source courseware and the source graphics.

Warning!

Do not change the course structure after the BNCOC cycle has begun. Any change in the course template destroys all student data. All students must be re-registered to access the revised course.

Changing the Course Structure

To change the course structure,

- Select item #1, "**Modifying the Course Structure**" from the Makecourse menu.
- Follow the instructions above, entering new data as appropriate.
- Remember that any changes to the course structure will require you to re-register all users in the course. All student performance data will also be destroyed. Never change course structure during a BNCOC cycle.

---

[3] The first three numbers refer to the course number. You may omit the leading zero when referring to this course. The last three numbers refer to the site number. All MicroTICCIT sites have "000" as the site number.

Loading Course 19 Courseware From Tape

Introduction

Complete these procedures on-line (at the MicroTICCIT terminal).

Procedures

- **Bring TICCIT UP** if you have not already done so.

- **Put a tape in the tape drive. Be sure the tape drive is on and the tape is in the read only position.**

- Log on and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (Type "19").
- Type: DMØ: BNCW[4]
- Press **EXIT**.
- Select LOAD (Type "8").

FILE 1: MTØ: Ø (Type MTØ: Ø and press **ENTER**.)[5]
FILE 2: BN-.CW (Type BN-.CW and press **ENTER**.)[6]

Press **ENTER again** to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[7]

---

[4] DMØ is the Master Directory name for the TICCIT System II. "BNCW" is the source courseware directory for **Course 19**, 19K BNCOC for Tank Commanders.

[5] MTØ: Ø is the name of the file containing the source courseware for **Course 19**. MTØ is the name of the tape device and "Ø" is the name of the file. Several files may be stored on the same tape. They are usually numbered consecutively. The tape containing the 19K BNCOC courseware contains eight files numbered from Ø to 7.

[6] BN-.CW is the name of the source courseware files you are going to load. "BN" is the name of the course. You may replace those letters with the name of another course you wish to load. This format will dump the entire course. Using the wildcard character "-" will load all files which start with the letters "BN" and end with the extension ".CW."

[7] The name of each file will appear at the bottom of the screen as it is loaded. You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are loaded on the disk. You will use this procedure when you load courseware from other MicroTICCIT projects which will be placed in BNCOC Course 19.

Quick Method

Before you press **ENTER** to begin the load, press **RULE**. Press TAB to move the cursor beside the prompt: LISTING FILE. Type an "*." Press **ENTER** to return to the first screen. Then press **ENTER** to begin the load. All files will be loaded without any further action from you. Note: You would not use this method if you needed to change the names of the files *before* loading them into the system. See Footnote 6 below.

TICCIT Labels

A COURSE NAME always has two letters. TICCIT files that store source courseware have TICCIT labels which correspond to their location within the course.

Examples:
BN010203.CW Unit 1, Lesson 2, Segment 3
BN050313.CW Unit 5, Lesson 3, Segment 13

Loading Parts of the Course

Enter the appropriate TICCIT file name beside the "FILE 2:" prompt. See examples below.

BN010101.CW (unit 1, lesson 1, segment 1)
BN01-.CW (loads all lessons and segments in unit 1)
BN0102-.CW (loads all segments in unit 1, lesson 2)

Next Step

Now load the source graphics from the tape. The instructions are presented on the next page of this manual.

Loading Course 19 Graphics From Tape

Introduction

Source graphics for a TICCIT course are dumped in separate files on the tape. If the courseware you are loading has no graphics, then you can skip this entire section. These procedures are very similar to those for loading source courseware except that you will load these files on the source graphics directory . These files have the extension ".SG."

Procedures

- **Be sure the tape is in the tape drive.**
- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (Type "19").
- Type: DMØ: BNSG [8]
- Press **EXIT**.
- Select LOAD (Type "8").

FILE 1: MTØ:1 (Type MTØ:1 and press **ENTER**.)

FILE 2: BN-.SG (Type BN-.SG and press **ENTER**.) [9]

Press **ENTER again** to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[10]

Quick Method

Before you press **ENTER** to begin the load, press **RULE**. Press TAB to move the cursor beside the prompt: LISTING FILE. Type an "*." Press **ENTER** to return to the first screen. Then press **ENTER** to begin the load. All files will be loaded without any further action from you.

Note: You would not use this method if you needed to change the names of the files before loading them into the system. See Footnote 9 below.

---

[8] DMØ is the Master Directory name for the TICCIT System II. BNSG is the source graphics directory for Course 19, the 19K BNCOC ADAPT course. To use these instructions for loading other source graphics, replace the prefix "BN" with the name of other course.

[9] BN-. SG is the name of the source graphics files you are going to load . "BN" is the name of the course. You may replace those letters with the name of another course you wish to load. This format will load the graphics the entire course. Using the wildcard character "-" will load all files which start with the letters "BN" and end with the extension ".SG."

[10] You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are loaded on the disk. You will use this procedure when you load source graphics from other MicroTICCIT projects which will be placed in the 19K BNCOC course structure.

Batch Processing Courseware for Course 19

Introduction

Before you can use the Courseware files you have loaded, you must **process** them. When you process a file, you are creating a separate object file (a TICCIT module). [11]

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Author Utilities Menu**.
- Select **Run Courseware Batch Processor** (Item #5).

Process courseware at all levels. Processing will take some time depending on how long the courseware is. Other authors will not be able to use the processor until you are finished. Enter the TICCIT labels as follows:

BN	(Processes all course level files)
BN.*	(Processes all unit level files)
BN.*.*	(Processes all lesson level files)
BN.*.*.*	(Processes all segment level files)

- You can substitute the name of another course for "BN."

- The asterick (*) is the wildcard indicating that you want ALL files (including all extensions) at that level to be processed.

- All types of files (standard, test, APT, etc.) will be processed.

- Press **ADVICE** for additional information.

Next Step

Process source graphics files if the course has graphics. Otherwise, register users for the course.

---

11 After the installation has been completed, you may wish to delete the source courseware files from the disk. Keep the tape containing the source courseware files for backup purposes. Deleting the source courseware has two results: You will have more space on the disk for other courseware. You will also be unable to make changes in this course from the ADAPT editor. See other sections of this manual for more information about TICCIT modules.

Batch Processing Graphics for Course 19

Introduction

Follow these instructions to process source graphics which have been loaded from tape to disk.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Graphics Utilities Menu**.
- Select **Batch Graphics Processor**.
- Enter the courseware location; e.g., BN
- Enter the name of the Source graphics directory; e.g. BNSG.
- Type "Y" beside the prompt: DISPLAY ERROR MESSAGE.
- Type "Y" beside the prompt: PROCESS LINK GRAPHICS.
- Type "N" beside the prompt: FORCE HIGH RESOLUTION.

Be sure that graphics have been dumped in unprocessed form before reprocessing. [12]

- Press **ENTER** to begin processing. These instructions will process all source graphics associated with the named course.

Check Graphics

- After processing, register a student in the course and check the graphics.

Next Step

Register users in **Course 19.**

---

12 List any of the source graphics files to find out whether they are processed or unprocessed. Processed graphics files will have a user defined file attribute which will appear in the file information as a "?." If they have been dumped in processed form, first unprocess the files; then proceed with the instructions for processing graphics.

Registering Users In Course 19

Important! Only the TICCIT operator should register students in a course. Operators should keep careful records of all transactions.

Introduction Before you can access **Course 19**, you must register at least one user in the course.

Procedures

- Select the **Operator Menu**.
- Select the **Registration Menu**.
- Access the **InterActive Registration Menu**.
- Register instructors in **Course 19**. Assign them an Instructor (IN) mode. Do not assign them to a section. [13]
- Register students into **Course 19**, Section ØØ.[14]

- Type the user's name last name first. The name can be a maximum of 20 characters (including first and last names).
- Assign an ID number. Be sure every user on the system has a unique ID number. The ID number can be from 1 to 9 numbers.
- Enter Course number 19, Section ØØ.
- Optional: Assign a four character password. The password can be numbers or letters or combination of both.

Modes and Authorization Codes Fill in both the mode and authorization code information for all users. If you do not enter an authorization code, the System will assign the default code which is **ST** (Student).

- The mode and authorization code for students must be **ST** (student).
- The mode and authorization code for instructors must be **IN** (instructor).

Important Notes:

- TICCIT only stores performance data for users who are registered in student mode.
- A student can only be registered in **one** section of a course.

---

[13] To see and test **Course 19** the way it will be presented to students, be sure to register at least one user in student mode. You should not register instructors into a section. No performance data are stored for users registered in the instructor mode.

[14] Section numbers must be two digits -- ØØ to 99. The example shown here is "ØØ"; however, the section number can be any two digits. Assign no more than 15 students to a section.

Creating A TICCIT Roster File

Important!

This file must be created before attempting to use TICCIT Course 20 which includes utilities for entering off-line data and printing the BNCOC Master Record.

Introduction

The TICCIT Roster File utility creates a disk file which lists the identification number and mailbox number of each student registered in a particular course and section. The 19K BNCOC CMI System, Course 20, will use these data to locate information about the student and to create the CMI System's Roster File.

BNCOC personnel could maintain two or more rosters by registering different students into different sections of the same course. **Create a separate TICCIT Roster File for each section.**

Procedures

- Log on Course Ø and select the **Instructor Menu.**
- Select **Student Progress Reports.**
- Go to the second page of the menu.
- Select **Build Class Roster** (Item #7).
- Enter the course number (i.e., 19).
- Enter the two digit section number that you assigned to the students during registration.

- Press **HARD** to create the TICCIT Roster File for this section. This file will be on the Registration Directory (TREGISTER) under the name Ø19ØØ.RO. The first 3 digits are the course number and the second two digits are the section number.

Changing the Roster

If students are added or dropped from the 19K BNCOC course during a cycle, the TICCIT Roster File will need to be recreated using the procedures above.

Changes in the "TICCIT Roster File" will not affect the performance data files of students registered in Course 19; however, the CMI Roster File created by Course 20, the 19K BNCOC CMI System, will need to be recreated to reflect the changes. Instructions for creating the CMI Roster File are included in Part III of this manual.

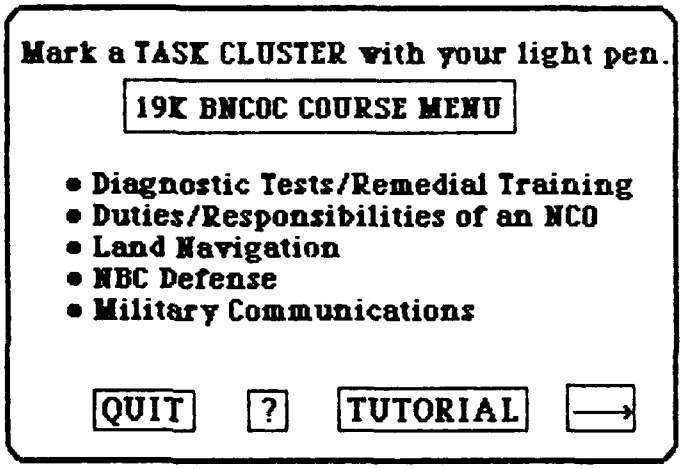
Contents Of Course 19

Introduction

Course 19, 19K BNCOC For Tank Commanders, consists primarily as a set of menus which provide the "structure" for 19K BNCOC MicroTICCIT courseware. Course 19 will allow BNCOC students to access the MicroTICCIT courseware developed for 19K BNCOC including the Diagnostic Tests and Remedial Training for five (5) of the BNCOC Prerequisite Tasks and other Tasks included in the Land Navigation, Military Communiciations, and Tank Commander's Gunnery Clusters.

The Main Menu

The Main Menu of Course 19 lists the 19K BNCOC Task Clusters. Page One of the Menu is shown below.



Submenus

Each Task Cluster Menu lists all of the 19K BNCOC tasks in that cluster.

MicroTICCIT Tutorial

Course 19 includes the MicroTICCIT Tutorial for students and for instructors which is accessible from the Main Menu by marking the icon, **TUTORIAL**, with the light pen. The Tutorial includes an introduction to the BNCOC course menus and instruction on using the light pen. Which version of the Tutorial the user sees depends on their user mode.

BNCOC Tests

Course 19 has three BNCOC tests which have been converted for MicroTICCIT presentation from their previous paper/pencil format. No instruction is included for the Tasks which they evaluate.

These tests are located at:

Cluster	Task
Responsiblities of an NCO	Conduct Performance Counseling
Tank Commander's Gunnery	Estimate Range
	Select Firing Position

Contents Of 19K BNCOC Unit 1 (Cluster L): Diagnostic Tests And Remedial Training

Introduction

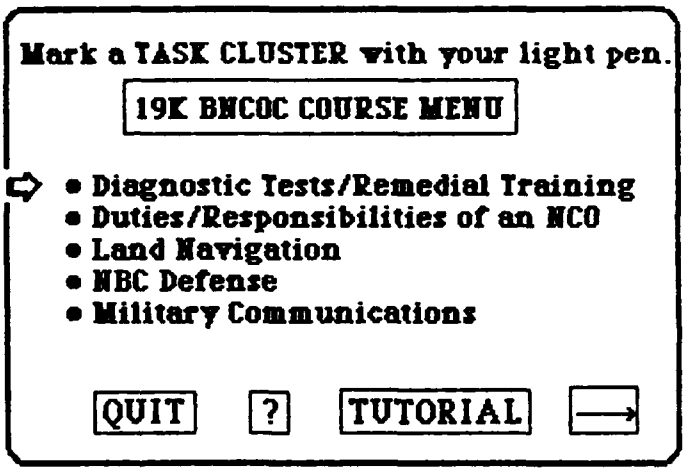
19K BNCOC's Task Cluster L includes instruction and testing of those tasks determined to be prerequisite to the 19K BNCOC course. The 19K BNCOC course on MicroTICCIT includes on-line testing and instruction for five of those prerequisite tasks.

Accessing Instruction

To use the instruction and tests for the five on-line prerequisite tasks, follow these procedures:

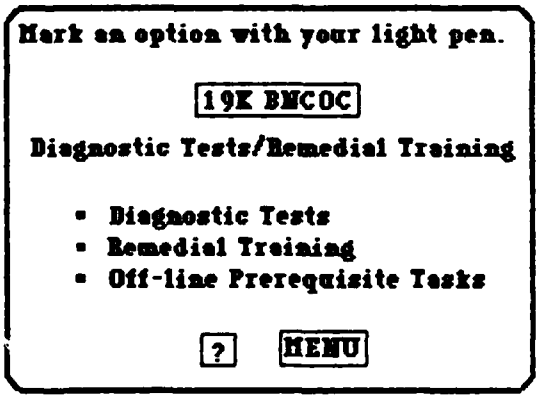
- Log on **Course 19**.
- Mark the first menu item on the Course Menu, Diagnostic Tests and Remedial Training.

19K BNCOC Course Menu



Diagnostic Tests Sub-Menu

The first sub-menu (shown below) offers three choices:



Diagnostic Tests

The tests for the prerequisite tasks are called diagnostic because they are intended to measure the student's existing knowledge and/or skills. The student takes this test **prior to having received instruction.**

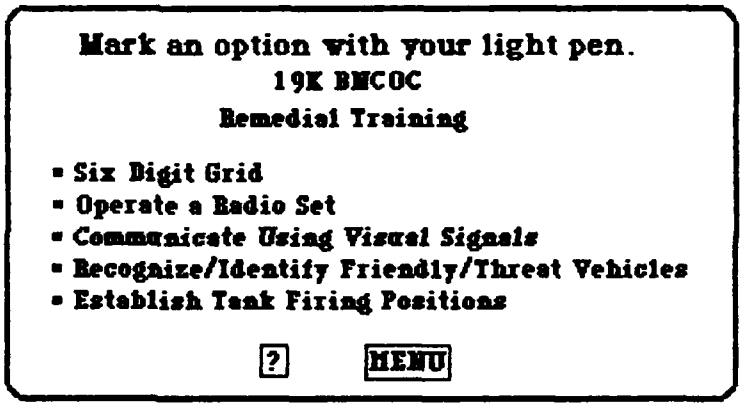
Remedial Instruction

The instructional material is called remedial because it is intended to remediate the student's lack of the knowledge and/or skills measured by the tests. A student does not see this instruction **unless he fails** the diagnostic test.

Other TICCIT instructional segments will be different. Ordinarily, the student must do the instructional activities before taking the test.

On-Line Prerequisite Tasks

There are 5 prerequisite tasks on-line. Both instruction and tests are included. See the sample screen below.



Off-Line Prerequisite Tasks

There are several other tasks which are prerequisite to the 19K BNCOC course. Those tasks are tested off-line (either in the field or in classroom). Students who do not pass these tests receive remedial instruction, but that instruction is not on MicroTICCIT.

Student Records

TICCIT stores each student's test results (Pass/Fail), the number of test attempts (1 to 3), and the student's score. TICCIT cannot store results of off-line testing. Those results must be entered by the instructor using TICCIT Course 20. Instructions for using Course 20 are given in the next section of this manual.

Videodisc

A videodisc has been developed to support the TICCIT courseware for the diagnostic tests and remedial training. The videodisc **must be** loaded before accessing this courseware. Instructions for loading videodiscs and using the videodisc player are included in the 19K BNCOC MicroTICCIT Instructor's Tutorial and Reference Manual.

Taking the Tests

The student must begin by taking all five diagnostic tests in the order in which they are listed. If a student passes a test, the test name on the menu will change from **CYAN** (light blue) to **GREEN**. If the student fails the test, the task title will change from **CYAN** to **RED**. Once begun, student must complete a test. TICCIT will record the test attempt information.

Accessing Restricted Tests

All 19K BNCOC tests are restricted; that is, a student cannot access a test without instructor (or Proctor) assistance.

Second and Third Test Attempts

The student cannot take a test again until he has completed the appropriate remedial instruction. A student may take a test a maximum of three times.

Accessing the Courseware

A student will not be able to access the Remedial Training until he has taken **all five** diagnostic tests at least one time. He may access **only** the instruction for the task he failed. Remedial instruction must be completed before a student can take the corresponding test again.

If a student exits the system without completing a remedial lesson, the task name on the menu will change from **CYAN** to **YELLOW**. The color **YELLOW** indicates that a lesson has been started but not completed. Successful completion of a lesson will change the task name from **CYAN** (or **YELLOW**) to **GREEN**.

Using the Light Pen

Students will make all responses using the light pen. In each case, students mark the appropriate screen location with the light pen. TICCIT records the information and determines whether the student has responded appropriately.

Using the Keyboard

Only instructors will need to use the MicroTICCIT keyboard. They will use the keyboard to log students on the system and to give them access to restricted tests.

Accessing Restricted Tests

Introduction

You must use the Proctor Password to give a student access to a restricted test. All BNCOC tests are restricted.[15]

• There is only one Proctor Password, but every user may have a unique user password. The Proctor Password may be different or the same as a User Password. The Proctor Password is **not** necessarily the same as the System Operator password.

Procedures

- Press the **ATT'N** key.
- Type "p" for "Proctor."
- Press the **TAB** key to move the cursor to the masked boxes at the right of the screen.
- Type the Proctor's password in the masked boxes. **Be sure to use the Caps Lock key or shift key if the password is uppercase letters.**
- Press **ENTER**.
- Type "y" for "yes" and press **ENTER**.

Result

The first page of the test should appear. If the system display requesting the Proctor password appears again, the password you have just entered was incorrect. You may have forgotten to capitalize all letters, if the password required it. Check with the TICCIT operator to find out the current Proctor password.

---

15 Only users registered in student mode will be required to enter the Proctor password to access the test. If the user is registered as an instructor or higher security level, any password may be used.

Part III: Installing Course 20, 19K BNCOC CMI System

Table of Contents

List of Figures

Introduction

Before you install Course 20, The CMI System, you must install the modified SRDBI function, a patch for TICCIT System II developed by Hazeltine Corporation for the CMI System (1985). Instructions for performing this patch are provided on Page III-27 in this part of the Manual. Information about the SRDBI function and its relationship to the TICCIT permanent data files (.PD) may be found below.

Installation Steps

Installing Course 20 on TICCIT System II requires several steps. With the exception of "installing the modified SRDBI" those steps match normal courseware installation procedures. If the modified SRDBI has been installed and/or Course 20 has already been established using Makecourse, you will not need to repeat those steps.

- Install the modified SRDBI.
- Create a course structure using Makecourse.
- Load the courseware and graphics files from the tape.
- Process the files (courseware and graphics).
- Register users in the course.

Using Course 20 as a Computer Managed Instruction system for the BNCOC courseware in Course 19, 19K BNCOC for Tank Commanders, also requires the operator to create a TICCIT Roster File for each section of students registered in Course 19.

Section-Size Restrictions

You may create more than one section of students during registration simply by assigning different section numbers to different groups of students. A section may not exceed 15 students. This restriction is imposed by memory requirements of the CMI System (Course 20) and not by the TICCIT operating system.

The Permanent Data Area

A TICCIT course is established using Makecourse which creates a course template stored in a file with the prefix "PDA." For example, the 19K for Tank Commanders course template file is "PDAØ19ØØØ." The first three digits correspond to the course number (with a leading zero) and the last three digits indicate the site number. All MicroTICCIT sites have the same site number "ØØØ."

The PDA stores information about the course structure such as the number of units and number of lessons per unit. When a user is registered for a TICCIT course, the System uses the course template to create a unique user data file for that individual. Each user data file has the .PD extension, e.g., ØØØØØØ22ØØ.PD. The first nine digits correspond to the user's identification number (up to 9 digits with leading zeros). The tenth digit indicates the relative entry of the course in the authorization file for that user. Each user may be registered in from 1 to 10 courses; therefore, the tenth digit can be from Ø to 9. In the example above, this user (ID 220) was registered in this course first. If the same user were registered in a second course, the file created would be named ØØØØØØ22Ø1.PD.

If you LIST the system files, the filename will appear without the leading zeros, e.g., 22Ø1.PD.

Whenever the user logs on the System, he must enter a course number. TICCIT searches the authorization file to determine if the user has been registered for the course and locates the user's .PD file corresponding to that course and loads it into TICCIT's core memory. See Figure 1, Log on Procedures and the .PD file, below. The .PD file is updated depending on the user's actions. For example, information related to time spent in each lesson, results of tests, etc. is stored in specific areas of this file. Based on data stored in the .PD file, the display that was on the terminal when the user logged off can be rebuilt and the user can resume course activity at the same location when he logs off again. When the user logs off, the contents of his .PD file are rewritten into the first 16 sectors of the file.

Figure 1, Log On Procedures and the .PD File

STEP ONE	STEP TWO	STEP THREE
User logs on indicating his ID number and course number.	TICCIT validates the course and ID number and find the disk address of the user's .PD file corresponding to the course.	TICCIT loads the first 16 sectors of the user's .PD file into Core Locations Ø - 7777_8.

The user's .PD file exists as a disk file, 18 sectors long (each sector is 256 words). The disk address of the .PD file is stored in the system authorization file (REGISTER.AF). Locations Ø to 7777_8 (Sectors 1 to 16) are called the "lower data area" of the "user permanent data area." Sector 17 is an index to the .PD file which contains data about the size and contents of the file. Sector 18 and beyond contain data regarding the length of time in a lesson or test, number of test attempts, and other student progress data. See Figure 2, Structure of the User Permanent Data Area, below.

The 19K BNCOC CMI System (Course 20) only accesses data in the .D area, described below in Figure 2. When a student takes a TICCIT Test on-line, the system writes also data to the .T area (See Figure 2). The CMI System does not read or write to that area.

The information in the PDA is all data; that is, no programs are included. In addition to the PDA, executable TICCIT modules which are used frequently by the user are stored in core resident. Other TICCIT modules are stored on the disk. They contain TICCIT functions which are not used as often and so are loaded into memory only as needed.

Figure 2, Structure of the User Permanent Data Area

Location in Octal	Description
Ø to 124Ø	Fixed data, not dependent on course in which user is enrolled
1241	UMAX, the name of the location which contains number of units in the course and the beginning of the .D area
1242	Location that stores value which indicates whether a student has passed the course
1243-127Ø	Two words for each unit, word one contains the Unit data and word two contains the pointer (address) to the Lesson Table for that Unit.
1271-1382	Lesson Tables which vary in length depending on the number of lessons per unit; word one contains the number of lessons in a specific unit followed by one word for each lesson in that unit.* 19K BNCOC for Tank Commanders (Course 19) consists of 11 units and a total of 61 lessons. Following the Lesson Tables is workspace for system modules required by the user.
1ØØØØ	The .I area. This is the .PD index area which contains information about the size of the lesson tables area (.L) and the size of the test Tables area (.T).
114ØØ	The .L area which contains information about each lesson. Each lesson is assigned 6 words.
118ØØ	The .T area which contains information about each test taken by the user, including each test attempt. Data area entered in the order in which the user accesses the test. This area is optional and is only created when the user takes a test. The data here are used to create Student Progress Reports about test results.

* See Figure 3, Lesson Tables in the .D Area, for a detailed explaination of the data contained in each word.

Lesson Tables in the .D Area

In the .D area of memory TICCIT locates data related to each lesson of the course. The SRDBI function allows a programmer to access this area which stores the information required by the CMI System to produce the 19K BNCOC Master Record. The specific data of interest are the pass/fail status of each lesson and the number of test attempts. The programmer can access the specific word in memory that contains these data by knowing the unit number, thus accessing the word that contains the lesson pointer. Then by knowing the specific lesson number of interest in that unit can locate the information. Actually, ADAPT allows a programmer only to access a specific byte, so all values must be doubled when positioning the pointer in the file to read specific data. In addition, all values must be converted from octal and entered in decimal. For example, Location 1241 which contains the number of units in the course is the octal value.

Information in the Lesson Table is stored by bit position, not by single bytes. Thus a mask must be developed to interpret data for use by the CMI system. See Figure 3 below, Lesson Table in the .D Area.

Figure 3, Lesson Tables in the .D Area*

1	Ø	Ø	Ø	Ø	1	Ø	Ø	Ø	Ø	Ø	Ø	Ø	1	1	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

* This user has passed the test on the first attempt.

The first bit (reading from left to right) is either a 1 or a Ø depending on whether the student has passed (1) or not passed (Ø). The next two bits are empty and therefore always contains zeros. The next three bits hold the value for the number of test attempts. (A maximum of 7 are allowed by the TICCIT; however a maximum of 3 are allowed in BNCOC courses.) The next seven bits hold the value of the test score. These bits are not turned on by taking the Lesson Test. The test score is stored, however, in the .T area. The final three bits hold the value related to the color or status of the user in that lesson. These color values are NOT the same as the values of colors used by authors. There are three possible values stored in these bits:

1 (red, fail),
2 (yellow, not started yet), and
3 (green, passed).

Future TICCIT programmers working with the 19K BNCOC CMI System should note that these same data are stored in the .T area; however, since the test results in that area are stored in the order that the user takes the tests, including each test attempt, access would be much more complicated than accessing the same information in the .D area.

ADAPT System Functions

The ADAPT authoring language includes several categories of system functions, one of these is the SRDBI. The SRDBI.CS is the file that stores this set of functions on the disk; however, there is only one function at the present time in this file. The SRDBI.CS file is located on the System's Master Directory (DMØ). When the programmer calls the SRDBI function into the course, TICCIT calls the module 7Ø1. The SRDBI function is designed to allow the programmer to access specific areas of the .PD file even when that user is not logged on the System. The SRDBI is central to the functioning of the 19K BNCOC CMI System's off-line test results entry procedures since it allows the program to examine or modifiy the contents of any student record. Arguments include the specific data area of the .PD file, the byte position in the file to be read or written to, the student identification number, and the course number. The named areas of the .PD file are as follows:

1241 - *	.D	Contains all course, unit and lesson data including test results
10000-10377	.I	Index to the .PD file
10400-10777	.L	COntains lesson data
10800- *	.T	Contains test results.

* The end of the .D area depends on the length of the course in terms of number of units and lessons. The size of the .T area depends on the number of test attempts by the individual student. The 19K BNCOC system allows the student to take a test a maximum of 3 times.

TICCIT's Method For Recording Off-Line Data

TICCIT has a means for recording *off-line* test results without the complex programming method developed for the 19K BNCOC CMI System. An instructor can log on a course using <u>each</u> individual student's ID number. Then he can use the appropriate Proctor Function to turn the "map" green for any unit, lesson or segment to indicate that the student has successfully completed that activity or test. The disadvantage of this method, of course, is that the instructor would need to log on for each student, access the appropriate course area, select the Proctor function, change the data, log off, and then repeat the process for as many students as there are in the course.

This method is still available to the instructor even though the CMI System is in place. However, instructors are not likely to be given training in understanding TICCIT maps in an environment where the light pen and ADAPT menus are used to develop courseware. Despite the use of menus instead of the TICCIT map, TICCIT itself still "thinks" in terms of maps.

Roster Files

The CMI System (Course 20) uses the TICCIT Roster File to built its own system files. The Roster File which has the extension .RO includes the mailbox number and the identification number of all students registered in a particular course and section. The first three digits of the file name correspond to the course number and the last two digits correspond to the section number. The file is located on the TREGISTER or REGISTER directory.

Each registered student is allotted three words of information (six bytes) in the Roster File. The first two bytes contain the student's mailbox number, and the last four bytes contain the student's identification number. Information obtained from the Roster File by the 19K BNCOC CMI System is used to access information stored in the REGISTER.AF file described below.

Register.AF (TICCIT System File)

Register.AF is a file created and maintained by the TICCIT operating system. It is a contiguous file which allots each registered user a 64 word area. Areas are ordered according to the user's mailbox number. Each area contains the user's name and other information about each course for which that person is registered (up to 10). The 19K BNCOC CMI System (Course 20) accesses this file using the mailbox number obtained by searching the Roster File (described above) and gets the name of the student.

19K BNCOC CMI System Files (Files created by Course 20)

The CMI system creates a file called MRCCCSS for each section of students using the 19K BNCOC for Tank Commanders (Course 19). "CCC" is the course number and "SS" is the section number. For example, a file might be named MR01900. This file is located on the Master Directory, DMØ. It is a random access file which contains information about the student's identification number and and all of the student performance data required to build and print the 19K BNCOC Master Record. Data are stored in ASCII format. The MR file is updated using the appropriate menu option within the Course 20.

Three listing files are also created in order to print the BNCOC Master Record. The contents of these files depend on the current course and section number being accessed by the user. More information about these files is included under the heading "CMI System File" on Page III-26 in this section of the Manual.

Using the 19K BNCOC CMI System with Another Course

Course 20 can be modified so that the CMI System can be used to manage a course other than 19K BNCOC (Course 19). Instructions for modifying Course 20 are included in Part X of this Manual. Using the System with another course, such as 19E BNCOC, for example, requires modifying or replacing the menus within Course 20. A word of warning: This procedure requires thorough understanding of both Course 19 and Course 20 and should only be attempted by an experienced ADAPT programmer, not a courseware developer. Knowledge of the TICCIT operating system is absolutely required.

More Information

Additional information about Course 20 may be found in Part X, Revising Course 20, in this Manual. The TICCIT operator will find complete documentation of the TICCIT system in Hazeltine manuals provided with the System II by Hazeltine Corporation. A third source of information are the RDOS manuals available from Data General.

Summary of the 19K BNCOC CMI System Capabilities

1. Allows an instructor to log on Course 20 using his own ID and enter off-line test results for all tests and all students in a single section by writing data directly to the .D area of the users' .PD files.
2. Allows course managers to maintain separate records for several sections of BNCOC students during a single cycle or over the course of several cycles, up to 99 sections.
3. Allows for a maximum of 15 students to be registered into one section.
4. Maintains records of test results for all 19K BNCOC tasks and all Prerequisite tasks including tests taken on-line and those administered off-line.
5. Produces a Master Record indicating the GO/NOGO status and the number of test attempts required by each student for the entire 19K BNCOC course including the Prerequisite Tasks.
6. Produces a record indicating the total number of NOGO test results for each student in a section.

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Makecourse Instructions For Course 20

Introduction

Course 20 contains the programs which allow 19K BNCOC instructors to enter off-line test results and to print the 19K BNCOC Master Record.

Updating an Existing Course 20

If Course 20 already exists on your system and no changes to the unit and lesson structure have been made, skip this step.

- If no changes are needed, you should next process the courseware and source graphics.

- If the unit and/or lesson structure has changed, skip to the last section of these directions, "Modifying Course Structure."

Course Number

20

Course Name

DE

Course Title

19K BNCOC CMI SYSTEM

Module Range

Enter the course number of an existing course at your site, e.g. "19" or other course on your System.

CAUTION: Do not type the module range numbers (e.g., 120000-129999). Doing so will **"delete"** all existing courseware in that module range. **Be sure you know what you are doing!**

Number of Units

3 Enter a K in the first three spaces.
Press **GO** to continue.

Number of Lessons

Enter a K in the number of spaces indicated below for each unit. Press **GO** for the next unit.

Unit 1 -- 11
Unit 2 -- 1
Unit 3 -- 1
Press **SKIP** to advance to the next screen.

Start Window

Press **GO** to accept the default value.

Number of Active Windows

Type "9" and press GO.
The number you choose relates to the maximum number of active lessons students will be allowed to work in at any one time.

Graphics/Audio Directory

Enter the number of the graphics directory used at your site. If in doubt, ask your Site Manager or Hazeltine's Customer Service Department. This directory must exist at your site. See the Hazeltine TICCIT Operations manual for instructions about creating directories.

Source Courseware Directory

Type "DEFAULTTAL" unless you have installed a different courseware directory at your site. This directory must exist at your site.

Source Graphics Directory

Type "GRAPHICS" unless you have installed a different source graphics directory at your site. This directory must already exist on your disk.

Number of Objective-Test Attempt Blocks

Press **GO** to accept the default value.

Extended Data Area

The CMI System does not use an extended data area to store data. Press **EXIT** to record the structure for this course.

Course Template File Name

You will see the following message on your screen which indicates that the course structure for this course has been recorded on your disk.

PDA020000 created

The first three numbers refer to the course number. You may omit the leading zero when referring to this course. The last three numbers refer to the site number. All MicroTICCIT sites have "000" as the site number.

Warning

If you use Makecourse to change any aspect of the course structure, all users (including authors, operators, instructors) must be re-registered in order to access the revised course structure.

Never make changes in the course structure during a BNCOC cycle. Even checking the course structure using the "Modifying the Course Structure" utility (described below) results in a new PDA template. So, do not even attempt to check the existing course structure in the middle of a BNCOC cycle.

Modifying the Course Structure

To change the course structure,

- Select item #1, "**Modifying the Course Structure**" from the Makecourse menu.
- Follow the instructions above, entering new data as appropriate.
- Remember that any changes to the course structure will require you to re-register all users in the course. All student performance data will also be destroyed. Never change the course structure during a BNCOC cycle.

Loading Course 20 From Tape

Introduction

Complete these procedures on-line (at the MicroTICCIT terminal).

Procedures

- **Put the tape in the tape drive.**
- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.

Load Courseware Files

- Select DIR (Type "19 ").
- Type: DMØ: DECW[1].
- Press **EXIT**.
- Select LOAD (Type "8 ").

FILE 1: MTØ:4 (Type "MTØ:4" and press **ENTER**.)[2]
FILE 2: DE-.CW (Type "DE-.CW" and press **ENTER**.)[3]

Press **ENTER again** to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[4]

---

1 DMØ is the Master Directory name for the TICCIT System II. "DECW" is the source courseware directory for Course 20, the 19K BNCOC CMI System.

2 MTØ:4 is the name of the file containing the source courseware for Course 20. MTØ is the name of the tape device. "4" is the name of the tape file. Several files may be stored on the same tape. They are usually numbered consecutively. The tape containing the 19K BNCOC courseware contains eight files numbered from Ø to 7.

3 DE-.CW is the name of the source courseware files you are going to load. "DE" is the name of the course. Using the wildcard character "-" will load all files which start with the letters "DE" and end with the extension ".CW."

4 The name of each file will appear at the bottom of the screen as it is loaded. You may change the name of the file before pressing **ENTER**. This procedure allows you to change the names of the files as they are loaded on the disk if necessary.

Load Course Graphics

- Select DIR (Type "19 "),
- Type: DMØ: DESG[5].
- Press **EXIT**.
- Select LOAD (Type "8 "),

FILE 1: MTØ: 5 (Type "MTØ:5" and press **ENTER**.)[6]
FILE 2: DE-.SG (Type "DE-.SG" and press **ENTER**.)[7]

Press **ENTER again** to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[8]

Quick Method

Before you press **ENTER** to begin the load, press **RULE**. On the next screen, press TAB to advance the cursor beside the prompt: LISTING FILE. Type an "* ". Press **ENTER** to return to the first screen. Then press **ENTER** to begin the load. All files will be loaded without any further action from you.

---

5 DMØ is the Master Directory name for TICCIT System II. "DESG" is the source graphics directory for Course 20, The 19K BNCOC CMI System. To use these instructions for loading other graphics, replace the prefix "DE" with the name of the course to load.

6 MTØ:5 is the name of the file containing the source graphics for Course 20. MTØ is the name of the tape device; "5" is the name of the file.

7 DE-.SG is the name of the source graphics files you are going to load . "DE" is the name of the course. This format will dump the entire course. Using the wildcard character "-" will load all files which start with the letters "DE" and end with the extension ".SG."

8 The name of each file will appear at the bottom of the screen as it is loaded. You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are loaded on the disk.

Batch Processing Courseware for Course 20

Introduction

Before you can use the courseware files you have loaded, you must **process** them. Processing a source file creates an object file (also called a TICCIT module) for each source file.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Author Utilities Menu**.
- Select **Run Courseware Batch Processor** (Item #5).

Process courseware at all levels. Processing will take varying amounts of time depending on how long the courseware is. Other authors will not be able to use the processor until you are finished. Enter the TICCIT Labels as follows:

DE	(Processes all course level files)
DE.*	(Processes all unit level files)
DE.*.*	(Processes all lesson level files)
DE.*.*.*	(Processes all segment level files)

- The asterick (*) is the wildcard indicating that you want ALL files at that level (including all extensions) to be processed.
- All types of files (standard, test, APT, etc.) will be processed.

- Press **ADVICE** for additional information.

Next Step

Process the Course 20 source graphics files.

Batch Processing Graphics for Course 20

Introduction

Follow these instructions to process source graphics which have been loaded from tape to disk.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Graphics Utilities Menu**.
- Select **Batch Graphics Processor**.

- Enter the courseware location; e.g., DE.

- Enter the name of the Source graphics directory; e.g.,.DESG.

- Type "Y" beside the prompt: DISPLAY ERROR MESSAGE.

- Type "Y" beside the prompt: PROCESS LINK GRAPHICS.

- Type "N" beside the prompt: FORCE HIGH RESOLUTION.

Be sure that graphics have been dumped in <u>unprocessed</u> form before reprocessing.

<u>Note:</u> Always <u>unprocess</u> graphics files before dumping them to a tape file or disk file or transferring them to another location on the disk. When you "unprocess" a file you are actually deleting the object file so that you can dump or transfer the source file. The file will require processing (changing back to object) at the new course location before it can be accessed by students within a course.

- Press **ENTER** to begin processing. These instructions will process all source graphics associated with the named course.

Next Step

Register users in Course 20 using the Interactive Registration Editor.

Registering Users For Course 20

Important! **Install Course 19 and register student users before proceeding with these instructions.**

Introduction Before you can use Course 20, you must register users in Course 19 and create a TICCIT Roster File. (See "Creating a TICCIT Roster File" in Part II of this manual.)

Procedures

- Log on Course Ø and select the **Operator Menu**.
- Select the **Registration Menu.**
- Select the **InterActive Registration Menu.**

- Register only instructors or operators into Course 20. [9]

- Assign instructors an **IN** (instructor) mode and an **IN** (instructor) authorization code. [10]

- **It is essential that these users are registered in instructor mode.** Otherwise, TICCIT's Advisor will attempt to analyze the instructor's input in terms of a right or wrong answer and may butt in at the most inopportune times. Other unpleasant things will happen in an unpredictable manner unless the authorized users of the CMI system have the proper user modes and authorization codes.

Next Step Create a TICCIT Roster File for each section of students enrolled in Course 19 if you have not already done so. See instructions in Part II of this Manual.

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[9] To see and test Course 20 the way it will be presented to users, be sure to register at least one user in instructor mode. Do not assign instructors to a section.

[10] Instructors must have an "IN" authorization code to access the Instructor Menu from the Supermenu. They must also be registered in Course Ø.

Contents of Course 20

Introduction

Course 20, "The 19K BNCOC CMI System" contains the programs that will allow BNCOC instructors to enter test results from instruction conducted off-line (i.e., not on MicroTICCIT). Since most of the 19K BNCOC tasks are taught and tested either in the field or in the classroom without using MicroTICCIT, instructors and other authorized personnel will be entering most of the test results using this course.

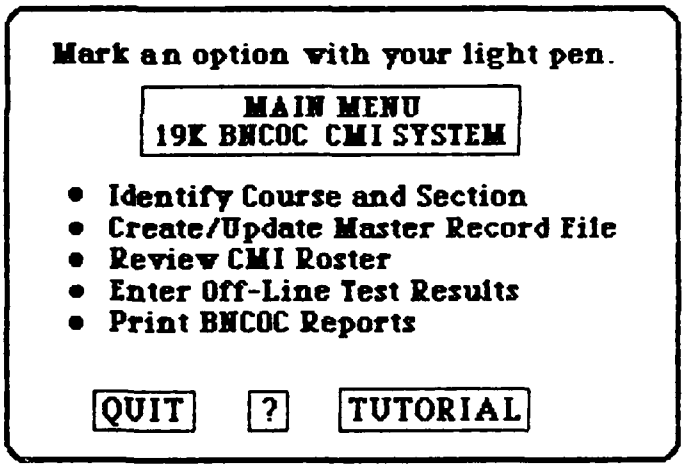
The Tutorial

A complete on-line tutorial is part of Course 20 and may be accessed from the Main Menu. Simply touch the light pen to the **TUTORIAL** icon at the bottom of the screen.

Main Menu

Course 20 lists five choices on the Main Menu.

- Identify Course and Section
- Create/Update the Master Record File
- Review CMI Roster
- Enter Off-Line Test Results
- Create and Print BNCOC Reports



Course Icons

The following icons (symbols) will appear at the bottom of the screen in Course 20.

?	Help Pages
→	Go to the next screen or menu
←	Go back to the last screen or menu
MENU	Return to the previous menu
TUTORIAL	Complete instructions for using **Course 20**.
RETURN	Go back to the screen where you accessed the ? icon.

Identify Course and Section

Before you begin entering off-line test results **you must** identify the course number and students' section number .

- Mark the three digit course number with your light pen. It will appear beside the word "COURSE." If you make a mistake, mark the icon "START OVER."

- After you enter the course number, mark the box "ENTER SECTION." Then mark the two digit section number.

COURSE: **SECTION:**

[1 2 3 4 5 6 7 8 9 0]

START OVER **MAIN MENU**

Then mark **MAIN MENU** to return to the main menu.

Create/Update Master Record File

Only the TICCIT operator should access this option.

This utility locates information about the course you are managing. Unless registration information changes (i.e., students added or dropped from the Course 19) this program should be run only once during each BNCOC cycle.

Note: A TICCIT Roster file must be created for each section of students enrolled in Course 19 before using this program.

Review CMI Roster

This utility allows you to review the names of the students on the roster in a particular course and section.

Before you select this option, you **must** enter the course number and section (option 1). You will see a list of students and ID numbers in the course and section you selected.

COURSE: 019 SECTION: ØØ DATE 07/17/85

ID #	Name
213212312	Allen, George N.
849320192	Brown, Peter W.

- Mark **MENU** to exit and return to the Main Menu.

Enter Off-Line Test Results

- Identify the course and section (see Option 1).
- Select a Task Cluster from the BNCOC Course Menu.
- Choose a task from the Task Cluster Menu.
- Enter the test results for each student enrolled in the course by marking **GO** or **NOGO** under the appropriate Test Attempt number.
- Mark → to go to the next student.
- Mark ? if you need help.
- Mark **Menu** to return to the Task Cluster Menu to select a different task.

Task Cluster: Task:
Title:
Student Name:
Student ID:

TEST ATTEMPTS

GO	NOGO	GO	NOGO	GO	NOGO

NO ATTEMPT **?** **MENU** →

Fixing Mistakes

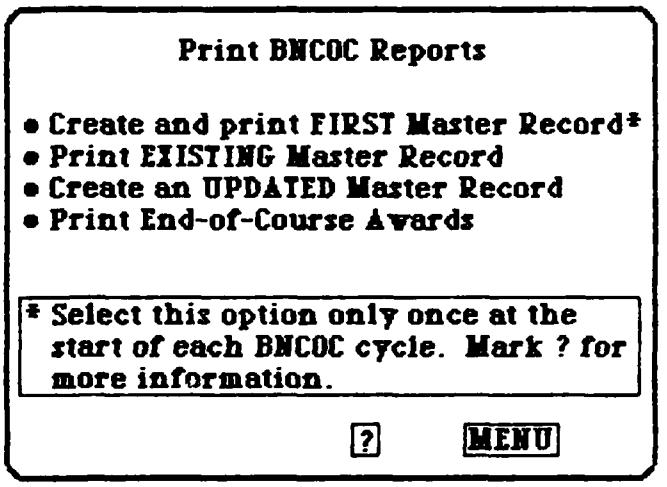
You can start over by marking the NO ATTEMPT icon. This action changes all the test attempt boxes to white which indicates no attempt has been made.

Test Attempt Colors

When you mark GO, the box will turn GREEN. When you mark NOGO, the box will turn RED.

Print BNCOC Reports This option allows you to print the BNCOC Master Record. The sub-menu offers three choices:

- Create and print FIRST Master Record
- Print existing Master Record
- Create an UPDATED Master Record
- Print End-of-Course Awards



Option 1 (used only by the TICCIT operator) will read the data in each student's permanent record file (.PD) and will then print the Master Record file. This process will take up to several minutes.

Option 2 prints the current Master Record file and will not include any test results entered made since the last update. To update the file see Option 3 below.

Option 3 reads the data in each student's permanent record file and completely replaces the data in the previous version of the Master Record file. This process takes up to several minutes.

Option 4 reads the data in each student's permanent data file (.PD) and counts the number of NOGO's each student received during the course. The printed report lists each student in that section and the total number of NOGO's each received.

Master Record Codes

The 19K BNCOC Master Record lists each student and the results of each test, including both off-line and on-line tasks. Results are coded as follows:

NA = No attempt
G1 = GO on first test attempt
G2 = GO on second test attempt
G3 = GO on third test attempt
N1 = NOGO on first test attempt
N2 = NOGO on second test attempt
N3 = NOGO on third test attempt

CMI System Files

Introduction

The CMI System (Course 20) will create several of its own files which will be stored on the disk. It uses other TICCIT files in the process. One of those file is the TICCIT Roster file.

Creating a Roster File

The TICCIT operator must create a TICCIT Roster File (a utility on the Student Progress Reports menu) before instructors can use the CMI System. The Roster File is a TICCIT system file that lists all of the students enrolled in a particular course and section.

The CMI Utility uses the data in the TICCIT Roster File to create another disk file called MRCCC.SS. where CCC is the course number and SS is the section number. This file holds the data required to print the Master Record. These data are in ASCII format.

CMI Files

The CMI system will use certain TICCIT files and utilities to do its job. It will also create some new files on the system disk. They are:

MRCCC.SS (where "CCC" is the course number and "SS" is the section number). This file stores the names and ID numbers of students registered in a class. It also stored the student's performance data for all 61 BNCOC tasks (including prerequisite tasks). There may be several of these files on the system, depending on how many different courses and sections are being monitored by the Course 20 utilities. Example:

MR019.ØØ (Course 19, section ØØ)

Three listing files are created to print the Master Record. These files are created once on each system. Their contents depend on the current course and section number being accessed by the user.

MRCCCSS.DS This file stores performance data for the prerequisite tasks.

MRCCCSS. L1 This file stores performance data for BNCOC clusters B-D.

MRCCCSS. L2 This file stores performance data for BNCOC clusters E-K.

Example:

MR019ØØ.DS (Course 19, Section ØØ)

Installing the Modified SRDBI (Patch for TICCIT System II)

Introduction

These instructions will guide you in the installation of the modified SRDBI function on a TICCIT System II, Version 38.17. This function enables you to read and write to the .D area of the user's permanent data area files (.PD). This software is required to use Course 20, The CMI System.

Required Tape Files

These files are provided on a separate tape. Check the label to be sure you have the correct tape.

File Name	Directory	Description
UC02.LB	TSYSGEN	System Library File
7Ø1	TPROGRAMS	SRDBI System Module
1ØØ1	TPROGRAMS	Error Handling Module
1ØØ9	TPROGRAMS	Error Handling Module

Before You Start

- Backup your system before beginning these procedures as a safety measure.
- Bring TICCIT Up and place the tape containing the files listed above in the tape drive. Be sure the tape drive is on and the tape is in the write-protected position.

Load the Library File -- UCO2.LB

- At the MicroTICCIT Terminal, access the **MPOS File Utility Menu.**
- Select DIR (Type "19").
  Type "DMØ: TYSYGEN" and press **EXIT**.
- Select RENAME (Option).
  FILE 1 UCO2.LB (Name of file to rename)
  FILE 2 TEMPUO2.LB (New name of file)[11]
- Select LOAD (Type "8").
  Type the tape file name (e.g., MTØ:Ø) and press **ENTER** twice.

(The System will display the name of the file being loaded from the tape file at the bottom of the screen.

- Press **EXIT** to return to the File Utilities Menu.

11 This is a recautionary action. In case something goes wrong, you can change the name of the temporary file back to the original name.

Perform a Patch With the System Debugger

- Press **ATT'N** and type "P" for Proctor.
- Type "D" for Debugger.

You will see a blank screen with the word "CORE" at the bottom. CORE refers to the computer's read/write (RAM) memory area.

- Press **ATT'N** to reach the screen where you will initialize the correct directory.
- At the prompt: TYPE DIRECTORY SPECIFIER BELOW, type "DMØ" and press **EXAMPLE**. When you see the message: Operation Successful, press **EXIT** to return to the Debugger.
- Press **ENTER** to move the cursor to the left of the screen where you can enter the file name to edit.
- Type: 'EPCO3817.CO. Be sure to begin with the apostrophe (single quote).

You will see the first line of the file with the data displayed in octal, e.g.

WORD POSITION	DATA	ASCII
000000	000000	β [ϕ]

- The cursor wil be positioned on the lower left of the screen.

  Type: BTFUNC+255

You should see the word position and data change to something similar to the following:

Ø421Ø5 **ØØ1ØØØ** **Ø**

Write down the word position (e.g., Ø421Ø5) and press **EXIT**.

You will use this number when you perform the System patch described later in this section.

- Bring TICCIT Down as you would normally do at the end of the day, but stop at the "R" prompt.

Load the New Modules

Load the modules on the tape file at the Data General console using these procedures:

- At the R prompt,
  Type "DIR DMØ" (CR)
  "INIT MTØ" (CR)
  "MLOAD/V/R/A MTØ:*" (CR)[12]

The MLOAD utility will load a TICCIT module into is proper directory and location. When the System has loaded the module, you will see the following information on the display screen:

TPROGRAMS: 7Ø1
TPROGRAMS: 1ØØ1
TPROGRAMS: 1ØØ9

Configure the New System

Still working at at the Data General console with TICCIT Down do the following:

- Type "DIR DMØ" (CR)
  "DIR TSYSGEN (CR)
  "MSYSGEN (CR)

MSYSGEN is a program that configures the new TICCIT System.

Note: If you get an error message at this point, see the instructions below:

The System may respond: CANNOT READ FILE: UPRV
If this message is received, type:

MOVE/A/V TSYSGEN UPRV (CR)

Then continue with the instructions.

- While MSYSGEN is running, answer "NO" to all questions except: CONFIGURE CORE RESIDENT. Answer "YES."

You will see the names of 3 files on the screen.
EPCO3817.CO
EPCO3817.LS
EPCO3817.ST

- At the "R" prompt, type the following:

MOVE/A/V/R %MDIR% EPCO3817.CO (CR)
MOVE/A/V/R %MDIR% EPCO3817.LS (CR)
MOVE/A/V/R %MDIR% EPCO3817.ST (CR)

- Bring TICCIT all the way Down.

---

12 Check the tape label to find out the appropriate tape file number.

Performing the Patch

- Bring TICCIT UP again.
- At the TICCIT Prompt (?) press return.
- The System will respond: MNEMONIC.
  Type "CO" and press return.
- Press the **NEW LINE** key at the Data General Console keyboard.
- At the TICCIT prompt (?) press Control-P (together)
- The System will respond: PATCH: ____
- Type the number you wrote down from the System Debugger. (The word address). Be sure to use 6 digits with leading zeroes if necessary.
- Press the **NEW LINE** key again.
- The System will respond with the data stored in that location.

On the next line, the System will present the word location for you to type the new data.

Type ØØØ654 and press return.

- Press **Carriage Return** twice.

The TICCIT System will be ready to perform system functions using the "modifed SRDBI." [15]

Test Program

Follow instructions for loading Course 19 and Course 20 and run the programs in Course 20. If the patch has been successful, the programs should perform as described under "Contents of Course 20" provided in this section of the Manual.

---

[15] The SRDBI function included with TICCIT system version 38.17 from Hazeltine will not access the .D area of the PDA unless this patch is performed. The procedures described here produce a "modified" version of the TICCIT software which should not affect other courseware on your system. In the event that Hazeltine releases a new TICCIT version, you should inform them that you are using Course 20 and a modified SRDBI function.

Part IV: Day-to-Day Operations

Table of Contents

Role of the TICCIT Operator

The TICCIT operator is responsible for providing technical support to the users at a MicroTICCIT site. The people who will use the system are the instructors and the students. At the Fort Knox site, MicroTICCIT will be used to present only part of the 19K BNCOC instructional program. Another major part will continue to be taught in classrooms or in the field.

Assisting MicroTICCIT Users

BNCOC students will spend six weeks using MicroTICCIT, then a new group will arrive. During each cycle, the TICCIT operator will have students to train and assist who have probably never used a MicroTICCIT before.

BNCOC instructors will only spend a small percentage of their time in the MicroTICCIT lab. Many instructors will be unfamiliar with computers and almost all will be unfamiliar with MicroTICCIT. The TICCIT operator will have to train and assist these system users.

Someone always needs to be present in the MicroTICCIT lab to assist students, not only with using MicroTICCIT, but just as importantly with using the courseware. Such a person is called a Proctor. Since all BNCOC tests on MicroTICCIT are restricted, a Proctor will be needed every time a student wants to take a test. Students will also need assistance with loading the proper videodisc at each MicroTICCIT station. Sometimes, the TICCIT operator will serve as a Proctor. Instructors also may be trained as Proctors.

Operators also run and maintain the system printer. They assist users with videodisc players and keep track of the videodiscs which accompany MicroTICCIT courseware.

Day-to-Day Maintenance

In addition to assisting students and instructors as they use MicroTICCIT, a TICCIT operator is also responsible for the day-to-day maintenance of the system. These procedures and other useful instructions are included in Part IV, Day-to-Day Operations:

- Bringing TICCIT UP (Page IV-5).
- Shutting TICCIT DOWN (Page IV-7).
- Backing up the System (Page IV-8).
- Changing the Proctor Password (Page IV-11).

Other responsibilities may include:

- Changing the User Passwords (See Page IV-12).
- Accessing the COURSELIST.LS file to list courses on the System and information about those courses (See IV-14).
- Managing the printer (See information about the "Set Page for TICCIT Printouts" utility on Page IV-16).

Managing Courseware

TICCIT operators also manage courseware on the system. From time to time, they must load new courseware, transfer courseware to other systems, archive unused courseware. Part V, Courseware Management, deals with those tasks.

Data Collection and Report Generation

Also, the TICCIT operator will assist in data collection and reporting. Part VI, Data Management, has information about these tasks:

- Load the logging tape and run ITEM ANALYSIS reports.
- Print NOTE data reports.
- Archiving PDA data.

Managing Registration and Recordkeeping

A TICCIT operator's most important job is managing Registration and keeping records about system users and courses that are on the system. Recordkeeping chores are described in Part XIII, Recordkeeping.

Bringing TICCIT "UP"

Introduction

Bringing TICCIT "UP" means transferring control of the computer from the Data General Operating System (RDOS) to the TICCIT operating system (MPOS). Ordinarily, you will bring TICCIT UP from a "warm start." A "warm start" means that the Data General has not been shut down completely. Turning the Data General or its disk drive off is not recommended.

MicroTICCIT Terminals

When you come into the TICCIT lab, check the MicroTICCIT terminal displays. The screen display tells you whether TICCIT is UP (ready for action) or DOWN.

- If the screen is dark, press the **ATT'N** key. A display will appear unless the terminal is off.
- To turn the MicroTICCIT terminal on, use the ON/OFF switch on the right side of the IBM/PC terminal. There must be a startup diskette in Drive 1 to start up the MicroTICCIT terminal.

Startup Disks for the IBM PC

Hazeltine has furnished a startup program on a floppy disk that should be kept in each MicroTICCIT terminal's Disk Drive 1. Make backup copies of the floppy for each MicroTICCIT terminal if necessary. The disk is needed only if the terminal has been shut off. Ordinarily, you should not shut the MicroTICCIT terminals off.

Bringing TICCIT UP

If you see a display saying that TICCIT is resting or other message indicating that TICCIT is not ready, you must bring TICCIT UP at the Data General console. Follow these steps:

- Press the CMD and ON-LINE keys (together). Then press the ALPHA LOCK key. You will see two red lights if the system is ready to accept a command.

- You should see the "**FILENAME?**" prompt on the Data General console screen. This indicates that RDOS is ready to accept a command.

- Press the **CR** (carriage return) key.

- The system will ask you to supply the date (**M/D/Y**). Type in this information and press the **CR** key. The system will then ask you to supply the time (**H:M**). Type in this information and press the **CR** key.

- You will see a series of messages from the system. Then the "**R**" prompt will appear. Type the word "**UP**" and press the **CR** key. The letters must be uppercase.

- You will see another series of messages from the system and then the TICCIT prompt "**?**" will appear. TICCIT is ready for action. If you look at a MicroTICCIT terminal, you should see the log on screen.

- Take the Data General console off-line by pressing the CMD key and the ON-LINE key simultaneously. Then press the ALPHA LOCK key. The two red lights on the keyboard should go out. Dim the Data General console screen. These actions will prevent accidental use of the system.

Shutting TICCIT "DOWN"

Introduction

At the end of the day, TICCIT should be shut down. Shutting down TICCIT means returning the control of the system to RDOS. You will need to do this before you back up the system. You should back up at the close of any day when activity has occurred.

Before Shutting TICCIT Down

Use the MicroTICCIT **Network Controller** to shut TICCIT down.

- BEFORE you begin, put the Data General Console ON-LINE.
- Press the CMD and On-Line keys. The on-line red light should now be on.
- Press the CMD and ALPHA LOCK keys to be sure what you type will be in upper case characters.

Shutting TICCIT Down From The MicroTICCIT Network Controller

Follow these steps:

- Log on Course Øand select the **Operator Menu**.
- Select **TICCIT Shutdown**.
- Check to be sure all users have logged off.
- When ready, press **ENTER**.
- All MicroTICCIT screens should display the Shut Down display in a few seconds.
- On the Data General console, you will see the following message:

3817 TICCIT System[1]
Current System = THSYS
Master Device = DMØ

Copyright notice also appears.

Steps to Take at the Data General Console

At the RDOS prompt "**R**",
type: "**DOWN**" and press return.

You should see the following response.

Master Device Released
FILENAME?

Perform the backup operations using instructions on the following page.

---

[1] This information is valid only for TICCIT system "3817" which is currently installed at the Ft. Knox MicroTICCIT site. The name of the Master Device (the hard disk) is DMØ on a System II. Master device names vary depending on the TICCIT System. For example, the name of the master device on a TICCIT System III is DPØ.

Backing Up the System

Introduction

All of the TICCIT courseware that you use is stored on your TICCIT system's hard disk. In addition to the courseware, the disk holds the two operating systems (RDOS and MPOS) and all of the utility programs. Plus, your disk has the files that store the performance data for 19K BNCOC students.

What is a backup?

A backup is an exact copy of the programs and files on the hard disk. You make this copy on magnetic tapes. If something unforeseen happens, you can load the contents of the tapes back into the system.

How often to backup?

You should make backup tapes at least once every day. You may need to backup more often if the system has heavy use.

What is DISKMAINT?

DISKMAINT is a system utility that checks the disk for problems. You do not have to run this program every day, but it can't hurt and it may help! Unless you are doing something unusual, you shouldn't have any errors. If DISKMAINT does report problems, write down whatever appears on the screen. Try to remember what happened during the day. Then call the Hazeltine Customer Service to report the problem. Finally, write down whatever you did to correct the problem.

Things to Know

DMØ is the name of the Master Directory of a TICCIT System II disk drive. It is the "name" of the disk.

The System II disk drive has a storage capacity of 50 megabytes. You will need 4 magnetic tapes to backup this disk. **No matter how much data you have on your disk, you will always use 4 tapes.**

Each tape will store the contents of part of the hard disk. Data on a disk is stored in sectors. You will need to tell the system which sectors to store on each tape. You will type the numbers in octal (base 8) which is why you will never use a number larger than 7.

The name of the tape drive device is MTØ. You will name the tape file using the number Ø. You will store all of the disk contents in one file.

Backup Procedures

FILENAME? Type **DISKMAINT** (CR)[2]

System response:
DMOS 38.14 Eclipse Diskmaint.

OPTION: Type **CHECK** (CR)

DISK TO CHECK: Type **DMØ** (CR)
CHECK OPTION: Type **GO** (CR)

After a few moments, the System responds:

DMØ
No check errors detected.

CHECK OPTION: Type **LAST** (CR)
301012 = Last Used Block[3]

CHECK OPTION: Type **QUIT** (CR)

Operation successfully completed.

OPTION: Type **DUMP** (CR)

DISK TO DUMP FROM: DMØ
FILENAME OR SECTOR RANGE: , 67777
TAPE FILE TO DUMP TO: MTØ:Ø
TAPE FILE LABEL: DUMP 8/8/85 Tape 1 of 4

(This operation takes about 5 minutes.)

SYSTEM RESPONSE: **OPERATION SUCCESSFULLY COMPLETED**

Loading a New Tape

After each "Operation successfully completed" message, remove the tape and insert a new one.

---

2 The abbreviation "CR" is used to remind you to press the carriage return key to enter the information into the computer's memory.

3 Use this number as the last number in the SECTOR RANGE for the last tape file.

Next tape:

OPTION: DUMP
DISK TO DUMP FROM: DMØ
FILENAME OR SECTOR RANGE: 70000, 157777
TAPE FILE TO DUMP TO: MTØ:Ø
TAPE FILE LABEL: DUMP 8/8/85 Tape 2 of 4

Repeat two more times:
SECTOR RANGE: 160000, 247777
TAPE FILE LABEL: DUMP 8/8/85 Tape 3 of 4

SECTOR RANGE: 250000, **301012**[4]
TAPE FILE LABEL: DUMP 8/8/85 Tape 4 of 4

When DUMP is finished

When the entire disk contents have been dumped to the tapes, take the Data General console off-line and dim the screen. You may bring TICCIT UP again if desired. [5]

•You can turn the MicroTICCIT terminals off, but ordinarily this is not necessary.

---

[4] This is the number you received when you used the CHECK OPTION: LAST. You may also type a comma and leave the last number blank.

[5] A screen can be permanently damaged by leaving the brightness on for long periods of time.

Changing The Proctor Password

Introduction

You will use the Proctor Password to give students access to restricted tests. To maintain test security, establish a regular procedure for changing the password. For best results, change the password on a regular basis (daily, weekly, etc.), and also change it at random intervals. Do NOT select a mneumonic password that could be discovered unexpectedly by a student such as the Proctor's name, the TICCIT operator's name, or a subject related password such as TANK. Passwords may be from 1 to 6 characters. You can vary the length of the words selected between four and six.

Procedures

- Log on Course Ø and select the **Operator Menu**.
- Select the **Data Base Operation Menu** (Option #4).
- Select **Set New Proctor Password** (Option #5).

The current Proctor Password will be displayed.

- Type new password in the space. Enter from 1 to 6 characters (no blanks). Press **ENTER**.
- You will receive the message "**Operation Complete.**"
- Press **EXIT** until you are back on the desired menu.

Suggestion

Make the password all capital letters. To enter the password you will be required to press the cap lock key down or use the shift key. This will be one additional step which will hinder unauthorized use of materials.

Recordkeeping

Keep a record in a secure location of the Proctor Passwords which have been used and the current password.

Date	**Proctor Password**

User Passwords

Introduction

There is only one Proctor Password on the System at any given time, but each user may have his own unique password. If a user has a password, he must enter it each time he logs on MicroTICCIT.

Changing User Passwords

- Log on Course Ø and select the **Operator Menu**.
- Select the **Registration Menu**.
- Select **Interactive Registration**.
- Decide whether this will be a change or a new registration. Enter the appropriate responses in the boxes.
- Complete the screen, entering a password in the appropriate box. The user password must be four characters. **It may not contain spaces.**

Removing a Password

To log on without a password, go to the Registration Editor and select CHANGE. Enter all of the information about the course and section but enter nothing in the PASSWORD section of the screen.
Press **ENTER** to record the new data.
You will receive a message "Operation Successfully Completed."
The password will no longer be required.

Checking on User Passwords

If an instructor or other user forgets his password, the TICCIT operator can find out what it is.

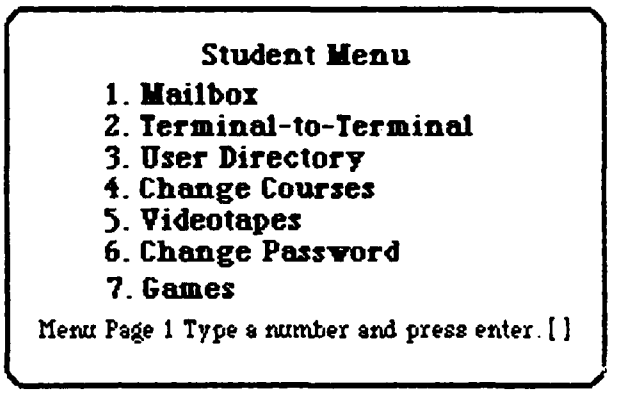
- Select the **Registration Menu**.
- Select **Examine User Registration**.
- Type the user's name or ID number. The Password will be displayed at the top of the screen.

Changing the Password Via the Student Menu

Any System user including students can change their own password via the Student Menu.

- From any location within a course, press **ATT'N**. Type "x" and press **ENTER** to access the Student Menu.

- Select option 6, **Change Password**.



Accessing COURSELIST.LS

Introduction

Part of the TICCIT operator's job is to keep track of the names of the courses currently on the system. These instructions will show you how to find out the names of the courses on your disk and to display them on the MicroTICCIT terminal.

- Log on and select the **Author Menu.**
- Select the **Author Utilities Menu.**
- Select **Makecourse**.
- Select **Print Courselist.**
- If your system has a printer, select **Print then delete**.

COURSELIST.LS

COURSELIST.LS is the name of the listing file that provides information about the courses on the disk. If you do not have a printer, you can display this information on the MicroTICCIT Terminal by following these instructions.

Note: Do not confuse this "listing file" with the file named COURSELIST. (with no extension). This file must not be deleted from the System. It contains the information about the courses on the disk that TICCIT requires to access courses. Deleting this file makes all of the courseware on the System inaccessible.

Displaying COURSELIST.LS on the MicroTICCIT Terminal

- Select **Author Utilities Menu**.
- Select **Makecourse**.
- Select **Print Courselist**.
- Select **Print then delete.**
- Now reenter **Print Courselist** again. This will give you an updated list. This time press **EXIT**.

- Now select the **Operator Menu**.
- Select the **Command Line Interpreter (CLI)**.

- Type: DIR DMØ (Press **ENTER.**)
- Type: EDIT COURSELIST.LS (Press **ENTER.**)
- Press **EASY**. The first page of the file will be displayed.
- Press **ADVICE** for instructions on advancing through the file.

Interpreting Courselist

COURSELIST.LS has several kinds of information about the courses on the disk that you may need to know. The date this file was created will be listed.

sample

IA 110000 119999
9999 113321 51 3
ADAPT Training

Course name, starting module range number, ending module range number, number of modules in the module range, starting module number*, course number, graphics directory number.

* This is the first module in the module range with IA courseware.

Set Page For TICCIT Printouts

Introduction

These instructions will guide you to the utility which allows you to change or set the page size for TICCIT printouts.

Procedures

- Log on Course Ø and select the **Operator Menu**.
- Select the **Database Operations Menu.**
- Select **Change Module Parameters** (Item #8).
- Select **Set Page Size for TICCIT Printouts** (Item #2).
- Note: The default or last entered values for page size will appear in green. These may be changed as described below.
- Enter the number of rows (page length) you wish to appear on a page.
- Enter the number of columns (page width) to appear on a page.
- Press **ENTER** to record the data. The system will respond "Operation Complete."

VERSATEK Model 1100A

Specify 126 as the number of rows.
Specify 209 as the number of columns.

VERSATEK Model V-80

Specify 68 as the number of rows.
Specify 102 as the number of columns.

EPSON 100

Add the information here when it becomes available.

Part V: Courseware Management

Table of Contents

Managing Courseware

The first two procedures in Part V, Managing Courseware, are instructions that you will use when you wish to transfer MicroTICCIT courseware to a different TICCIT system or when you wish to archive (store) a course on tape.

- Dump courseware to tape.
- Dump graphics to tape.

Be sure that you always include Makecourse instructions for the courseware in your files or send them with the tape to the receiving site.

The next set of procedures are instructions that you will use when you receive new MicroTICCIT courseware for 19K BNCOC. You will also use these instructions when you load courseware you have archived on tape back into the system. The procedures are given in the sequence you should use to add new courseware.

- Makecourse (Creating a new course or modifying an existing course).
- Loading courseware from tape to your System disk.
- Loading graphics from tape to your System disk.
- Processing the courseware.
- Processing the graphics.
- Creating a TICCIT Roster File.

Also included here are instructions for:

- Deleting an entire course
- Deleting part of a course
- Listing names of TICCIT files on a tape.

Dump Courseware To Tape

Introduction

You may wish to store a courseware file on a tape for several reasons; for example,

- To transfer the file to a different site
- To make space on the hard disk for other files

Procedures

- **Put a tape in the tape drive.**
- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (Type #19).
- Type: DMØ (This is the Master Directory.)
- Type: BNCW.DR (This is the Courseware Directory. Replace BN with the name of the course you wish to dump.)

- Select DUMP (Option #9).

- DIALOGUE

FILE 1: MTØ:Ø (This is the name of the file you will dump the courseware to. MTØ is the name of the tape device; "Ø" is the name of the file. If you dump several files to the same tape, you should number them consecutively to keep track of the materials you are transferring.)

Type MTØ:Ø and press **ENTER**.

FILE 2: BN-.CW (This is the name of the file you are going to dump. "BN" is the name of the course. Replace those letters with the name of the course you wish to dump. This example will dump the entire course. (-) is a wildcard which means dump all files starting with the letters "BN" and ending with the extension ".CW.")

Type BN-.CW and press **ENTER**.

Press **ENTER** again to begin the DUMP.

The name of each file will appear on the bottom of the screen. Press **ENTER** after each one until all files are dumped.

Backup Copy

Repeat the procedures above and make a second copy of the file for safe keeping. Be sure to call the next file MTØ:1.

Quick Method

Before you press **ENTER** to begin the dump, press **RULE**. On the next screen press TAB to advance the cursor beside the prompt: LISTING FILE. Type an "* ". Press **ENTER** to return to the first screen. Then press **ENTER** to begin the dump. All files will be dumped without any further action from you.

TICCIT Labels

A COURSE NAME is always two letters. TICCIT files or modules that store courseware have TICCIT labels which correspond to their location within the course. Examples:

BN010203.CW Unit 1, Lesson 2, Segment 3
BN050313.CW Unit 5, Lesson 3, Segment 13

Record the File Names

Be sure to write the names of the files you have dumped on the tape (in this case BN-.CW). You must know the names when you reload the files.

Deleting Files

A dump does not remove the file from the hard disk. To remove the file, you must delete it. Instructions for deleting files or courseware are given separately in this manual.

Makecourse At The Receiving Site

Record the course structure on the tape. The receiving site must establish a course to receive the materials using the Makecourse utility. They will need to know how many units the course has and how many lessons each unit contains.

The receiving site must either use the course name which corresponds to the coursename on your file or change the name to match an existing course on that system. Instructions for changing the file names are included with "LOAD COURSEWARE" instructions.

If your course has graphics, see "Dump Graphics To Tape."

Dumping Parts of the Course

BN010101.CW (unit 1, lesson 1, segment 1)
BN01-.CW (dumps all lessons and segments in unit 1)
BN0102-.CW (dumps all segments in unit 1, lesson 2)

Dump Graphics To Tape

Introduction

Courseware graphics must be dumped separately. If the courseware you are dumping has no graphics, then you can skip this entire section.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select **Graphics Utilities** (item #4).
- Select **Dump Source Graphics** (SG DUMP) (item#4).

Enter information on the display that follows. (Suggested responses are given for each item. You may can change the responses to match your courseware and your particular needs.)

OUTPUT DUMP FILE:	MTØ: Ø
LISTING FILE (optional):	DMØ: filename
LOCATION SPECIFIED:	BN
NEW LOCATION SPECIFIER:	BN
SOURCE GRAPHICS DIRECTORY:	TGRAPHIC
DUMP LINKS?	[Y]
DUMP UNPROCESSED FORM OF GRAPHICS?	[Y]
VERIFY DUMP TO SCREEN?	[Y]
SELECT GRAPHICS TO DUMP?	[Y]

Message: Graphic to Dump: TICCIT file name
[Press **ENTER** to dump the file.]
Final Message: Selected Graphics have been dumped.

Output Dump File

This is the name of the file on the tape. MTØ is the name of the tape drive device. The number following the colon (:) is the tape file number. Number files consecutively on the tape. Be sure to keep a record of the files you store on the tape.

Listing File

The system will create a file that lists the names of the graphics that you dump. You will store this file on the Master Directory (DMØ). Give the file any legal name you choose; e.g., BNCOCPIXS.

Location

The location is the name of the course where the graphics are "located." If you type the name of the course without additional specifiers (unit, lesson), you will dump graphics for the entire course.

New Location

You may wish to dump graphics from one course to another. You can type the name of the new course here. For example, you may wish to dump graphics from a course on your system named BN to another course named GG. You can also dump graphics from a specific part of a course and change them to another location, e.g. from BN.1.1 to BN.2.1.

Source Graphics Directory

Your source graphics are the unprocessed form of the graphics. SGDUMP locates the unprocessed form and "dumps" these files. Your source graphics directory should be part of your course template (Makecourse) documentation.

Links

If the graphics are linked to other courses or other parts of a course (if they are used in more than one location, for example), link files exist on the graphics directory. Ordinarily, you will want to dump the links; so respond "Yes" to the question. If they do not exist, no harm has been done.

Unprocessed Graphics

Always dump the "unprocessed form" of your graphics. Respond "Yes" to this question.

Verify Graphics

If you respond "Yes" to this question, TICCIT will display the name of each graphic before it dumps the file. You will press **ENTER** each time. If you want the entire file dumped and do not need to see the names of each file, then you can respond "No" to this question.

Select Graphic

If you are planning to dump only "selected" graphics from a "location," then respond "Yes" to this question.

Record the File Name

- Write down the names of the files on the tape label.

Makecourse at the Receiving Site

You must also record the course structure on the tape in order for the receiving site to load in the course. The receiving site must establish a course to receive the materials using Makecourse. They will need to know how many units the course has and how many lessons each unit contains.

The receiving site must either use the course name which corresponds to the coursename on your file or change the name to match an existing course on that system. Instructions for changing the file names are included with "LOAD COURSEWARE" instructions.

Makecourse Instructions

Introduction

The TICCIT Makecourse utility menu consists of several options. Makecourse creates a disk file with the prefix PDA followed by the 3 digit Course number and the site number. This file contains the course template and is used by the System to create individual user data files with the extension .PD when a user is registered into a course. It is very important to remember that users must be re-registered after any change to the PDA file in order to access the new course structure.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select **Makecourse**.
- To create a new course, select **Create a new course from scratch**.
- Complete the following dialogue substituting the appropriate responses for your course.

Course Number 19 (1 to 3 digits)[1]
Course Name BN (two alphanumeric characters)
Course Title 19K BNCOC FOR TANK COMMANDERS (up to 20 characters)

Module Range

Enter the **course number** of an existing course at your site.

You can also enter the module range where you want the course to be located, e.g., 120000 to 129999.

WARNING: Typing in a module range will delete all existing courseware in that module range. Be sure you know what you are doing!

Number Of Units

Enter the number of units in the course by typing a K in the appropriate number of blocks.[2] Press **GO** to advance to the next screen.

Number Of Lessons

Enter the number of lessons for each unit, typing a K in each block. Press **GO** for the next unit.

Start Window

Press **ENTER** to accept the default location or type another location.

---

[1] The course numbers and names at each site must be unique. The system will warn you if there is another course on the disk with the same name or number. You do not need to type leading zeros i.e., 019 or 009.

[2] A "K" will produce a black box on a TICCIT map indicating an "on-line" course component. Other codes may be entered here indicating off-line instruction, etc.; however, the CMI system is entirely menu driven, making codes for TICCIT map colors extraneous information.

Number Of Active Windows

Type a number from 1 to 9 and press **ENTER**.

The number you choose relates to the maximum number of active lessons students will be allowed to work in at any one time. We suggest allowing the maximum number unless you have reasons for doing otherwise.

Graphics Directory

Enter the number of the graphics directory at your site. This directory must have already been created. See the Hazeltine TICCIT Operations manuals for instructions about creating directories.

Source Courseware Directory

Enter the name of the source courseware directory at your site (e.g, DEFAULTTAL, COURSEWARE, etc.) This directory must have already been created on your disk.

Source Graphics Directory

Enter the name of your site's source graphics directory, (e.g. GRAPHICS). This directory must already exist on your disk.

Number of Objective Test Attempt Blocks

Press **ENTER**. Accept the default value unless otherwise instructed by the courseware developers.

The system sets aside space for an average number of 3 test attempts per lesson. If a course requires more space, you may enter a larger number. Follow the instructions given by the courseware developers.

Extended Data Area

This section is optional. Enter the two character name and the size in sectors of each extended data area you wish to create. You can read and write data to these areas using ADAPT's SRDBI function. If extended data areas are required by the courseware, the developers should provide the name and sector size with their Makecourse instructions.

If the courseware does not require extended data areas, press **EXIT**.

Course Template File Name

You will see the following message on your screen which indicates that the course structure for this course has been recorded on your disk.

PDA019000 created

The first three numbers refer to the course number. You may omit the leading zero when referring to this course. The last three numbers refer to the site number. All MicroTICCIT sites have "000" as the site number.

Warning

Do not use Makecourse to change the course structure after the BNCOC cycle has begun. Any changes in Makecourse destroy all student data. All students would have to be re-registered.

Loading Courseware From Tape

Introduction

Complete these procedures on-line (at the MicroTICCIT terminal).

Procedures

- Bring TICCIT UP if you have not already done so.

- Put a tape in the tape drive. Be sure the tape drive is on and the tape is in the read only position.

- Log on and select the Operator Menu.
- Select the File Utilities Menu.
- Select DIR (Type "19").
- Type: DMØ: BNCW[3]
- Press **EXIT**.
- Select LOAD (Type "8").

FILE 1: MTØ: Ø (Type MTØ: Ø and press **ENTER**.)[4]
FILE 2: BN-.CW (Type BN-.CW and press **ENTER**.)[5]

Press **ENTER** again to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[6]

---

[3] DMØ is the Master Directory for the TICCIT System II. "BNCW" is the source courseware directory for Course 19, 19K BNCOC for Tank Commanders. You would replace the letters "BN" with the course initials of the course you are loading.

[4] MTØ:Ø is the name of the file containing the source courseware you are loading onto the system. MTØ is the name of the tape device and "Ø" is the name of the file on the tape. If the courseware you are loading is stored on the tape in a file other than "Ø", you would substitute that number into this command (e.g., MTØ:1).

[5] BN-.CW is the name of the source courseware you are going to load. "BN" is the name of the course. If the course initials are different for the course you are loading, substitute those letters for "BN." This format will load the entire course. Using the wildcard character "-" will load all files which start with the letters "BN" (or the initials you have substituted) and end with the extension ".CW."

[6] The name of each file will appear at the bottom of the screen as it is loaded. You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are loaded on the disk. You will use this procedure when you load courseware from other MicroTICCIT projects which will be placed into BNCOC Course 19.

Quick Method

Before you press **ENTER** to begin the load, press **RULE**. Press **TAB** to move the cursor beside the prompt: LISTING FILE. Type an "*." Press **ENTER** to return to the first screen. Then press **ENTER** to begin the load. All files will be loaded without any further action from you. Note: You would not use this method if you needed to change the names of the files before loading them into the system. See Footnote 6 below.

TICCIT Labels

A COURSE NAME always has two letters. TICCIT files that store source courseware have TICCIT labels which correspond to their location within the course.
Examples:
BN010203.CW Unit 1, Lesson 2, Segment 3
BN050313.CW Unit 5, Lesson 3, Segment 13

Loading Parts of the Course

Enter the appropriate TICCIT file name beside the "FILE 2:" prompt. See examples below.

BN010101.CW (unit 1, lesson 1, segment 1)
BN01-.CW (loads all lessons and segments in unit 1)
BN0102-.CW (loads all segments in unit 1, lesson 2)

Next Step

Now load the source graphics from the tape. The instructions are presented on the next page of this manual.

Loading Graphics From Tape

Introduction

Source graphics for a TICCIT course are dumped in separate files on the tape. If the courseware you are loading has no graphics, then you can skip this entire section. These procedures are very similar to those for loading source courseware except that you will load these files on the source graphics directory. These files have the extension ".SG."

Procedures

- **Be sure the tape is in the tape drive.**
- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (Type "19").
- Type: DMØ: BNSG[7]
- Press **EXIT**.
- Select LOAD (Type "8").

FILE 1: MTØ:1 (Type MTØ:1 and press **ENTER**.)[8]
FILE 2: BN-.SG (Type BN-.SG and press **ENTER**.)[9]

Press **ENTER** again to begin the LOAD. The name of each file will appear at the bottom of the screen. Press **ENTER** to continue until all files are loaded.[10]

---

7 DMØ is the Master Directory name for the TICCIT System II. BNSG is the source graphics directory for Course 19, the 19K BNCOC ADAPT course. To use these instructions for loading other source graphics, replace the prefix "BN" with the name of the other course.

8 MTØ:1 is the name of the file containing the source graphics to be loaded. MTØ is the name of the tape device and "1" is the name of the file on the tape. Make sure that you respond to the File 1 prompt by typing the correct MTØ:n file name. Check the label on the tape to see the file name holding the source graphics to be loaded.

9 BN-.SG is the name of the source graphics file you are going to load. "BN" is the name of the course. You may replace those letters with the name of another course you wish to load. This format will load the graphics in the entire course. Using the wildcard character "-" will load all files which start with the letters "BN" and end with the extension ".SG."

10 You may change the name of the file before pressing **ENTER**. This procedure will allow you to change the names of the files as they are loaded on the disk. You would use this procedure when you load source graphics from other MicroTICCIT projects which will be placed in the 19K BNCOC course structure.

Quick Method

Before you press **ENTER** to begin the load, press **RULE**. Press **TAB** to move the cursor beside the prompt: LISTING FILE. Type an "*." Press **ENTER** to return to the first screen. Then press **ENTER** to begin the load. All files will be loaded without any further action from you.

Note: You would not use this method if you needed to change the names of the files before loading them into the system. See Footnote 10 below.

Batch Processing Courseware

Introduction

Before you can use the Courseware files you have loaded, you must **process** them. When you process a file you are creating a separate object file or TICCIT module.[11]

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Author Utilities Menu**.
- Select **Courseware Batch Processor** (#5).

Process courseware at all levels. Processing will take some time depending on how long the courseware is. Other authors will not be able to use the processor until you are finished. Enter the TICCIT Labels as follows:

BN	(Processes all course level files)
BN.*	(Processes all unit level files)
BN.*.*	(Processes all lesson level files)
BN.*.*.*	(Processes all segment level files)

- You can substitute the name of another course for "BN."

- The asterick (*) is the wildcard indicating that you want ALL files all that level (including all extensions) to be processed.

- All types of files (standard, test, APT, etc.) will be processed.

- Press **ADVICE** for additional information.

Next Step

Process source graphics files if the course has graphics. Otherwise, register users for the course.

---

[11] After the installation has been completed, you may wish to delete the source courseware files from the disk. Keep the tape containing the source courseware files for backup purposes. Deleting the source courseware has two results: You will have more space on the disk for other courseware. You will also be unable to make changes in this course from the ADAPT editor. See Part VII of this Manual for information about TICCIT modules.

Processing Graphics

Introduction

Follow these instructions to process source graphics which have been loaded from tape to disk.

Procedures

- Select the **Graphics Utilities Menu**.
- Select **Batch Processor**.
- Enter the courseware location; e.g., BN or other course name.
- Enter the name of the Source graphics directory; e.g. BNSG.
- Type "Y" beside the prompt: DISPLAY ERROR MESSAGE.
- Type "Y" beside the prompt: PROCESS LINK GRAPHICS.
- Type "N" beside the prompt: FORCE HIGH RESOLUTION.

- Press **ENTER** to begin processing. These instructions will process all source graphics associated with the named course.

Check Graphics

- After processing, you must register a student in the course to check the graphics.

Next Step

Register users in the course using the **InterActive Registration Editor**.

Creating A Roster File

Important

This file must be created before attempting to use Course 20, The 19K BNCOC CMI System, which includes utilities for entering off-line test results and printing the BNCOC Master Record.

Introduction

The TICCIT Roster File utility creates a file on the system listing the identification number and mailbox number of each student registered in a particular course and section. The CMI System will use these data to locate information about the student in the TICCIT authorization files.

BNCOC personnel could maintain two or more rosters by registering different students into different sections of the same course.

Registration Procedures

- Select the **Operator Menu.**
- Select the **Interactive Registration Menu.**
- Type the student's name last name first.
- Assign a unique ID number.
- Enter course number and a Section two digit section number.
- Assign a four character password if desired.
- Give students an **ST** mode and and **ST** authorization code.
- Press **ENTER** to record the registration data.

Important!

- TICCIT will assign the **ST** authorization code by default if you do not enter information in the box.
- TICCIT does <u>not</u> require you to enter a section number. However, you will not be able to create a TICCIT class roster file unless students are registered into a particular section.

Create the Roster File

- Select the **Instructor Menu.**
- Select **Student Progress Reports.**
- Press **GO** to advance to page 2 of the menu.
- Select **Build Class Roster** (Item **#7**).
- Enter the course number (e.g., 19).
- Enter a <u>two digit</u> section number. This number must include leading zeros if necessary.
- Press **HARD** to create the TICCIT Roster File for this section. This file will be located on the TREGISTER Directory under the name Ø19ØØ.RO. The first three digits represent the course number and the last two represent the section number.

More than one Section

If you are creating more than one section of students for a course, repeat the process above for each section.

Changing the Roster File

If students are added or deleted from the 19K BNCOC course during a cycle, the TICCIT Roster file must be recreated using the procedures above. Avoid making changes in registration after a course cycle has begun.

The CMI Roster File

See Instructions for creating a CMI Roster File in Part III of this Manual. The TICCIT Roster File is required to build the CMI System File.

Deleting An Entire Course

Introduction

These instructions should be followed only when you wish to delete an entire course from the disk. Be sure to archive the source to tape first using the instructions for DUMPING COURSEWARE. A dump transfers only the source to the tape.

To delete a course completely from the disk you must remove the object and source files for both the courseware and the graphics.

Object is the processed (machine language) version that is accessed in student mode.

Source is the unprocessed version that is accessed in author mode through the ADAPT, APT, or GRAPHICS editors.

Saving Disk Space

If space is required on the disk, you may wish to delete only the source version of courseware and graphics.

Deleting Object Courseware

- Log on Course Ø and select the **Author Menu**.
- Select the **Courseware Utilities Menu**.
- Select **Makecourse**.

- Select **Delete an Entire Course**.
- Enter the course name and number as required.

This process deletes the object modules and the PDA. You will no longer be able to access the course in student mode. Author mode will still be available. Reprocess the courseware to access in student mode again.

- Go to the **Interactive Registration Menu** and delete all registered users. See Page V-20 for instructions.

Deleting Source Courseware

Use these procedures when you want to delete only the source courseware. The course will no longer be accessible in author mode but will be available to students.

- Log on and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (#19) and type DMØ to initialize (open) the Master Directory. Press **EXIT**.
- Select DIR and type the courseware directory of the course to be deleted: e.g., AACW.DR (Substitute the name of your course for the letters "AA.") Press **EXIT**.
- Select DELETE.
- At the FILE NAME prompt, type AA-.CW to delete the entire course. (Substitute the name of your course for the letters "AA.")

Deleting Object Graphics

- Log on Course Ø and select the **Author Menu**.
- Select the **Graphics Utilities Menu**.
- Select the **Batch Process Graphics** option.
- Type the course name (e.g., AA).
- Select **Unprocess Graphics**. (This deletes the object graphics and leaves only the source graphics on the disk.)

Deleting Source Graphics

- Select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select DIR (#19) and type DMØ to initialize the Master Directory. Press **EXIT**.
- Select DIR and type AASG.DR. (Substitute the name of your course for "AA." You are initializing the "Source Graphics Directory." Press **EXIT**.[12]
- Select the DELETE option.
- At the prompt FILE NAME, type AA-.SG. This will delete all the source graphics files associated with the course titled "AA."

Clean Up Registration

To clean up the registration environment, go to the Registration Menu and drop all users registered for the course you have deleted from the disk. It is important to make "Clean Up" procedures a regular part of your TICCIT maintenance operations.

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12 You may access the source graphics directory in one step by selecting DIR and typing DMØ:AASG.DR.

Deleting Part Of A Course

Introduction

There may not be enough space on your disk to store all of your courseware at one time.
These instructions will help you delete specific portions of the 19K BNCOC course (Course 19) as well as parts of other courses on your system disk.

See "Deleting An Entire Course" for additional information.

Deleting Object Courseware

- Log on Course Ø and select the **Author Menu**.
- Select **ADAPT EDITOR**.
- Type the specific section of the course to be deleted, e.g., BN.3.S; BN.3.1.S.
- In the "Further Options" box, type "2" for Delete. and press **ENTER**.
- TICCIT will ask if you are sure you want to delete the material. If you do, press **HARD**. To return to the Editor without deleting the file, press **EXIT**.

Deleting Source Courseware

- Select the **Operator Menu.**
- Select the **File Utilities Menu**.
- Select DIR (#19) and type DMØ to initialize (open) the Master Directory. Press **EXIT**.
- Select DIR and type the courseware directory of the course to be deleted: e.g., AACW.DR. (Substitute the name of your course for the letters "AA."). Press **EXIT**.
- Select DELETE.
- At the FILE NAME prompt, type the specific TICCIT label for the file or files you wish to delete.
AA030101.CW deletes unit 3, lesson 1, segment 1.
AA03-.CW deletes all of unit 3.
AA0101.-CW deletes all segments of unit 1, lesson 1.

Deleting Object Graphics

- Select the **Author Menu**.
- Select the **Graphics Utilities Menu**.
- Select the **Batch Process Graphics** option.
- Type the course name (e.g., AA).
- Select **Unprocess Graphics**. (This changes the object graphics to source graphics.)

Deleting Source Graphics

- Select the **Operator Menu**.
- Select the **File Utilities Menu** (#19).
- Select DIR and type DMØ to initialize the Master Directory. Press **EXIT**.
- Select DIR and type AASG.DR. (Substitute the name of your course for "AA." You are initializing the "Source Graphics Directory." Press **EXIT**.
- Select the DELETE option.
- At the prompt FILE NAME, type the TICCIT label for the specific portions of the course you wish to delete.

AA010101.SG deletes graphics associated with Unit 1, lesson 1, segment 1.
AA01-.SG deletes all graphics associated with unit 1, all lessons, all segments.

Warning

Do not drop students from the course if you are only deleting part of the course. Make no changes in registration. Do not remove the unit or lesson from the course template using Makecourse unless you are between course cycles and the change will be permanent.

Listing Names Of Files On A Tape

Introduction

You may wish to list out the names of files stored on a tape. These instructions will assist you.

Procedures

- Turn the Tape Drive On.
- Put the tape in the drive.
- Log on and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select LOAD (Option #8).
- FILE 1: MTØ:Ø (Type the name of the tape device and the file to list.)
- FILE 2: **Press HELP.**

The name of the first file contained in tape file MTØ.Ø (or the number you chose to enter) will be displayed at the bottom of the screen.

- Continue pressing **HELP** until all the files are listed.

Important: If you press **ENTER**, the System will LOAD that file on the disk.

- To list the contents of the next tape file, change the file number beside the FILE 1 prompt and press **HELP** as described above. For example, the next file on the tape would be MTØ:1.

Part VI: Data Management

Table of Contents

Developer Use of the NOTES Utility

Introduction

As a TICCIT courseware developer or as an evaluator of courseware, you may wish to gather informal responses from the courseware users or instructors. TICCIT provides an easy method for collecting these types of data using the **NOTE** key and TICCIT utilities which collect and store data.

How the NOTE Function Works

At the top left of the MicroTICCIT keyboard there is a key labeled **NOTE**. Any person engaged in a TICCIT course can press this key at any time. The course is interrupted and a blank screen appears for the user to type a message. Once finished the user has the option of leaving the message signed or unsigned. TICCIT records the user's message and the location in the course when the **NOTE** key was pressed. The user returns to the same location in the course.

Data Storage

TICCIT stores NOTES data in a disk file located on the Master Directory called DISKNOTES.LG. It is NOT necessary to put in a logging tape to collect these data. Complete instructions for retrieving the data are provided for TICCIT operators on page VI-5 in this section of the Manual.

NOTES Output

The NOTES function stores the following information about each input:

- User name (if given)
- Course/section
- Unit.Lesson.Segment
- Function/Part/Level/Item
- User message

NOTE Instructions To The User

Introduction

Developers or evaluators should provide instructions to all users from whom they wish to collect NOTES data. Instructions are included in the 19K BNCOC MicroTICCIT Instructor's Tutorial and Reference Manual.[1]

Purpose

Comments about the MicroTICCIT courseware as it is used can assist the instructors in evaluating and monitoring the courseware. MicroTICCIT provides an easy method to gather information.

Procedures

- Find the **NOTE** key at the top left of the MicroTICCIT keyboard.

- When you are logged on MicroTICCIT, press the **NOTE** key at any time you wish to make a comment about anything you see on the screen.

- You will immediately see a blank screen. Type your message. Use the Left Arrow key to erase an error if necessary.

- MicroTICCIT will record the name of the course you are using and specific information about the exact location in the course. It will also record your message.

- You have a choice between leaving a SIGNED or an UNSIGNED message.

- Find the **MAP** and the **EXIT** keys on the far right of the MicroTICCIT keyboard.

- Press **EXIT** to record a SIGNED message.

- Press **MAP** to record an UNSIGNED message.

Re-entering the Course

You will automatically resume the course at the exact location at which you left. Press the **NOTE** key any time you wish to leave another message or a comment.

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1 The 19K MicroTICCIT Instructor's Tutorial and Reference Manual was developed by Inter America Research Associates (August 1985) as a part of the CMI for Tank Commanders project.

Retrieving And Storing NOTES Data

Introduction

The purpose of TICCIT's NOTES utility is to allow you to collect comments about your courseware from system users and to retrieve that information either at the MicroTICCIT terminal or in a print-out. Instructions will be provided below for systems with or without printer capability.

NOTES Data Storage

User comments will be entered at the MicroTICCIT terminal any time while they are logged on and using a TICCIT course. Those comments will be stored automatically on the Master Directory (DMØ) in a disk file called DISKNOTES.LG. The NOTES utility stores the message along with the user's name (if given), the course and section, and specific information about the location of the user in the course including: unit, lesson, segment, function, part, level, and item.

Retrieving NOTES Data On-line

To retrieve the NOTES data at the MicroTICCIT terminal follow these steps:

- Log on Course Ø. You must be registered for this course as a TICCIT operator.
- Select the **Operator Menu**.
- Select the **Command Line Interpreter** (CLI).
- Type EDIT DMØ: DISKNOTES.LG and press **ENTER**.
- Press **EASY**.

The first NOTE message will be displayed on the screen. Type "5" and press **GO** to advance to the next message. Continue until all messages have been displayed and then **EXIT** the editor.

Retrieving NOTES Data Off-line

You may also display NOTES data when TICCIT is DOWN on the Data General Console screen. Follow these procedures:

- At the "R" prompt, type:
  TYPE DMØ: DISKNOTES.LG
  (Note: TYPE is an RDOS command which lists out an ASCII file on the DG display.)

The contents of the file will scroll by. You may stop the display by pressing **CTRL-S** and resume scrolling by pressing **CTRL-Q**. To exit and return to RDOS, press **CTRL-A**. (Note: As an example of using the CTRL key, pressing CTRL-S means that you hold down the CTRL key at the same time as you press the S key.)

Printing NOTES Data On-line

Follow these procedures at the MicroTICCIT terminal:

- Log on Course Ø and select the **Operator Menu**.
- Select #8, **Data Reduction Menu**.
- Select #5, **Notes Menu.**

You will see two options:

1. Print Student Notes from Log Tape file (NOTES)
2. Print Student Notes from Notes Disk File

Select #2 and press **GO** to print the default system file, DISKNOTES.LG.

Printing the NOTE Data off-line

If your TICCIT system has a line printer, you may use the off-line TICCIT utility, NOTES.SV to produce a print-out of the DISKNOTES.LG file. Follow these procedures:

- Bring TICCIT DOWN.
- At the "R" prompt, type: DIR DMØ.
- Press the CR key (carriage return).
- Type NOTES.SV log filename and press the CR key to run the utility.

- Important! COLLEGE must be available on the disk to run this utility. The off-line utility COLLEGE is described on another page in this section of the manual.

Without a printer, you will receive the message: UNIT NOT ON LINE.

Archiving NOTES Data on Tape

You may wish to archive NOTES data on a daily or weekly basis. Or, you may wish to archive NOTES data related to a particular course. Regardless of your purpose, the procedures are as follows:

- Bring TICCIT UP. Place a tape in the tape drive. Be sure the tape drive is on and the tape is in the write position.
- Log on Course Ø and select **Operator Menu**.
- Select the **File Utilities Menu.**
- Select Option #19, Type DMØ, and press **ENTER**.
- Select Option #9, DUMP.
- File 1 MTØ:Ø (Name of tape file)
- File 2 DISKNOTES.LG (Name of file to dump)

Transferring the NOTES File to Disk

- BRING TICCIT UP. Place the tape containing the file to load in the tape drive. Be sure the tape drive is on and the tape is in the Read position.
- Log on Course Ø and select the **Operator Menu**.
- Select the **File Utilities Menu**.
- Select Option #19, Type DMØ, and press **ENTER**.
- Select Option #8, LOAD.
- File 1: MTØ:Ø (Name of tape file)

Press **ENTER** twice.

TICCIT will display the name(s) of the file to be loaded.

Note: There could be several files stored in one tape file. You may change the name of the file if desired before loading in on the disk.

- You may now follow the procedures for displaying the contents of the file on the screen or printing the file.

Deleting the DISKNOTES File

Usually, you should delete the DISKNOTES.RG file when you have recorded the data to avoid storing a long file with useless data on the disk. TICCIT will automatically create a new DISKNOTES.RG on the disk when the NOTE utility is invoked.

Collecting Logging Tape Data

Introduction

The purpose of these instructions is to allow you to store student performance data on a logging tape for processing using TICCIT utilities such as ITEMS and ITEM ANALYSIS REPORTS.

Initiating Logging Procedures

The ADAPT courseware your students are using will automatically log student performance data if the logging tape has been turned on, unless the ADAPT programmer has included other instructions. Operators should check the documentation included with each piece of ADAPT courseware.

- Turn the tape drive on (if necessary) and place a tape marked LOGGING DATA in the tape drive. The tape must be in the Write position.

- Bring TICCIT UP if you have not already done so, leaving the Data General console in the ON LINE position (the ON-LINE light should be on). The ALPHA LOCK light should also be on.

- At the TICCIT prompt "?", type CTRL-L and press the CR key. (Note: Pressing CTRL-L means you press the CTRL key and the L key simultaneously.) You will begin the following DIALOG:

SYSTEM:	CURRENT LOGGING = mm ann NEW LOGGING MODE:
USER:	Type SF or SV and press return.
	See Logging Modes below for an explanation.
SYSTEM:	NEW LOGGING FILE:
USER:	Type "ann" and press return.
	a = add nn= the number of the logging file (from ØØ to 99)

Note: If you attempt this dialog without a tape in the drive, you will receive the message:
LOGGING TAPE NOT READY: 10404.

Initiating Logging Procedures (cont.)

If you get the message described in the previous paragraph, press the CR (return) key twice to restore the TICCIT prompt. Place the tape in the drive and continue. You **must** complete this dialog or the system will freeze.

Type NL when the System asks for NEW LOGGING MODE to exit without logging.

• When the Dialog has been completed, take the Console off-line by pressing the ON-LINE key and the CMD key simultaneously. Then press the ALPHA LOCK key. Both the ON-LINE and ALPHA LOCK lights should go out. Continue with the day's usual activities. As students use courseware, you will hear the logging tape come on and off.

Logging Modes

The following logging modes may be entered:

NF	No logging desired
SF	Log selected users (Students); include fixed data only
SV	Log selected users (Students); include fixed and variable data
LF	Log all users; include fixed data only
LV	Log all users; include fixed and variable data

Changing Logging Modes

Use CTRL-L while TICCIT is UP at the DG Console and complete the dialog above.

Deactiviating the Logging Mode

Type CTRL-L while TICCIT is UP and type NL or shut TICCIT DOWN.

Retrieving Logging Tape Data

Introduction

You will conduct these procedures at the MicroTICCIT terminal.

Creating a Logging File

Before you can print out an ITEM ANALYSIS REPORT you must transfer the logging file from the tape to the disk.

Note: The size of a logging data file can quickly become very large. Be sure you are collecting only the type of data you need, e.g., student or all, and fixed and variable plus fixed. Delete the disk file after you have extracted your report data. You may wish to maintain an archive file on tape.

- Log on Course Ø and select the **Operator Menu**.
- Select the **Data Reduction Menu**.
- Select **TRANSFER LOG TAPE to DISK FILE** (LGXFER)
- Enter the name of the tape file, e.g. MTØ:ØØ (nn)

- Enter a DISK FILE NAME. This file name will store the output on the disk. You may assign any name you want to this file. A standard approach might be to begin with the prefix LOG and use the current data; for example:

LOGØ81185 (Log for August 11, 1985)

- If you do not enter a file name, the System will automatically assign the name DRØnnn.LS. This file is a message file which will contain error messages related to your logging tape records.

- TICCIT creates a file with the extension .ID and stores it in the REPORT.DR when you run the item analysis program.

Off-line Reports

You may also run the off-line data reduction programs ITEMS.SV and WEEKLY.SV.

KEEP CAREFUL RECORDS OF THE NAMES OF YOUR TAPE AND DISK FILES.

Using The COLLEGE Utility

Introduction

If you list the files on your system's Master Directory (DMØ), you will find a program called COLLEGE.SV. This program creates a file called COLLEGE with no extension which contains the name of the institution or MicroTICCIT Site. This name will be printed out on TICCIT's data reduction reports, e.g., Student Progress Reports, Item Analysis, etc.

Procedures

- Bring TICCIT down. You will be working at the Data General console (off-line).
- At the R prompt, type COLLEGE.SV (CR).
- You will see the following prompt:

ENTER NAME OF COLLEGE:

- Type the name of your site or institution and press return. The name cannot exceed 26 characters.

Important

Various TICCIT data reduction utilities will not work unless the COLLEGE file exists. Hazeltine usually installs this file on your disk. The name, however, may not match the name of your site or institution.

PDADUMP

Introduction

You will use this "off-line" TICCIT utility when you want to store the contents of the PDA for Course 19 or other courses on a tape. The PDA file stores the student performance data.

Procedures

- Bring TICCIT "DOWN."
- You should see the "R" prompt at the Data General console.
- **Put a tape in the tape drive.**
- Type: **Dir DMØ: TREGISTER**
- Type: **INIT MTØ** (to dump to tape).
- Type **PDADUMP/V MTØ: Ø 019ØØ/C**
- Press the CR (carriage return) key.

MTØ: Ø is the name of the tape file.

"019" is the course number.

"ØØ" is the students' section number.

/V means Verify file as it is being dumped. The individual student data files with the .PD extension will be displayed.

/C means include only files that match this course and section.

Result

The result is a list of .PD files in that section or course.

Part VII: TICCIT Hints

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TICCIT System Specifications And Parameters

Core Memory

The "core memory" is another term for Random Access Memory (RAM). The amount of "core" determines the size of the program or programs that can be in memory at one time. The contents of "core" will change as you use TICCIT courseware. The MicroTICCIT system has a core memory size of:

256 K (256,000 WORDS OR 512,000 BYTES)

Hard Disk Storage

How much space you have to store programs and data files on your system at one time depends on the size of the hard (or fixed) disk. The TICCIT System II has one fixed disk which stores:

50 Megabytes (50 Million Bytes)

Course Structure

Each TICCIT course has certain limitations regarding the number of units and lessons it can have. Those limitations are:

Maximum Number of Units per course	30
Maximum Lessons Per Unit	30
Maximum Segments Per Lesson	none

Course Names

Every TICCIT course must be assigned a name. A course name consists of two characters. Examples are:

BN, IA.

Course Numbers

Every TICCIT course must be assigned a course number. This number is used to identify the course when a user logs on. A course number may be from one to three numbers. Legal course numbers are from:

1 to 564.

Course Ø is the name of the TICCIT course containing the TICCIT utilities which are accessed from the Supermenu.

Section Numbers

Students may be enrolled into sections which consist of two digits from ØØ to 99. A section number must be assigned to access class performance data from the Student Progress Reports menu. A student cannot be enrolled in two sections in the same course.

Screen Colors

TICCIT assigns a meaning to certain colors in its Student Progress Report menus and TICCIT maps. The colors and their meanings are:

RED	FAILED
GREEN	PASSED
YELLOW	IN PROGRESS
BLACK	NOT STARTED YET
WHITE	SUGGESTED DESIGNATOR FOR OFF-LINE LESSONS OR UNITS

Other Color Uses

TICCIT utilities (in **Course Ø)** also use colors in standard ways.

RED	SYSTEM ERROR MESSAGES
CYAN	FATAL SYSTEM ERRORS TO BE REPORTED TO HAZELTINE

BNCOC Courseware Colors

MicroTICCIT courseware designed for 19K BNCOC uses the standard TICCIT colors such as RED for failed, GREEN for passed. Developers of Course 19, the menus for the 19K BNCOC courseware, have also chosen to use cyan in a special way:

CYAN	Indicates an area where a student may mark with his light pen.

The TICCIT System Operator: User #1

Introduction

The SYSTEM OPERATOR (SYSOP) is a special user established by Hazeltine when the TICCIT system is installed at a site. The SYSOP is the first user in the TICCIT authorization file. The SYSOP's mailbox number is always 1. The "default" password is LORD (all uppercase). You can use the SYSOP's number and password to LOG ON with authorization to all parts of the system in an emergency. You can and should change the SYSOP's password.

Important! The SYSOP and the TICCIT site operator should not have the same user ID. That is, the "person" acting as the TICCIT operator should be registered in **Course Ø** with his own user ID with the authorization code of **SY**. Never register the SYSOP in another course.

Password

You can change the SYSOP's password or any other user's password on the system using the Registration Editor.

All user's may have different four character passwords but there can only be one proctor password.

See the sections on PASSWORDS for more information.

Understanding TICCIT Modules

What is a Module?

A **module** is a special kind of TICCIT file which is used to store ADAPT courseware as well as TICCIT system programs. System modules are numbered from 1 to 3999 and are stored in the TPROGRAMS directory.

Module Characteristics

A module is a contiguous file.
It has a numeric name and no extension.

samples
120000, 701, 1001, 123987

Module Directories

To store courseware you must have a module directory which you create with the **TICCIT BUILDMD** utility.

Types of Modules

There are two kinds of modules:
COURSEWARE MODULES that store only data.
EXECUTABLE MODULES that are operated by TICCIT.

Finding Module Ranges

There are two ways to get information about the module ranges that exist on your disk and which store courseware. If you want to know the module range for a specific course use the COURSELIST information. If you want to create a new module range and need to find out which range is open, find the current module directories on the disk by this process:

- Log on Course Ø and select the **Operator Menu**.
- Select **Data Base Operations Menu**.
- Select **Current Module Directories**.

The display will appear as follows:

#	Home	Module Dir	Start	End	Mod
0	TPROGRAMS	TPROGRAMS	1	3999	

TPROGRAMS is the name of the Module Directory which stores the TICCIT system modules. These modules begin at number 1 and end at 3999.

Module ID

To get an idea of how courseware modules work:

- Log on Course Ø and select the **Operator Menu**.
- Select **FILE UTILITIES MENU**
- Type "17," **MODULE ID**.
- Press **RULE.**
- Type the module start and end range for a course on your system, e.g. 120000 and 129999.

The first module in that directory will be the **BIT MAP.** Each module in that directory has an entry in this module.

- Press **ENTER** to see the contents of the next module. You will see the module number and the TICCIT label of the courseware stored in that module.

Courseware Modules

Module Location in Core Memory

A module is always loaded by TICCIT into memory locations 4096 to 8181 (decimal). Its size cannot exceed 4096 words.

Object Courseware

Courseware modules store the object (processed) form of the courseware. The object courseware is what the student sees when the courseware is accessed. Only the object form needs to exist for the students to use the courseware.

Source Courseware

The source courseware is stored separately in regular MPOS files with TICCIT labels such as BN010201SI.CW. These files must be present to enter the course from the ADAPT or APT editors.

The TICCIT Registration Directory

Introduction

TICCIT stores binary data in octal code (base 8). However, you ordinarily input data using decimal (base 10). Sometimes, however, you will see a mixture of octal and decimal data in system output screens. The Registration Directory is an examples.

Registered Users	ID#	Mailbox	Code	Password
Albert, Henry	**124**	**20**	**04**	
System Operator	**01**	**01**	**177777**	**LORD**

ID Numbers

The ID Number can be up to 9 numbers and is displayed in decimal.

Mailbox Numbers

The mailbox number is displayed in octal! The mailbox number represents the order in which the users were registered on the system. Henry Albert's mailbox number (see above example) is 16 in decimal.

Security Code

The security code of "04" indicates that Henry is registered as a student. The security code is also in octal.

System Operator

The System Operator (SYSOP) is the first registered system user. The SYSOP is registered by Hazeltine as part of the installation process. The security code (177777) is the highest possible security level. Note: The System Operator is not the same as user types: operator or system programmer.

Passwords

The password is displayed in ASCII characters.

Security Codes

Every registered TICCIT user has a security code assigned at the time that user is registered in a course. There is only one security code per user. Therefore, when the user is registered in another course (or changes are made to a registration), care must be taken to enter the desired security code.

User Categories

Memonic	Category	Octal Value
ST	Student	1
PR	Proctor	2
IN	Instructor	4
OP	Operator	10
SY	System Programmer	20

Recordkeeping

Print out a list of authorized system users on a regular basis.

Break Files

Introduction

TICCIT creates a separate Break file for each terminal on the system. These files store error reports and are useful for authors. Break files, however, can become extremely large and take up a great deal of space on the disk and serve no purpose in an instructional environment. They should be deleted at regular intervals. **Break files are stored on the Master Directory, DMØ.**

Check Break File Size

Check the size of the system Break Files at the TICCIT CLI or the MPOS FILE UTILITY.

- Type **DIR DMØ**
- Type **LIST BREAKØØØ.BR** (Terminal 0)
- **LIST BREAKØØ1.BR** (Terminal 1), etc.

Delete Break Files

Use either the TICCIT CLI or the MPOS FILE UTILITY.

From the CLI :
- Type **DELETE BREAKØØØ.BR** (or appropriate name)

From the MPOS File Utility:
- Select DIR and type **DMØ**.
- Press **EXIT**.
- Select DELETE and type the name of the break file.

Print Break Files

If you have a line printer, you may print Break files using the utility on the MPOS FILE UTILITY Menu, PRINT BREAK.

List Break Files

Select LIST from the MPOS **File Utilities Menu** and type BREAKØØØ.BR. The last three numbers indicate the terminal number. For example, BREAKØØ1.BR is the file created at terminal #1.

Wildcards

You can use a wildcard to list all break files on the disk.
- Select the MPOS File Utility Menu.
- Select LIST.
- Type BREAK-.BR.
- Press **ENTER ENTER**. (Press ENTER twice.)

Using the LIST Command

Use the LIST command to find out if a file exists on the system. Find out the size of the file, its attributes and other useful information. A FILE NOT FOUND or FILE DOES NOT EXIST message may indicate that you are on the wrong directory.

Review Graphics

Introduction

These instructions will help you locate graphics stored on your MicroTICCIT system disk.

Procedures

- Log on Course Ø and select the **Author Menu**.
- Select the **Graphics Utilities Menu** (#4).
- Select **Display Object Graphics** (#1).

You will see a prompt at the bottom of the screen such as the following:

Graphics 1:1

The first number is the graphics directory number. The second number is the graphics number in that directory.

To see the next graphic, press **GO.**

Missing Graphic

If there is no graphic located at a specific number, you will see "MISSING GRAPHIC" printed in the lower right corner of the screen.

Module Number

Press **OBJECTIVE** to see the graphic module number. This number is the one you would use to display the graphic in your ADAPT courseware.

Press **OBJECTIVE** again to return to displaying graphics.

Graphics Directory

Use the COURSELIST utility (on the Makecourse menu) to find out the number of the graphic module directory on which graphics from a particular course are located.

System Graphics

System Graphics such as the startup and shutdown screens are located in Graphics Directory Ø. You can change the number of the directory or the specific entry that you are viewing by typing the appropriate number after the Graphics prompt at the bottom of the MicroTICCIT screen.

Changing The TICCIT Graphics

Introduction

You may wish to have a different shutdown or startup graphic. This section includes instructions for changing those graphics.

Select a New Graphic

Before you begin the procedures below, select the new graphic and write down the number. If you need help to find the graphics already stored on your system, see "Review Graphics" on Page VII-12.

You may also wish to create your own display. See the Hazeltine manuals for creating graphics.

Procedures

- Log on Course Ø and select the **Operator Menu**.
- Select **Log on, Log off** (Option#1).
- Select **Start up, Shutdown Menu.**
- Select one:
  Build New Shutdown Display (#2)
  Build New Log on Display (#3)

- Type number of new graphic and press **EXIT** to load new graphic.

Current Module Directories

Introduction

The TICCIT operator needs to know the ranges of the current module directories on the system. You can obtain this information using a TICCIT utility.

Procedures

- Log on to Course Ø and select the **Operator Menu**.
- Select **Database Operations Menu** (#4).
- Select **Display Module Directory Information** (#9).

The current module directories will be displayed.

#	HOME	MODULE DIR	START	END	[NOTES]
Ø	TPROGRAMS	TPROGRAMS	1	3999	SYSTEM MODULES
1	XTRACWMODS		120000	129999	HUMRRO MODULES
2	TDMMD		950000	99999	DEMONSTRATION CW
3	TRAINMODS		110000	119999	ADAPT TRAINING

Explanation

- The number (#) indicates the module directory number where the modules are located. Use this information when you set up a course with Makecourse.

- Under **HOME**, the name of the module directory is listed. To access modules on that directory you could DIR TRAINMODS.

- Under **MODULE DIR**, the name of the module directory can be repeated.

- **START** indicates the first number of the module directory. The first module stores the BIT MAP for the directory, the information the system needs to locate the remaining modules and load them into memory for execution. START and END denote the module range.

- **END** indicates the last number of the module directory. For example, the last available module in the TPROGRAMS module range is 3999.

- Under **[NOTES]** is a description of the courseware stored in a particular module range.

TPROGRAMS

TPROGRAMS stores the TICCIT system modules, (TICCIT utilities and ADAPT functions). For example, the SRDBI function that is used to read and write data to the student's permanent data area file (.PD) is stored in module 701.

Change Module Parameters

Introduction

The TICCIT sub-menu called "Change Module Parameters" contains several useful utilities. You will be changing TICCIT module parameters when you select one of these utilities.

Procedures

- Log on Course Ø and select the **Operator Menu**.
- Select **Database Operations Menu**.
- Select **Change Module Parameters** (*8).

Options

You will see the following list of options:

1. Set time computer waits for videotape player to get up to speed.
2. Set page size for TICCIT printouts.
3. Set security level required for courseware processing.
4. Set program to run when user logs on.
5. Set new proctor function password.

Options above which are important in the operation of the 19K BNCOC MicroTICCIT site and using the 19K BNCOC CMI System are explained in more detail in other sections of this manual. TICCIT operators need to be aware of these options and to explore their uses.

Current TICCIT Printout Settings

Access option *2 and make a note of the current settings at your site.

Start up Program

Access option *4 and make a note of the program currently set as the start up program at your site.

Set Security Level

Access option *3 and make a note of the current security level required to process courseware at your site.

Set Proctor Password

Access option *5 and make a note of the current proctor password at your site.

Part VIII: RDOS Hints

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ABOUT RDOS and MPOS

RDOS Data General's Real-time Disk Operating System (RDOS), is the heart of the multi-user MicroTICCIT system. A real-time operating system is one that allows several users to feel as if they are accessing the same programs simultaneously.

RDOS CLI The RDOS Command Line Interpreter (CLI) is a program that lets the user interface with RDOS through simple one word commands. TICCIT operators use RDOS for all off-line TICCIT utilities and for performing system operation and maintenance tasks such as bringing the system "UP" and backing up the system. When you bring TICCIT "UP," you are turning over the disk operating chores to MPOS.

MPOS The MicroTICCIT disk operating system is called MPOS or TICCIT. MPOS follows almost the same file naming and file handling conventions as RDOS. When TICCIT is "UP", the operator has access to TICCIT's "Command Line Interpreter" or CLI. The TICCIT CLI, however, consists of physically different programs which do the same tasks as the RDOS CLI. Operators will note, however, that not all of the RDOS CLI commands are available. One major difference is that MPOS utilities are displayed on the MicroTICCIT bit-mapped screen which differs greatly from the Data General Dasher console which is text-oriented. The bit-mapped screen does not scroll; therefore, the MPOS version of the CLI does not have the TYPE command.

TICCIT Modules A TICCIT module is a special kind of file. Modules contain either courseware (all data) or executable modules (programs). When several users log on to the same MicroTICCIT course at different terminals, they each use a small piece of the courseware at different times. Each small piece is stored in a TICCIT courseware module. The names of these files are all numbers and have no extensions which makes it possible for TICCIT (i.e., MPOS) to access them very rapidly. The module contents are swapped in and out of core memory every time a user makes a keypress. The contents are kept in memory at the MicroTICCIT terminal until a new keypress occurs.

SYSTEM PROMPTS

Introduction

A prompt is a character that tells you the system is ready to accept a command. You can tell which operating system is "up" (in charge of the system) by the prompt character. The prompt characters that you will see as a TICCIT operator are listed below.

?	TICCIT OPERATING SYSTEM (MPOS)
R	RDOS PROMPT
!	VIRTUAL CONSOLE
*	RDOS EDITOR

THE TICCIT SYSTEM II MASTER DIRECTORY (DMØ)

Introduction

The Master Directory for the TICCIT System II is called DMØ. This directory lists all of the other directories on the system as well as files and programs that are stored on the Master Directory.

DIR DMØ

Unless you tell it, the system does not know which directory it is on. You can initialize (open up for access) the master directory where most of the files are located by typing DIR DMØ from either the TICCIT or the RDOS CLI.

MPOS

When MPOS (the TICCIT Operating System) is UP and running, it almost completely hogs the Data General's core memory -- almost, but not quite. There are still links to RDOS. One of those "links" is the ability to access directory information.

GDIR

If you wonder which directory you are on, you can find out by typing GDIR from the CLI. Because of the many links that have been created, you may find yourself on a directory you did not open yourself. For example, when you DIR a courseware directory such as BNCW.DR you will find yourself on TDMCW.DR. With a little experimenting and familiarization with the system you will get accustomed to what is where. You will always need to begin with the master directory (DMØ) to find the directory and the file you need to access.

RDOS COMMANDS (USE AT DATA GENERAL CONSOLE)

Introduction

RDOS is the Data General multi-user disk operating system. The RDOS prompt is "R." The "-" character is a wildcard. Consult the RDOS manual for more information.

Directory List

At the "R" prompt, type:

- DIR DMØ (Press the CR key)
- LIST/A/E -.DR (space between E and -) (Press the CR key)

The following information will be displayed:

XTRAOBJGR.DR 512 SPDY 01/06/84 17:02
01/06/84 [002310] 0

Filename, size of file in words, file attributes, date created, time created, date of last access, disk sector address, use count

Controlling the Screen

Press CTRL/S (the CTRL and S keys simultaneously) to stop the screen from scrolling. Press CTRL/Q to continue scrolling. Press CTRL/A to abort console operation in progress and return to the "R" prompt

File Extensions

File extensions are added to the file name to distinguish among various types of files. For example, REPORT.DR is a directory file named REPORT. UP. MC is a macro file named UP.

.DR	DIRECTORY
.MC	MACRO FILES
.SV	EXECUTABLE PROGRAMS
.OL	OVERLAY FILES

Listing File Names

LIST/A/E -.- (List all files.)
LIST/A/E -.MC (List all macro files.)

Switches

Switches are arguments which are added to CLI commands to qualify the command. Some of the switches you will see are:

/A	List all files, permanent and non-permanent.
/E	List all file information.
/B	List file name only.
/K	Do not list links.
/N	List only links.
/S	Sort file names alphabetically.

TYPE Command

The TYPE command works only with ASCII files. Other files will produce strange results or messages such as:

LINE TOO LONG. To "type out" the contents of the Macro File "UP" on the screen, type:

DIR DMØ (return)
TYPE UP.MC (return)

Note: In this case you will actually type the word "TYPE."

RDOS Files

RDOS Filenames

A LEGAL RDOS filename consists of from 1 to 10 letters, digits, or the $ character plus a two character extension. ORDINARILY, the TICCIT operating system (MPOS) follows the same filenaming conventions.

examples:
COURSELIST. (no extension)
UP.MC
COLLEGE.SV

Disk Blocks

A DISK BLOCK (or sector) consists of 256 16 bit words or 512 bytes. RDOS stores information in blocks or sectors.
An RDOS word has 16 bits; a byte has 8 bits; a word, therefore, contains 2 bytes.

Types of Files

There are 3 major types of files on an RDOS system. They are:

RANDOM ACCESS
SEQUENTIAL
CONTIGUOUS (A fixed number of blocks in unbroken series of logical disk addresses.)

File Characteristics

When you LIST a file, the system displays the name of the file, its size, creation date, and other information, such as the file's characteristics. The characteristics and their codes are listed below.

D	Random file
C	Contiguous
L	Link Entry
T	Partition
Y	Directory

File Attributes

When you create a file, you assign certain attributes. These attributes can usually be changed by the system user. The file attributes are also given when you LIST a file. The attributes are as follows:

P	Permanent
S	Save File
W	Write Protected
R	Read Protected
A	Attribute Protected
N	No Link
?	User Defined
&	Second User Defined

Processed Graphics File Attribute

An important user defined attribute to recognize is the one which indicates that a graphics file has been processed. When you list the name of a graphics file, you will see the ? attribute when the file has been processed. Graphics files must be unprocessed before they are dumped.

NAMES OF I/O DEVICES (INPUT/OUTPUT)

Introduction

If you list the names of the files on the Master Directory, you will see files that begin with the "$" character. These files are the names of the Input/Output (I/O) devices which could be attached to your system. Just because they are there, however, does not mean that you have this equipment. It means that the system has been configured so that you could use these devices if they did exist.

Names of I/O Devices	MTØ	Name of magnetic tape drive
	$LPT	Line Printer
	$TTO	System Console
Related File Names	$OUT	Link file to $LPT

HOW TO WRITE A MACRO FILE

Introduction

The TICCIT software that is supplied with your system includes a few useful MACROS such as UP.MC and DOWN.MC which you use to bring TICCIT up from RDOS and to return to RDOS (when you are shutting TICCIT down).

A MACRO file is a series of RDOS commands which you ordinarily execute together. A Macro saves you from typing them all in every time you do a particular task.

Creating a Macro File

- Use the RDOS CLI EDITOR.
- At the R prompt, Type DMØ
- Type EDIT (name of new Macro)

The RDOS editor prompt will be displayed on the screen.

*** (the Editor Prompt)**

Type each CLI command with the appropriate arguments and press return.

Type UEH$$ to return to RDOS and exit the EDITOR.

Part IX: Revising Course 19, "19K BNCOC for Tank Commanders"

Table of Contents

Part IX, Revising Course 19, "19K BNCOC for Tank Commanders"

Introduction

This section of the manual provides guidelines for making revisions to the 19K BNCOC MicroTICCIT **Course 19** as changes take place in the 19K BNCOC Course. Because the 19K BNCOC for Tank Commanders course structure is dynamic and can change from cycle to cycle, it is essential that corresponding changes are made to the 19K BNCOC MicroTICCIT course in order to keep the 19K BNCOC MicroTICCIT CMI system up-to-date with BNCOC.

This part of the Manual includes general instructions and information about 19K BNCOC and the corresponding CMI system and addresses changes within the on-line instruction and testing of the 19K BNCOC MicroTICCIT Course. Part X of this Manual has instructions for making revisions to **Course 20**, The 19K BNCOC CMI System.

Only an experienced ADAPT programmer should attempt to revise any part of a MicroTICCIT course.

Important: **NEVER** alter the BNCOC Course in the middle of an instructional cycle. This would require you to re-register all students enrolled in the course, thus destroying their current Permanent Data Areas (.PD files) and all your records of their performance data which have been entered and stored on the MicroTICCIT system.

General Instructions

Modification of the 19K BNCOC MicroTICCIT course requires an understanding of both the TICCIT (ADAPT) course structure and the 19K BNCOC course structure and the relationship between the two.

19K BNCOC is divided into several Task Clusters, each of which includes a varying number of Tasks. Each Task includes one or more objective(s) or sub-task(s). Before attempting to modify the 19K BNCOC MicroTICCIT course, programmers should become familiar with 19K BNCOC by examining the most recent Program of Instruction (POI).

Programmers should also examine the current 19K BNCOC Master Record which lists the tasks (or sub-tasks) which are considered testable events. Be aware that NOT ALL BNCOC tasks included in the POI are actually tested. (For example, none of the tasks in Task Cluster A are included on the Master Record.) The 19K BNCOC MicroTICCIT course structure is designed to collect information about the soldier's performance for those tasks which are actually tested and which are used as criteria for satisfactorially passing the 19K BNCOC course. In some cases, two 19K BNCOC tasks listed in the POI are combined and scored as one testable event (i.e, in Task Cluster F, the tasks "Install a Hasty Protective Minefield" and "Remove a Hasty Protective Minefield" are tested as "Install/Remove a Hasty Protective Minefield"). In other cases, sub-tasks are listed separately on the Master Record (i.e., in Task Cluster D, the task entitled "MOPP" is divided into three subject areas: MOPP, Initiate Unmasking Procedures, and Use M256 Chemical Detector Kit, each of which is tested separately).

Part IX, Revising Course 19, "19K BNCOC for Tank Commanders"

19K BNCOC MicroTICCIT Courseware consists of two ADAPT courses that work in tandem to track student performance in 19K BNCOC. The first course (Course number **19**, Course label **BN**) contains the on-line instruction and testing available for a variety of 19K BNCOC Tasks. The student uses **Course 19** when he goes on-line to receive instruction or to take tests. The second course (Course number **20**, Course label **DE**) is used to enter the results of instruction and testing that have taken place off-line (i.e., in the field). The student will not use **Course 20**. The primary user of **Course 20** will be the person assigned to enter the off-line test results. Together, **Course 19** (on-line instruction and testing for the student) and **Course 20** (data entry of off-line student test results) form the CMI system used to record student performance in 19K BNCOC and ultimately to print the 19K BNCOC Master Record.

Any revisions to 19K BNCOC will necessitate revisions to both ADAPT courses developed for 19K BNCOC. To understand how the 19K MicroTICCIT courseware has been built, it is essential to understand first how an ADAPT course is built.

ADAPT courses are hierarchical, beginning with the COURSE level and descending to the UNIT, LESSON, and SEGMENT levels. Generally, the actual instruction is placed at the segment level with menus appearing at the upper levels. The course is divided into units; each unit is divided into lessons; each lesson is divided into segments. Each of these levels is assigned a TICCIT label by the courseware developer. A label of **BN** indicates a file at the COURSE level. A label of **BN.1** indicates a UNIT file; **BN.1.1** references a LESSON file; and **BN.1.1.1** references a SEGMENT file. These labels are known as C.U.L.S. (Course, Unit, Lesson, Segment) labels.

The basic authoring unit in ADAPT is the chapter. A chapter may be authored at any level (course, unit, lesson, or segment). Each chapter is divided into frames; frames are divided into pages. For example, the ADAPT file in **Course 19** containing the BNCOC Course Menu (**BN**) is one (1) chapter containing three (3) frames. The course menu itself is in the first frame and consists of four pages. The student tutorial is in the second frame and consists of three (3) pages. The third frame contains the instructor tutorial. Each page has three components: Display Construction commands, Response Analysis commands, and a Branching Table. A variety of other components must be authored as well, such as the Name That Frame page, symbol tables, and, for tests, a page of Test Specifications. See the ADAPT Reference Manual published by Hazeltine Corporation for more detailed information.

Comparison of 19K BNCOC and 19K BNCOC MicroTICCIT Courses is restricted in this discussion to a comparison between the 19K BNCOC Course and Course 19, **BN**, because the latter is used by the student and mirrors the structure of 19K BNCOC. (Because **Course 20** is primarily designed for entering off-line test results and printing the Master Record, its structure will not be discussed here. Refer to Part X of this Manual, Revising Course 20, for the specific information regarding how the structure of 19K BNCOC has been translated into TICCIT structure in **Course 20**. **Be aware, however, that any modifications to** Course 19 **will, in all likelihood, require modifications to** Course 20.

Part IX, Revising Course 19, "19K BNCOC for Tank Commanders"

The structure of the 19K BNCOC course is reflected within the structure of TICCIT (ADAPT) Course 19 (**BN**). For example, each 19K BNCOC Task Cluster for which testable events are included is represented by one TICCIT Unit. Each 19K BNCOC Task (testable event) is represented by one TICCIT Lesson. For example, Cluster B of 19K BNCOC corresponds to BN's Unit 2 (BN.2). Task 3 within Cluster B of 19K BNCOC corresponds to the BN Unit 2's third lesson (BN.2.3).

Each 19K BNCOC Task may be divided into any number of TICCIT segments. Instruction for BNCOC is placed at the TICCIT segment level (i.e., BN.2.3.1). Test segments are always placed at the segment level and measure performance at the lesson (Task) level. If desired, a TICCIT test may be segmented, with each part of the test placed within a different segment file. For example, testing for Cluster B Task 3 might have three (3) distinct parts. The test could be compiled by pulling together test files created at the segment level that reflect the different parts: BN.2.3.1, BN.2.3.2, and BN.2.3.3. TICCIT would string these files together and present them to the student as one LESSON test.

TICCIT records no information about student performance at the segment level. All student performance data relate to the lesson level and above.

REP Model vs. Author Defined Model

When you are creating a TICCIT frame, you will be asked to decide whether you wish to use the REP (Rule, Example, Practice) model or an "Author Defined" model. Programmers need to understand TICCIT instructional philosophy to determine why the "author defined" model will be required for the 19K BNCOC MicroTICCIT course.

In the REP model, the TICCIT operating system is geared to make a great many decisions by default, such as item scoring, branching, and display of feedback to the student. A major feature of the REP model is the TICCIT Advisor, a programming feature which causes an "Advisor" to break in at various times. This Advisor is strongly linked to TICCIT instructional philosophy which supports a learning environment where the student directs and controls his own learning. He selects the topics he wishes to study and demonstrates his mastery of instructional objectives by first reading the RULE, then perusing EXAMPLE problems, and finally by doing PRACTICE problems, not through pass/fail testing. It is difficult for a student to fail a TICCIT lesson, since he can continue to see and answer the practice problems until he correctly answers the number established for mastery. Because the role of the Advisor is to "recommend", the student is likely to encounter frequent interruptions on the part of the Advisor, which breaks in to "comment" on his performance. These interruptions, in addition to being intrusive, force the student to use the keyboard and not the light pen (the use of the light pen has been established by the Army Research Institute as the sole acceptable means of student response). Because the Advisor's messages are supplied by the system (default messages), the student is expected to respond by pressing one of the various "end of message" keys on the keyboard (i.e., ENTER, EXIT, MAP).

Given the Army's testing criteria (a maximum of three test attempts) and their need to direct and control student learning within BNCOC, the REP model has been found to be inappropriate for designing BNCOC on-line materials. The author has far greater control over the student learning environment when s/he defines his/her own structure.

Makecourse and the Course Template

The TICCIT utility "Makecourse" creates a TICCIT course template, or instructions to the system about the structure of a course, including the number of units and the number of lessons per unit. No information about the number of segments is included. The course template also includes information about the directories where the source courseware and source graphics are stored on the system. Makecourse creates a file called "PDA019000" and stores it on the master directory of the hard disk. The first three digits refer to the course number (from 1-3 digits) and the last three digits refer to the site number. All MicroTICCIT sites are numbered "000." In this example, "019" refers specifically to the number given the BNCOC MicroTICCIT course.

When each student is registered in a course, a unique file is created for him using the course template. The file name is a ten digit number with the extension ".PD". The file name (e.g., 0000002200.PD) consists of the student number (up to nine digits) and a number indicating the order in which the student was registered in that course in relation to other courses. In the example, "**220**" tells us that the student's ID number is **220**. The last number (000000220**0**.PD) indicates that this is the first course into which that student was registered. The last number can be from "0" to "9." Students can be registered into a maximum of ten (10) courses.

You cannot determine from the file name which course the file corresponds to; however, this file stores all the information about the course and the student's performance in that course. To determine which course a particular .PD file corresponds to, check the registration directory. The courses are listed in the order in which the student was enrolled.

The .PD file is created when the student is registered into the course. The file is destroyed and/or recreated if any changes occur in registration, i.e., if the student is dropped or his status within the course is changed.

The PDA019000 (course template) is destroyed and re-created whenever changes are made using the Makecourse utility. Students who were registered in the earlier version of the course must be re-registered in order to access any new units or lessons added to the course structure.

Note: Students will still be able to access units and lessons existing in the former course structure. This is because their .PD file has information required to access the former structure, but not the new structure.

Adding A New Unit (Task Cluster)

Introduction

The course template, PDA 019000, for **Course 19** (as of 11/85) has eleven units. Each unit corresponds to one 19K BNCOC Task Cluster. These instructions allow you to add a new (additional) unit to **Course 19**. Adding a new unit requires you to modify the course template.

Recommendation

It is easier to add a unit to the end of a course than to insert one in the middle. The latter requires you to revise the lesson information for each unit following the new one you would add. Renumbering units is a complex and problem-ridden undertaking that requires the debugging of all units following the new one. For example, adding a unit in the middle of currently existing units would necessitate renaming all files to reflect the new course structure, as well as locating and changing all branching commands that reference the old units' and lessons' number. Therefore, **you should add UNITS to BNCOC only after the last existing unit**.

Revise the Course Template

- Log on Course Ø and select the **Author Menu**.
- Select **Makecourse.**
- Select **Modify an Existing Course**, Item #1.

- Enter Course Number "19" and the Course Map will appear.

- Modify the existing Course Map (which shows eleven (11) units or clusters) to conform to your intended revisions. For example, if you are adding a UNIT at the end, type a "k" in block 12.

- Advance through the UNIT maps until you reach the map of the unit you have added. (Press **GO** until the appropriate UNIT map appears.)

- Enter the number of lessons for the new unit by typing a "K" in the number of blocks for which you will have lessons .

- You do not need to change the remaining course information. Use the **SKIP** key until you come to the end. Then press **EXIT** to record the new template.

- You will see a message telling you that **PDA 019000** has been created. This file completely replaces the previous PDA 019000 file.

Revise BNCOC Course Menu

Add the title of your new unit (Cluster) to the BNCOC Course Menu (located at BN.S). You may need to reformat the current page to make room for the new cluster title or add a new page through A'TTN function 13.

- Add response analysis commands to process a student mark in this area;

- Add response analysis commands to branch the student to the new cluster's menu when he marks that option.

Create a Menu for the New Cluster

- From the ADAPT Courseware Editor, type the appropriate TICCIT label. For example, if your new cluster is Cluster M (Unit 12), the label would be BN.12.S. Type "1" in the **Further Instructions** box (for Create/Add).

- The ADAPT Environment display appears. You can only select a value of "3" for entry into the first box of this display. In the second box, you should enter "1" for "Design Supplied by Author."

- The **Name that Frame** display will appear. Currently, frame labels for Cluster menus are mnemonics for the Cluster title. For example, Cluster C is Land Navigation and the frame label for its menu is LNAV. Similarly, the label for Cluster E (Military Communications) is MLCOM.

- Create your menu page.

  * Access the Color Palette (option 19 on the ATT'N menu) and enter the values detailed in **Part XI** of this Manual. Each existing menu page makes use of these altered color palette values.

  * If your menu has more than one page, make use of already established icons. These include: a GO ON arrow box, a BACK arrow box, a MENU box and a HELP box (designated by the symbol "?"). Consult **Part XII** of this Manual for macro definitions of these icons. Macros have been used so that icon positioning on the screen is consistent.

Creating a Menu page (continued)

* If some of the lessons listed on the new Cluster menu have no on-line instruction, place a page in the cluster frame that tells the students that the instruction and testing for the task will be provided by their instructors. Do NOT place this message at the TICCIT label level appropriate for the task (i.e., if Task 2 of Cluster 12 is all off-line, don't place this message at BN.12.2.S. Place it within the BN.12.S file and branch the student there using a base page label such as NOLSN (no lesson). The rationale for this is that at a later time you may wish to add on-line instruction and it is easier to create a BN.12.2.S file where none exists than it is to delete a NOLSN message at that level and replace it with the new material.

- See the instructions for "Adding a New Lesson" and "Adding a New Segment of Instruction" for how to proceed.

Process the Files

Process all new files. Try them out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what students will see.

Accessing the Revised Course

To access the new unit, you must do these things:

- Load (or create) the courseware for the new unit;
- Process the new courseware, and
- Register (or re-register) users in the course.

Adding A New Lesson (BNCOC TASK)

Scenario

Within an already existing Task Cluster, you wish to add a new Task. For example, under Cluster E, Military Communications, there are presently four (4) lessons. You might wish to add a fifth.

In **Course 19**, A TICCIT unit corresponds to a BNCOC Cluster; a TICCIT lesson corresponds to a BNCOC Task.

Note: If you are adding a new lesson to a new Cluster (in other words, the Cluster does not already exist), you must first follow the instructions for "Adding a New Unit."

Recommendation

Do NOT add the lesson in the middle of an existing unit. Add the new lesson at the end. In this way, no changes will need to be made to branching commands of currently existing files.

In any case, you will be adding a lesson here at the end of the existing lessons. Revising the order of lessons within the course as the students see them necessitates revising the labels of each existing TICCIT lesson.

Revise the Course Template

- Log on Course Ø and select the **Author Menu**.
- Select **Makecourse.**
- Select **Modify an Existing Course**, Item #1.

• Type the course number "19" and the course map will appear showing the existing units in the course.

• Press **GO** to move from the Course Map and into the maps for the units (Clusters) until you find the Unit/Cluster to which you wish to add the new lesson. Enter a "K" in the next available empty lesson cell of this Cluster map.

• Press **SKIP** until you reach the last display (the Extended Data Areas), then press **EXIT**.

Revise the Task Menu

- Access the ADAPT Editor through the Author Menu.

- Access the appropriate file, i.e., to add a lesson (task) to Cluster E, Military Communications, you would access the file BN.5.S.

- To this menu, add the title of the new lesson. Remember to include: (a) display construction commands to color this option cyan, red or green depending on the student's status within that lesson; (b) response analysis commands to process a student mark in this area; and (c) response analysis commands to branch the student to a lesson menu if one will exist. See the description of the macro PUTCO in **Part XII** of this Manual.

- If adding the new title requires that you reformat the existing screen, remember to change the window definitions in the display construction section which color the lesson's title, and also in the response analysis section under the "compare/areas/input" command.

Create a Menu for the New Lesson

- If on-line instruction or testing will be available for your new lesson, you will need a lesson menu to present these options to the student. From the ADAPT Courseware Editor display, create the menu file by typing in the appropriate TICCIT label. For example, in adding a fifth lesson to Cluster E, Military Communications, you would create the menu file with the label BN.5.5.S.

- If on-line instruction will exist for your new lesson, the lesson menu should list the titles of the segments of instruction available. This should be done as the other menus are: The titles should be colored to reflect the student's status. If he has never entered the segment, the color of the title should be cyan. If he has failed the segment, the title should be red, and if he has passed, the title should be green. Examine the actual courseware files of Course 19 for more information.

- Include response analysis commands to analyze student marks on the titles of available segments of instruction and to branch the student appropriately.

Process the Files

Process all new files. Try them out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what the students will see.

Adding A Segment

Introduction

TICCIT segments are parts of TICCIT lessons. In **Course 19**, the 19K BNCOC MicroTICCIT course, a segment will correspond to an activity or sub-task for a BNCOC task.

Task Cluster = TICCIT unit
Task = TICCIT lessons
Activity = TICCIT segment

You will not need to use Makecourse when you add a new segment. Only units and lessons are recorded in the TICCIT course template, PDA 019000.

Two possible scenarios will be discussed: (1) Adding a segment of instruction where other segments for that lesson already exist; and (2) Adding a segment of instruction for a lesson where no instruction is currently on-line.

Scenario 1

To a Cluster and Task that already exist in the BNCOC Course, you wish to add a segment of instruction. For example, in Cluster C, Land Navigation, Task 8 (Terrain Analysis) currently has five (5) segments of instruction. You might wish to add a sixth segment.

Revisions to the Course Structure

You do not need to revise the course template (PDA 019000) when you add a segment to an existing lesson.

If you wish to create a segment of instruction for which no unit or lesson exists in the course template, you must create the UNIT and LESSON (cluster and task) first using the Makecourse utility. See the directions for "Adding a New Unit" and "Adding a New Lesson."

Revise the Lesson Menu

- Access the existing Lesson menu to add the title of the new segment of instruction. In the example presented in the Scenario above, you would access the file BN.3.8.S. , a menu that already lists existing segments of instruction.) When adding the new title, remember to include (a) display construction commands to color the title cyan, red, or green depending on the student's status within that segment; (b) response analysis commands to analyze a student mark in this area; and (c) response analysis commands to branch the student to the segment of instruction you are adding. (See **Part XII** for instructions or examine existing menu files for examples.)

- To reformat the Lesson Menu to add the title of the new segment, change the existing window definitions in both display construction and response analysis to conform to the titles' new positions on the screen.

Create the New Segment

- From the ADAPT Courseware Editor, create the new segment by typing the appropriate TICCIT label. In the example presented in the scenario above, the label would be: BN.3.8.6.S.

- **Name your frames.** Current frames of instructions have labels of: OBJCT (Objective), INSTR (Instruction), REVUE (Review), IHELP (Instruction Help), PRAC (Practice), PHELP (Practice Help), and STEST (Student Test). Notice that these are not REP frames.

- In current segments of instruction, the first page the student sees is the objective (OBJCT) for the segment. Page 2 is a menu for the segment that lists the following options: receive INSTRUCTION, REVIEW instruction, get some HELP, do some PRACTICE problems, take the TEST, and QUIT. Students access the frames by marking one of these options with his light pen. By placing the menu within the file, branching to the different frames is simplified. You would alter this menu to conform to the options you want to make available to the student. For example, if you decide not to provide a HELP frame, eliminate that option from the menu.

- Consult **Part XII** for additional information. Also study the existing version of **Course 19** to see the contents and set-up of currently existing segments of instruction.

Scenario 2

You wish to add segments of instruction for an existing BNCOC cluster and task that previously had no on-line instruction. For example, in Cluster E, Military Communications, Task 3 (Hot Loop Wire) has no on-line instruction or testing. Courseware has been developed and you wish to add it to **Course 19**. These instructions explain how to add a segment of instruction.

Revisions to the Course Template

The course template does **not** need to be revised if the unit and/or lesson already exist as part of the course template. The course template does not store information about the number of segments in a lesson.

If you wish to create a segment of instruction for which no unit or lesson exists in the course template, see the directions for "Adding a New UNIT" and "Adding a New LESSON."

Revise the Cluster Menu

If a task has neither on-line instruction or testing, no lesson menu exists in **Course 19**. The task is listed on the Cluster menu. When the student marks that menu item, the program branches the student to a NOLSN (no lesson) message within that file. You must change these branching instructions to take the student to a Lesson Menu listing the segments of instruction available for that task (see "Create a Lesson Menu" below). Using the example presented in "Scenario 2," the response analysis branching commands on the Cluster Menu should be changed from "Go To NOLSN" to "Go CHAPT 5,3."

Create a Lesson Menu

If there is currently no on-line testing or instruction for the task, you must create a lesson menu. In the scenario's example, this menu would be placed at BN.5.3.S. The menu should list the segments of instruction available for the lesson. Remember to include display construction commands to color the segment titles cyan, red, or green depending on the student's status within the segment, (b) response analysis commands to analyze a student mark on each segment title, and (c) response analysis commands to branch the student to the appropriate segment. (See **Part XII** of this Manual for instructions.)

Create the Segments of Instruction

- From the **ADAPT Courseware Editor** create the new segment(s) by typing the appropriate TICCIT label(s). In the scenario's example, segments would be created at BN.5.3.1.S and BN.5.3.2.S.

- **Name your frames**. Current segments of instruction have frames labeled: OBJCT (Objective), INSTR (Instruction), REVUE (Review), IHELP (Instruction Help), PRAC (Practice), PHELP (Practice Help), and STEST (Student Test). Notice that these are not REP frames. Use of the REP model has been avoided for the reasons outlined in the Introduction of this section of the Manual. It is better to make these frames author-defined.

- In currently existing segments of instruction, the first page the student sees is the objective for the segment. Page 2 is a menu for the segment that lists the following options: Receive INSTRUCTION, REVIEW instruction, get some HELP, do some PRACTICE problems, take the TEST, and QUIT. The student accesses the frames by marking one of these options with his light pen. He does not use the keys that correspond to these typical TICCIT frames (i.e., pressing the PRACTICE key to see the practice items). By placing the menu inside the file, branching to the different frames is simplified. You would alter this menu to conform to the options you want to make available to the student. For example, if you decided not to provide a HELP frame, you should eliminate that option from the segment menu.

- Consult Part XII of this Manual for more information. Check the existing courseware to see the contents and set-up of currently existing segments of instruction.

Process the Files

Process all new files. Try them out by registering a "dummy" student in the revised course and accessing the new files under this dummy student's ID. Only then will you see what the students will see.

Deleting A Unit

Scenario

The Army decides to eliminate Cluster E, Military Communications, from the BNCOC Course. BNCOC would then consist of only ten (10) Clusters (units). Your task is to delete the courseware associated with Cluster E.

Recommendation

Do not revise the course template when you delete a unit from the course. Eliminating a unit from the course template, particularly a unit in the middle, would require you to renumber the units that follow and make complex and extensive revisions through all files pertaining to those units. Debugging the new courseware would be a major task.

A better avenue of revision would be to alter the course on the surface, i.e., the options the students see on the menus. If you removed the Task Cluster option fromthe BNCOC Course Menu, the students would not be able to access that Cluster's material. In fact, they would not even know the Cluster existed. Beneath the surface, of course, nothing would have changed: the Course template would remain the same and the Cluster's materials would still exist, but no extensive debugging would be necessary. Steps involved in "deleting" a unit in this fashion are outlined below.

Revising the Course Template

No revision to the course template is necessary, if the Cluster is merely "deleted" on the surface. You would not use the Makecourse utility if you follow this set of instructions.

Revise the BNCOC Course Menu

- Access the source version of BN.S and erase the title of the Cluster to be "deleted." Reformat the page if necessary.

- Redefine the windows in which the remaining cluster titles now appear.

- Redefine their areas in the response analysis "Compare Areas Input" command so that student marks can be analyzed using the titles' new positions on the screen.

Revise the BNCOC Course Menu (con't)

- Remove the area coordinates defined for the Cluster title you have "deleted." The "Compare Areas Input" command should now only reference window coordinates for the remaining cluster titles.

- Locate the response analysis command that provides branch instructions for the Cluster you want to "delete." Remove the command entirely. Leave all others as they are. Remember, you are not actually deleting the Cluster, so you will not need to alter the labels assigned to other clusters. The only portion of these branching commands that must be changed is the "Go If W=(n)." Because you have removed the area assigned to your "deleted" Cluster from the "Compare Areas Input" command, the number assigned by WHICHMATCH to other inputs may need to be changed.

For example, response analysis commands in the old Course Menu might read:

```
Compare   Areas     Input = ACLUS ! BCLUS ! CCLUS ! DCLUS

Compute   Calc      W ← WHICHMATCH

              Go          If          W=1
                          CHAPT       1
              Go          If          W=2
                          CHAPT       2
              Go          If          W=3
                          CHAPT       3
```

Removing BCLUS would result in the following:

```
Compare   Areas   Input = ACLUS ! CCLUS ! DCLUS !
Compute   Calc    W ← WHICHMATCH

              Go          If          W=1
                          CHAPT       1
              Go          If          W=2
                          CHAPT       3
              Go          If          W=3
                          CHAPT       4
```

Now a student mark in the area of Cluster C's title would be assigned a value of 2, not 3 (the value loaded into W via WHICHMATCH). Branching, however, remains the same, because Cluster C is still the third unit in the BNCOC Course template.

Revise Other Menus

All Cluster Menus following the Cluster you have "deleted" will require minor modifications. For example, if you "delete" Cluster E, as in the case presented in the scenario, Clusters F-K would have to be relettered to conform to the new structure the students will see. The Cluster F menu would need to be changed to identify it as the Cluster E menu and so on. Additionally, lesson menus that shoot off from Cluster Menus should be checked to ensure they are identified as belonging to the new Cluster. A lesson menu under Cluster F, for example, might be entitled "Cluster F Task 1" and this would need to be changed to "Cluster E, Task 1." Again, char.ges are made only on the surface (the object mode the student sees). In actuality, the structure of BNCOC will not have changed. Therefore, it is essential that thorough documentation be maintained as to the changes being made, so confusion in the future is avoided.

Other Revisions

Other revisions should not be necessary. For example, there is no need to delete the modules associated with the "deleted" Cluster. The students can not access this Cluster so for all intents and purposes, it no longer exists. While this may seem a "messy" way of eliminating a Cluster, it is by far the simplest and also allows the materials to be "reinstated" if the "delete" decision should be reversed. Deleting courseware is time-consuming and tricky. With the method laid out above, there is no need to actually erase the Cluster from memory.

Process the Files

Process all new files. Try them out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what your real students will see. Make sure that marking a Cluster title results in a branch to that Cluster's menu.

Deleting A Lesson

Scenario

Within Cluster C, Land Navigation, the Army might decide to eliminate the lesson on "Determine Location" (Task 6). Cluster C would then only consist of eight (8) tasks or lessons. Your task is to delete the lesson from **Course 19**.

Recommendation

Do not change the course template. Eliminating a lesson (task) from the course template (map), particularly a lesson in the middle, would renumber the lessons that follow and require complex and extensive revisions through all files pertaining to those lessons. Debugging the new courseware would be an overwhelming task and one best avoided.

A better approach is to alter the course on the surface, i.e., the options the students see on the menus. If the option of selecting a Lesson were removed from the appropriate Cluster Menu, the students would have no way of accessing that Lesson's material. In fact, they would not even know the Lesson existed. Beneath the surface, of course, nothing would have changed: the Course template would remain the same and the lesson's materials would still exist, but no extensive debugging would be necessary. Steps involved in "deleting" a lesson in this fashion are outlined below.

Revise the Course Template

Changes to the course template are not necessary if the Lesson is merely "deleted" on the surface. It is strongly recommended that any revisions to the course template using the Makecourse be avoided.

Revise the Cluster Menu

- Access the source version of the appropriate Cluster menu (in the scenario's example, the Cluster menu would be in the file BN.3.S) and erase the title of the lesson to be "deleted." Reformat the page if necessary and remember to redefine the windows in which the remaining lesson titles now appear. Also redefine their areas in the response analysis "Compare Areas Input" command so that student marks can be analyzed, given the titles' new positions on the screen. Be sure to remove the area coordinates defined for the lesson title you have "deleted." The "Compare Areas Input" command should now only reference window coordinates for the remaining lesson titles.

Revise the Cluster Menu (continued)

- Locate the response analysis command that provides branch instructions for the lesson you want to "delete." Remove the command entirely. Leave all others as they are. Remember, you are not actually deleting the lesson, so you will not need to alter the labels assigned to other lessons. The only portion of these branching commands that must be changed is the "Go If W=(n)." Because you have removed the area assigned to your"deleted" lesson from the "Compare Areas Input" command, the number assigned by WHICHMATCH to other inputs may be changed. (See "Deleting an Existing UNIT" for how these commands appear before and after deleting a unit. The concept is identical for deleting a lesson.)

Revise Other Menus

All Lesson Menus following the lesson you have "deleted" will require minor modifications. For example, if you "delete" Task 6, as in the case presented in the scenario, Tasks 7 and 8 would have to be renumbered to conform to the new structure the students will see. The Lesson 7 menu would need to be changed to identify it as the Lesson 6 menu and so on. Additionally, segment menus that shoot off from lesson menus should be checked to ensure they are identified as belonging to the new lesson. Again, changes are made only on the surface (the object mode the student sees). In actuality, the structure of BNCOC will not have changed. Therefore, it is essential that thorough documentation be maintained as to the changes being made, so confusion in the future is avoided.

Other Revisions

Other revisions should not be necessary. For example, there is no need to delete the modules associated with the "deleted" lesson. The students can not access this lesson so for all intents and purposes, it no longer exists. While this may seem a "messy" way of eliminating a lesson, it is by far the simplest and also allows the materials to be "reinstated" if the "delete" decision should be reversed. Deleting courseware is time-consuming and tricky. With the method laid out above, there is no need to actually erase the lesson from memory.

Process the Files

Process all new files. Try them out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what the students will see. Make sure that marking a lesson title results in a branch to that lesson's menu.

Deleting A Segment

Scenario

Within Cluster C, Land Navigation, Task 8 currently has 5 segments of instruction. The Army might decide to eliminate the third segment. The new organization for Task 8 would then consist of only 4 segments of instruction.

Recommendation

Do not actually delete the segment from the course. Eliminating a segment, particularly one in the middle, would require renumbering the TICCIT labels of the segments that follow and require complex and extensive revisions through all files pertaining to those segments. Debugging the new courseware would be an overwhelming task and one best avoided.

A better method is to alter the course on the surface, i.e., the options the students see on the menus. If the option of selecting a segment were removed from the appropriate Lesson Menu, the students would not be able to access that segment's material. In fact, they would not even know the segment existed. Beneath the surface, of course, nothing would have changed: the segment's materials would still exist, but no extensive debugging would be necessary. Steps involved in "deleting" a segment in this fashion are outlined below.

Revising the Course Structure

It is not necessary to revise the course template when you add or delete a course segment. The template established by Makecourse does not include information about course components at the segment level.

Revise the Lesson Menu

- Access the source version of the appropriate Lesson menu (in the scenario's example, the Lesson menu would be in the file BN.3.8.S) and erase the title of the segment to be "deleted." Reformat the page if necessary.

- Redefine the windows in which the remaining segment titles now appear. Also redefine their areas in the response analysis "Compare Areas Input" command so that student marks can be analyzed, using the titles' new positions on the screen.

Revise the Lesson Menu (con't)

- Remove the area coordinates defined for the segment title you have "deleted." The "Compare Areas Input" command should reference window coordinates only for the remaining segment titles.

- Locate the response analysis command that provides branch instructions for the segment you want to "delete." Remove the command entirely. Leave all others as they are. Remember, you are not actually deleting the segment, so you will not need to alter the labels assigned to other segments. The only portion of these branching commands that must be changed is the "Go If W=(n)." Because you have removed the area assigned to your "deleted" segment from the "Compare Areas Input" command, the number assigned by WHICHMATCH to other inputs may need to be changed. (See the instructions under "Deleting a UNIT" for information about the way these commands appear before and after deleting a unit. The concept is identical for deleting a segment.)

Revise Other Menus

All Segment menus following the segment you have "deleted" will require minor modifications. For example, if you "delete" Segment 3, as in the case presented in the scenario, Segment Menus 4 and 5 may need to be edited to conform to the new structure the students will see. Again, changes are made only on the surface (the object mode the student sees). In actuality, the structure of BNCOC will not have changed. It is essential that thorough documentation be maintained as to the changes being made, so confusion in the future is avoided.

Other Revisions

- Check your Test Control (TC) files for tests constructed at the segment level. If a test exists for the lesson (combining the segment tests stored in separate files at the segment level), the TC Mastery Box may need to be changed. Access the TC file for the lesson in question (in the example, this file is located at BN.3.8.TC, accessed through the APT editor), and examine the values in the Mastery Box. If they include the number of the segment you have "deleted", remove the segment's number and leave all others the same. Remember: Segments 4 and 5 are still Segments 4 and 5, according to all existing file labels, regardless of what appears to be true on the surface. If you have strung together a segmented test via this TC file, TICCIT will include only those segment tests that it is instructed to include. You need to remove the "deleted" segment from the instructions it uses to string the test together.

Other Revisions (Con't)

- Other revisions should not be necessary. For example, there is no need to delete the modules associated with the "deleted" segment. The students can not access this segment so for all intents and purposes, it no longer exists. While this may seem a "messy" way of eliminating a segment, it is by far the simplest and also allows the materials to be "reinstated" if the "delete" decision should be reversed. Deleting courseware is time-consuming and tricky. With the method laid out above, there is no need to actually erase the segment from memory.

Process the Files

Process all new files. Try them out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what your real students will see. Make sure that marking a segment title results in a branch to that segment's menu and instruction.

Deleting A Lesson Test

Scenario

The Army re-writes a currently on-line test (i.e., Conduct Performance Counseling with a Subordinate, Cluster B, Task 2). In its new form, it is no longer suitable for on-line conduct and you want to remove the old test from MicroTICCIT.

Revise the Lesson Menu

Access the appropriate lesson menu. In the example presented in the scenario above, the menu is stored in file BN.2.2.S. In the response analysis commands for this menu page, you will need to change the branching instructions so that a student marking the title of Task 2 will NOT be branched to the next lowest file (BN.2.2.1.S). Since no test will be available on-line, the student will not be branched to another menu where he marks an option to take the test on that task. He would be branched instead to a message page telling him there is no instruction or testing on-line (if that is indeed the case).

Other Revisions

The following files would need to be deleted (erased) from MicroTICCIT **Course 19**:

- **The TC file for the test.** In the example provided here, the TC file exists at BN.2.2.TC and is accessed through the APT Editor. To delete the file, type in the TICCIT label and select "2" (Delete this file) in the Further Instructions box. Note: If the TC file instructs MicroTICCIT to string this test together with other segment tests in order to present a segmented lesson test, you MUST NOT delete the TC file. Rather, erase the value filled in for the segment test you are deleting and allow the values representing the other segments to remain.

- **The Test (T) File.** In the example provided here, the test file is located at BN.2.2.1.T. Delete a file by typing the TICCIT label into the ADAPT Courseware Editor and typing "2" (Delete this file) in the Further Instructions box.

- **The Explanation (E) file.** In the example provided here, the Explanation file exists at BN.2.2.E. Delete the file by typing the TICCIT label into the ADAPT Courseware Editor and typing "2" (Delete this file) in the Further Instructions box.

Process the Files

Process all new files (in this case, the lesson menu). Try the file(s) out by registering a "dummy" student in your course and accessing the new files under this dummy student's ID. Only then will you see what the students will see. Make sure that marking a lesson title that would have previously taken students to a lower level and on to a test does not do so now.

Modifying A Lesson Test

Introduction

Because it is difficult to predict what sort of revisions the Army might want to make to an existing test, guidelines for test modification will not be provided here. Rather, the reader is referred to the documentation provided in Part XII of this Manual, TICCIT Tests which summarizes how the on-line tests were constructed. The most helpful documentation would be the printouts of actual test files. These show the symbols used, the base page displays and the accompanying command sections. See Part XII for information about symbols used in test files. Part XI describes TICCIT test development. A thorough examination of this documentation should supply the information necessary to modify an existing test.

Testing New Courseware

The only way to see what the real students will encounter in taking an on-line test is to register a "dummy" student in BNCOC and try your modified test using the dummy student's ID. If you take the test as an author in student mode (option 5 on the ADAPT Courseware Editor display) or as a student registered under your ID in BNCOC, the test file will not always behave the same way as it would for a person registered on MicroTICCIT only as a student. To be sure that your modified test functions as it should, be sure to try the test as the "dummy" student.

Modifying A Menu

Scenario

A BNCOC Cluster or Task title has been changed. You need to change the appropriate menu.

Revising the Course Template

The modifications here assume that you are not changing the structure of the BNCOC course (i.e., no cluster or task is being dropped or added). The only modifications discussed here will be those of a typographical nature.

Revise the BNCOC Course Menu

The Course Menu is located at BN.S. If your modifications are to a Cluster title, access the source version of the file and make your changes.

For example: The title of Cluster B "Duties and Responsibilities of an NCO" is changed to "NCO Duties and Training."

- Type the new text.
- Adjust the window definitions for the title so that all letters are colored (these commands are in the display construction section).
- Change the response analysis "Compare Areas Input" command to account for any difference in the size of the title between the old and new versions.
- Process the file and enter the course as a student to make sure the changes appear.

Revise the Cluster Menu

If your modifications involve changing a Cluster title, you will also need to access the source version of the Cluster menu and make the menu's title agree with the title on the Course Menu. No changes in window definitions will be necessary.

If the modifications you are making require changes in the titles of Tasks within the Cluster, you will have to make sure that window definitions that put the color in the Task titles are changed to agree with the length of the new title (these window coordinates appear in the display construction section under "Color always" commands and in the response analysis "Compare Areas Input" command). Process your files and enter the course as a student to make sure that the changes appear.

Revise the Lesson Menu

If your modifications were in Lesson titles (and you have revised their appearance on the Cluster menu), you must also revise the Lesson menu to conform to the new title. (If your revisions do not extend to the Lesson level, then ignore this step.) Make sure to adjust window coordinates to account for a longer or shorter title: the display construction "Color Always" command, as well as the response analysis "Compare Areas Input" command, will need such an adjustment. Process your files and enter the course as a student to make sure that the changes appear.

Part X: Revising COURSE 20

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Introduction

Course 20 has been developed so that off-line student test results can be entered and stored on MicroTICCIT. Course 20 also enables an instructor to print out the BNCOC Master Record, a record of how each student performed in BNCOC. Most revisions to Course 19 will require revisions to Course 20, so that all BNCOC testable events can be accurately recorded and printed.

Recommendation

Only an experienced ADAPT programmer should attempt to revise any part of Course 20. The CMI System is intricate and modifying any portion of its operation requires a full understanding of both MicroTICCIT and the ADAPT authoring language. The documentation provided below is not intended to be a step-by-step instruction in how to make modifications to Course 20. Rather, the documentation is provided as a guideline to making revisions and is directed at a person with working knowledge of ADAPT as a programming language as well as a courseware development system.

Overview of Course 20

Course 20 has 3 units. Unit 1 recreates the structure of 19K BNCOC: the 11 lessons in Unit 1 represent the 11 Clusters in BNCOC. Unit 2 consists of the programs that create and print the Master Record and a second report that reports the total NOGOs each student received during the course. Unit 3 includes the programs that create the Master Record File and CMI Roster. Figure 1 below lists all files contained in Course 20, as well as each file's contents.

Description of Unit 1

Unit 1 of Course 20 contains the 19K BNCOC course structure. The file labeled DE.1.S contains the BNCOC Course Menu listing all the task clusters. The Cluster Menus are housed in lesson files ranging from DE.1.1.S to DE.1.11.S, a file per cluster. Marking a task title on any cluster menu leads to one of three places: DE.1.1.1.S, DE.1.1.2.S, or DE.1.1.3.S., where identical off-line data entry pages are stored. Here the student test results are entered and the program writes the data to the appropriate memory location in the student's permanent data file (.PD) associated with Course 19.

Description of Unit 2

Unit 2 has two lessons and contains the software that prints the BNCOC Master Record. The Print Menu for BNCOC reports is located at DE.2.S. Four options presently exist on this menu. Option 1, Create and print first Master Record, performs the same operation as Option 3, Create and print updated Master Record. That is, they both collect test data from the .PD files of students registered in a particular course and section and write the data to the Master Record. Option 1 is listed to make sure that the user puts data into the Master Record at least once during a BNCOC cycle. This ensures that he can use Option 2, Print existing Master Record. Option 4 creates a list of the number of NOGOs scored by each student registered in a particular course and section.

The print routines for the Master Record are located at the segment level in files DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D), and DE.2.1.3.S (Clusters E-K). Each print routine creates a separate file to be printed: results of the Diagnostic Tests are printed from a listing file called MRCCCSS.DS; results for Clusters B-D are printed from a file called MRCCCSS.L1; and results from Clusters E-K are printed from a file called MRcccss.MRCCCSS.L2. (Note: "CCC" is the 3-digit course number and SS is the 2-digit section number.)

The print routine for the list of NOGOs is located at DE.2.2.1.S (for Clusters B-D) and DE.2.2.2.S (for Clusters E-K). The total number of NOGOs is collected from information contained in each student's .PD file but does not include NOGOs for the Diagnostic Tests. The listing file for the list of NOGOs is named NOGOCCCSS.LS. The printed result has three columns of information: student name, student ID number, and total number of NOGOs.

Description of Unit 3

Unit 3 contains the software that produces the CMI Roster and the Master Record File. The CMI Roster lists all students registered in a particular course and section. The Master Record File uses this list and creates arrays that will help locate each student's .PD file and access test data on all BNCOC testable events.

Before you can create the CMI Roster using Course 20, a TICCIT Roster file must first be created using Course Ø. The TICCIT Roster file is created through a TICCIT on-line procedure accessed from the Student Reports Menu. Software located at DE.3.S uses this file (name: CCCSS.RO) and another TICCIT file, REGISTER.AF, to create a roster of students registered for a designated course and section. The Master Record File is then created by using information from the CMI Roster. The Master Record File has the name MRCCC.SS. The first word of the Master Record File stores the total number of students listed on the CMI Roster; subsequent words store the ID number and name of each student on the CMI Roster.

Summary

Course 20 is used in the following way. The TICCIT operator first registers students and creates a TICCIT Roster File for each course and section. The operator then can log on Course 20 to create a CMI Roster and to create the first Master Record file. Then instructors or other designated personnel can use Course 20 to enter off-line student test results. Course 20 permits these results to be printed as the BNCOC Master Record.

Figure 1: Course 20 File Labels and Contents*

Course	Unit	Lesson	Segment	Contents of File
DE				Main Menu for Course 20 Software for Identifying Course and Section Number of Students Software: Reviewing CMI Roster
DE	**1**			BNCOC Course Menu, listing current BNCOC Clusters
DE	**2**			Print Menu,listing 4 print options
DE	**3**			Software for using the CMI Roster to Create/Update Master Record File
DE	**1**	**1**		Cluster L Menu**
DE	**1**	**2**		Cluster B Menu
DE	**1**	**3**		Cluster C Menu
DE	**1**	**4**		Cluster D Menu
DE	**1**	**5**		Cluster E Menu
DE	**1**	**6**		Cluster F Menu
DE	**1**	**7**		Cluster G Menu
DE	**1**	**8**		Cluster H Menu
DE	**1**	**9**		Cluster I Menu
DE	**1**	**10**		Cluster J Menu
DE	**1**	**11**		Cluster K menu
DE	**1**	**1**	**1**	Data Entry Page: Diagnostic Tests
DE	**1**	**1**	**2**	Data Entry Page: Clusters B-D
DE	**1**	**1**	**3**	Data Entry Page: Clusters E-K
DE	**2**	**1**	**1**	Print routines: Diagnostic Tests
DE	**2**	**1**	**2**	Print routines: Clusters B-D
DE	**2**	**1**	**3**	Print routines: Clusters E-K
DE	**2**	**2**	**1**	Collect NOGOs from Clusters B-D
DE	**2**	**2**	**2**	Collect NOGOs from Clusters E-K; also print NOGO list
DE	**3**	**1**		Tutorial for Course 20

* Combining the Course, Unit, Lesson, Segment information provided here identifies the file label you should use to access the material of your choice. For example, access file DE.3.1.S to see the source version of the Course 20 Tutorial.

** Cluster L is the Diagnostic Tests/Remedial Training cluster. It has been designated as Unit 1 in the MicroTICCIT courseware because the tasks in Cluster L are considered prerequisites for BNCOC training.

Part X: Revising Course 20

Adding a New Task Cluster

Introduction

Adding an entirely new Cluster to the currently existing BNCOC course requires modifying the instructional template established for Course 20 using Makecourse. As recommended in Part IX (Revising Course 19), it is much easier to add a cluster at the end of the instructional template than to insert a cluster in the middle. **The following discussion assumes that you will add the new cluster to the course template <u>after</u> the last existing cluster**, regardless of where the cluster is inserted into 19K BNCOC.

Revise the Course Template

- Log on to Course Ø and access the **Author Menu**. Select Option 4, Author Utilities Menu; then select **Makecourse**.
- Select option 1, **Modify an Existing Course**.
- Type in the BNCOC Course Number to be modified **(20)** and the instructional template for Course 20 will appear.
- Press **GO** and the Unit 1 map will appear. Unit 1 contains 11 lessons, one for each BNCOC cluster. You will **add your new Cluster by adding a lesson to Unit 1**. For example, if BNCOC has added a twelfth cluster, add a "K" in Block 12 of the Unit 1 map.
- There is no need to change the information on the remaining pages of Makecourse. Move through the pages by pressing the **SKIP** and **EXIT**.

Result

The system will display a page which states at the bottom that "PDA020000" has been created. Your modified BNCOC course is now reflected in the structure of Course 20.

Accessing the Revised Course

All users registered in Course 20 will have to be re-registered in order to access this new course template.

Revise the BNCOC Course Menu

- You will need to **modify the BNCOC Course Menu stored in the file DE. 1.S** so that the new course menu will list the title of the new BNCOC Cluster. The BNCOC Course Menu not only allows a user to select a Cluster for which to enter off-line test data, it also assigns values to variables used by the system to update a student's .PD file. These response analysis commands will also need to be added. Each of these revisions is discussed below.

- Through the Author Menu, access the ADAPT Courseware Editor display and type in the CULS label **DE.1.S**. The BNCOC Course Menu will appear. **Add the title of the new Cluster at the end of the Course Menu**. Add response analysis commands to interpret a mark in this area and branch the user to the Cluster Menu. Do NOT, however, change the values loaded into the variables VLIST(0) or VLIST(1) for any of the commands currently on the page.

Add the window coordinates of the cluster title to the <u>end</u> of the Compare/Areas command. That way, you do not have to <u>change</u> any of the Go/If/W=? commands. You should only add one at the bottom to branch the user marking the new Cluster title. Be sure that branching commands place the user at the correct location, i.e., the correct cluster menu.

Course 20 menus should parallel the menus of the course for which it is used to enter off-line data. When Course 20 is used with Course 19, the course and cluster menus should be identical in both Course 19 and 20.

- Adding the variables to update a student's .PD file is essential. Response analysis commands on the Course Menu assign a value to VLIST(0) and VLIST(1), as can be seen in the example commands on the following page.

Command	Mod	Data Field
Compare	Areas	(5 5, 5 38) ! (7 5,7 27) ! (9 5, 9 27)
Compute	Calc	W← WHICHMATCH
Go	If	W=1
	Calc	VLIST(0)← 676; VLIST(1)← 1
	CHAPT	1,1
Go	If	W=2
	Calc	VLIST(0)← 678; VLIST(1)← 2
	CHAPT	1,2
Go	If	W=3
	Calc	VLIST(0)← 680; VLIST(1)← 3

Each Cluster has its own unique VLIST(0) value which tells the CMI system where the test data is to be stored. The first Cluster always has the value 676 assigned to VLIST(0). The second Cluster assigns 678 to VLIST(0), the third assigns 680, and so on. (See Figure 2 for a list of the values assigned to VLIST(0) for each task cluster.) You must add commands to **assign a value to the new Cluster by adding 2 to the previous value assigned to VLIST(0)**. If you have added a twelfth cluster, this value would be 698.

- In addition, the course level variable **VLIST(1)** is assigned a value dependent upon the Cluster. The first cluster assigns a value of 1 to VLIST(1). The second cluster assigns a value of 2, the third a value of 3 and so on. Add commands to **assign a value to VLIST(1) for the new Cluster**. For example, if you have added a twelfth cluster, you would assign VLIST(1) a value of 12. Figure 2 lists the values assigned to VLIST(1) for each current task cluster.

Create the New Cluster Menu

- Create a cluster menu to list the tasks associated with the newly added BNCOC Cluster. As with the Course Menu, you will also need to assign values to variables used on the cluster menus.

- Access the ADAPT Courseware Editor display (via the Author Menu) and type in the CULS label for your new Cluster Menu file. Since you have added the cluster at the end of those listed in the course template (see Revise the Course Template above), this file will probably have the CULS label: DE.1.12.S. In the option box for Further Instructions, type a "1" for "Create/Add."

Create the New Cluster Menu [cont.]

- Complete the "Name That Frame" display with the name of your choice and press **GO** to edit the frame. You will list the tasks associated with the new cluster on a base page using the Color Palette information listed in Part XII of this manual. Examine the current Cluster Menu files using the ADAPT editor for more information about programming the Cluster Menu page to branch the user appropriately (this will most likely be to the data entry page you will also need to create - see below).

- It is useful to add a HELP PAGE in this frame that lists information a Course 20 user might need to know, such as which tasks in this Cluster are on-line (presented in Course 19). The user accesses this page by marking the **?** icon on the Cluster Menu.

- **Assign a value to the course level variable VLIST(2) for each task of the new cluster.** The value assigned for each task listed on the cluster menu reflects its position on the page. For example, Task 1 assigns a value of 1 to VLIST(2), Task 2 assigns a value of 2, Task 3 a value of 3, and so on. The following commands are taken from the Cluster B menu as an example. (In the first command, the variables Task1, Task2, etc. actually appear in the software as window coordinates of the task titles. They are listed here with names to clarify what they reference.)

Command	Mod	Data Field
Compare	Areas	Task1! Task 2! Task3! Task4! Task5
Compute	Calc	W← WHICHMATCH
Go	If	(W ≥ 1) and (W ≤ 5)
	Calc	VLIST(2)← W
	CHAPT	1,1,2 (the user is branched to the data entry page for Cluster B)

Revise the Data Entry Pages

- Adding a Cluster to BNCOC requires that you add programming to the Data Entry pages so that test results for all tasks associated with the new Cluster can be entered and stored through Course 20.

Revise the Data Entry Pages [cont.]

• Because of the memory constraints for a segment (4096 words), 3 separate displays exist to enter the off-line test data. Each display appears to be identical to the user and essentially is programmatically except for several minor differences. Be sure that a task selection from the cluster menu branches to a data entry page.

• Currently the Data Entry pages are located at: **DE.1.1.1.S, DE.1.1.2.S., and DE.1.1.3.S**. Off-line data is entered for the Diagnostic Tests, Clusters B-D, and Clusters E-K, respectively.

• If new Clusters are added to the present 19K BNCOC structure, it is suggested that a new segment be added to Unit 1, Lesson 1 of Course 20. This will result in off-line data entry pages existing at the three locations listed above and at DE.1.1.4.S. DE.1.1.4.S would be used to enter off-line test data for the new Cluster(s). It will contain the same 4 frames as the other data entry pages.

• Access the ADAPT Courseware Editor display via the Author Menu and use option 4 on the Editor to **copy an existing data entry file (i.e., DE.1.1.1.S)**. Give the new file the name of DE.1.1.4.S. Process. Then make the following changes to the new file.

• The symbol **TC** displays the Cluster letter on the data entry page. The cluster letter is indexed from the value assigned to VLIST(1) (see Revise the BNCOC Course Menu above), using the following commands:

Command	Mod	Data Field
Show	Remark	Show the Cluster letter.
	Calc	TC←VLIST(1): ?, L, B, C, D, E ...
	Window	3 22, 3 24
	Data	TC

Locate the single page in Frame 2 of DE.1.1.4.S. Go to the Show/Calc data field of the command shown above (in the display construction) and **add the letter of the new Cluster behind the existing Cluster letters**. This will command the display of the cluster letter on the data entry page when the user selects to enter data for that cluster.

Revise the Data Entry Pages [cont.]

- **Go to the macro EVENT**. Symbol values for VLIST(1) and VLIST(2) are used here to assign a title for each task within the new cluster to the variable TITLE.

Example commands in **EVENT** (taken from DE.1.1.1.S, for the Diagnostic Tests) are as follows:

Command	Mod	Data Field
Compute	If	VLIST(1)=1 & VLIST(2)=1
	Calc	TITLE← Six Digit Grid
Compute	If	VLIST(1)=1 & VLIST(2)=2
	Calc	TITLE← Operate Radio Set
Compute	If	VLIST(1)=1 & VLIST(2)=3
	Calc	TITLE← Communicate Using Visual Signals

- You will need to add commands that check the value of VLIST(1) and VLIST(2) for your new Cluster and accordingly assign titles for each task to TITLE. If you've added a twelfth cluster, example commands would be:

Command	Mod	Data Field
Compute	If	VLIST(1)=12 & VLIST(2)=1
	Calc	TITLE← (the title of the first task)
Compute	If	VLIST(1)=12 & VLIST(2)=2
	Calc	TITLE← (the title of the second task)

Titles for all subsequent tasks in this new cluster are assigned in the same manner.

Revise Current Print Routine Pages

Adding a new cluster requires you to **revise the definition of the array SC** in the print routine software. This software is located in files DE.2.1.1.S, DE.2.1.2.S, and DE.2.1.3.S.

Currently, SC is defined as having 61 positions available to hold student performance data (one position for each BNCOC testable event). When you add a new cluster, you are adding testable events to BNCOC, and you must expand SC to include an equivalent number of positions. Take the following steps to add positions to SC.

- Access each of the print routine files. Press **ATTN** and type 1 to enter the Symbol Editor.

- Type in the name **SC** and press **ENTER**. The current definition of SC should appear. The Value Field should contain the number "60." Change this number to include more positions. For example, if your new Cluster has 5 tasks, change the Value Field from 60 to 65. Repeat for all three print routine files.

- You must also change one branching command in the file DE.2.1.3.S. In response analysis of the second page, the GO command reads: GO/CHAPT/2. Change this command to read: GO/CHAPT/2, 1, 4.

Create a New Print Routine File

If new clusters are added to BNCOC, create a new Print Routine file. This will result in print routine files existing at the three locations listed above and at DE.2.1.4.S. DE.2.1.4.S would be used to collect and print student test data for the new cluster(s). It will contain the same commands as the other print routine files with minor revisions to make it specific to the new cluster(s).

- Access the ADAPT Courseware Editor via the Author Menu and use option 4 to copy an existing print routine file (suggestion: use DE.2.1.1.S). Give the new file the name of DE.2.1.4.S. Process. Then make the following changes in the new file.

- The Listing File Name. At present the Master Record is printed in 3 segments: Diagnostic Tests, Clusters B-D, and Clusters E-K. Each segment is held in a separate listing file, respectively called MRCCCSS.DS, MRCCCSS.L1, and MRCCCSS.L2. These listing files are created in the print routine software. Because you have created a new print routine file by copying an old one, you must change the command naming the listing file to create.

The command creating MRCCCSS.DS reads:

Command	Mod	Data Field
Compute	Calc	MAST↓ MR ↓ & COURSE & SECT & ↓ .DS ↓

Change the ↓ .DS ↓ part of the data field to read: ↓ .L3 ↓ Thus, the listing file for printing student data for your new Cluster would be MRCCCSS.L3.

• The Headers. Some of the headers used in printing the Master Record will stay the same. For example, commands producing a header such as "BNCOC 19K Division" would not need revision. However, other headers are specific to the cluster information being printed. Because you have copied a file designed for printing another cluster, **remove** header commands relating to the old cluster and **add** commands specific to the new one. See the description under the symbol HEAD in Part XII of this manual for how the headers are created to reflect Cluster-specific information.

• The SCORE macros. In the 3 print routine files, each cluster has a separate macro called SCORE (see description in Part XII). SCORE collects student performance data from memory and holds this information in the array SC for eventual printing of the Master Record.

You must create a SCORE macro for your new cluster. Between clusters, this name varies slightly (see Figure 2). For example, Cluster B's SCORE macro is called SCOR2, while Cluster K's is called SCR11. If you are adding a 12th cluster, name your SCORE macro SCR12.

Copy the commands used in the other macros. Make sure you have preceded SCORE with the TEE macro, so that when the system executes SCORE, it can determine the correct starting position to read from (see description of TEE in Part XII of this manual). The parameter for TEE's execution for your new cluster would be the number of your cluster (in this example, 12).

• Also within SCORE is the variable E. This variable identifies what positions in the array SC to load student test data into. Positions 0-60 are presently holding data on the Diagnostic Tests and Clusters B-K. You need to specify that E will begin at 61. This will instruct the system to load student status on the first task in your new cluster into SC(61), the second task into SC(62) and so on.

• Other Changes. The print routine commands string together the data held in the array SC and print it as one line of student information. An example of this is taken from the Diagnostic Tests:

Command	Mod	Data Field
Compute	Calc	LS(1)← ID(n) & NAME(n) & SC(0) & SC(1) & SC(2) ... & SC(17)
Compute	Calc	BWRIT (CHAN, LS(1), 0, $ERP, ECD)

Change the position indicator to string together the positions in SC storing data on your new Cluster. If you have started loading these data into SC(61) and there are 5 tasks, you would:

Command	Mod	Data Field
Compute	Calc	LS(1)← ID(n) & NAME(n) & SC(61) & SC(62) & SC(63) & SC(64) & SC(65)

One final change is the GO command at the bottom of the print routine file. Instead of GO/CHAPT/2,1,?, the command should read GO/CHAPT/2.

Revise the NOGO List Files

Add commands to the software that produces the list of the number of NOGOs received by students in BNCOC, so that student performance within your new cluster will be included in the tallies of NOGOs. The files are located in DE.2.2.1.S and DE.2.2.2.S.

- **Access DE.2.2.2.S and add a TEE and SCORE macro to read data on your new cluster.** (See descriptions of both of these macros in Part XII of this manual.)

Note: The SCORE macros used in producing the list of NOGOs are not the same as the SCORE macros used in the print routine files.

Copy commands from a SCORE macro used in the NOGO files. TEE is identical in both sets of software. However, be sure to specify the number of your new cluster (in the examples included in this section, it would be 12) as the PARAMS mod for TEE's execution.

Reminder

Process all files at the highest level possible.

Adding a New Task

Introduction

Adding a new task to an existing BNCOC Cluster requires changes in the corresponding Cluster Menu, so that a Course 20 user selecting that title will be branched to a data entry page that shows the task number and title. Values will need to be assigned to variables so that student data can be recorded for the new task.

Revise the Cluster Menu

- In Course 20, cluster menus are located in files DE.1.1.S through DE.1.11.S. **Access the cluster menu associated with the cluster being modified.** For example, if a task has been added to Cluster B, access the menu stored in DE.1.2.S.

- **Add the title(s) of the new task(s)** to the bottom of the Cluster menu base page. Add response analysis commands to **load the appropriate value into the variable VLIST(2).** Each task within the cluster is assigned a sequential VLIST(2) value from 1 to n. This value corresponds to where the task appears on the cluster menu. For example, VLIST(2) is assigned a value of 1 for the first task on the menu and a value of n for the last task (n is the number of tasks in the cluster). Because you have added the task title at the bottom of the page, you will avoid having to renumber the values assigned to VLIST(2) for the already existing tasks. Just assign your new task a VLIST(2) value of the next available number.

Revise the Data Entry Pages

- **Access the data entry pages** used with the cluster for which you are adding a task. For Cluster L (Diagnostic Tests/Remedial Training), this file is located at DE.1.1.1.S. For Clusters B-D, this file is DE.1.1.2.S. For Clusters E-K, this file is DE.1.1.3.S.

- **Enter the macro EVENT.** Symbol values for VLIST(1) and VLIST(2) are used here to assign a title for each task within the cluster to the variable TITLE. Add a command to assign your new task a title. Instructions for writing this command are included with example commands under "Adding a New Task Cluster: Revise the Data Entry Pages."

Revise Current Print Routine Pages

Several revisions must be made to the print routine software located in files DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D) and DE.2.1.3.S (Clusters E-K). These revisions are listed below.

- The Array SC. Adding a new task requires you to revise the definition of the array SC in all three print files.

Currently, SC is defined as having 61 positions available to hold student performance data (one position for each BNCOC testable event). When you add a new task, you are adding a testable event to BNCOC, and you must expand SC to include that event. Take the following steps to add a position to SC for each new task you add to BNCOC.

- From within each print routine file, press **ATT'N** and type 1 to **enter the Symbol Editor**.

- Type the name **SC** and press **ENTER**. The current definition of SC should appear. The value field should contain the number "60." Change the number to include one more position for each task you have added. For example, if you are adding 1 task, **change the value field** from 60 to 61. Repeat for all print routine files.

- The SCORE macros. In the 3 print routine files, each cluster has a separate macro called SCORE (see description in Part XII of this manual). SCORE collects student performance data from memory and holds this information in the array SC for eventual printing of the Master Record.

You must make one minor revision to the SCORE macros used to gather data on all clusters that follow the one to which you have added a task. This revision is to the variable called **E**. E identifies what positions in the array SC to load student test data into. Positions 0-60 presently hold data on the Diagnostic Tests and Clusters B-K. The system loads SC positions in the order of the tasks within the clusters. If you have added a task to a cluster in the middle, you must **redefine the starting position for E for the clusters that follow**.

As an example, you have added one task to Cluster B. SCOR2 presently loads task data from this cluster into SC(18) through SC(22). Test data for the new task will be loaded into SC(23). However, the next cluster's SCORE macro specifies to begin loading SC at position 23. You will need to access this SCORE macro and change E (or E) to 24, so that data from the first task in this cluster will not be loaded on top of of the data for the task you added to the last cluster. Do this in all SCORE macros for clusters following the one to which you have added a task. See Figure 2 in this section of the manual for the SCORE macro name for each cluster and the file where it is located.

- The Headers. The Master Record produced through Course 20 contains a header identifying the cluster and task. Student test results are printed beneath this header. The header for each task takes the form of the Cluster letter and the task number. (For example, the 5 tasks in Cluster B appear in the header as B1 B2 B3 B4 B5.)

Go to the header command for that cluster and add an identifier for the new task. Adding a task to Cluster B, for example, would require you to add "B6" to Cluster B's header command. You do not need to change the commands for the other clusters. (See the description of HEAD in Part XII of this manual.)

- Other Changes. The print routine commands string together the data held in the array SC and print it as one line of student information. An example of this is taken from the Diagnostic Tests.

Command	Mod	Data Field
Compute	Calc	LS(1)← ID(n) & NAME(n) & SC(0) & SC(1) & SC(2)... & SC(17)
Compute	Calc	BWRIT (CHAN, LS(1), 0, $ERP, ECD)

For the cluster to which you have added a task, you will need to add one more "& SC(n)" to the command stringing the task results held in SC together. For example, if you have added a task to the Diagnostic Tests, you would add "& SC(18)" to the command shown above.

This revision, however, requires that you revise the commands that string together other task data. Using the example above, you would have to access the next print routine file (DE.2.1.2.S) and go to the command that strings the SC positions together for printing. Take out the first **SC** position specified (which should be identical to the one you added in the other print routine file). Add a position at the end of the command. For example, task results in Clusters B-D are currently held in and printed from SC(18) - SC(39). Change the command to print SC(19) - SC(40). Also access DE.2.1.3.S (which prints results from Clusters E-K) and make appropriate changes there.

Reminder Process all revised files at the highest level possible.

Deleting a Cluster

Introduction

When a Cluster is deleted from the 19K BNCOC curriculum, changes must be made to menu pages in Course 20.

Recommendation

No revision to the course template should be made using Makecourse. Eliminating a unit (cluster) from the template, particularly a unit in the middle, would force the renumbering of all units that follow. This would require complex and extensive revisions through all files pertaining to those units.

Therefore, it is best to alter Course 20 on the surface, i.e., change the options presented to the user. For example, if the option of entering off-line data for Cluster B were removed from Course 20 menus, the user would have no way of accessing this material and Cluster B would appear to be "deleted" to the student.

Revise the BNCOC Course Menu

These instructions assume that the Cluster to be "deleted" has not been dropped from the course template established for 19K BNCOC using Makecourse.

- In order to delete a cluster "on the surface," use the ADAPT Courseware Editor display to **access the BNCOC Course Menu, located in file DE.1.S**. Remove the title of the cluster to be deleted and reformat the page, if necessary. Remove response analysis commands that would branch a user to that Cluster's menu. Identify this command by the value assigned to VLIST(1): the first cluster assigns a value of 1, the second 2, the third 3, and so on. If you are deleting the sixth cluster from BNCOC, the branching command to be removed assigns VLIST(1) a value of 6.

Revise the BNCOC Course Menu (con't)

Important: No changes should be made to the variable VLIST(0) used in this chapter (DE.1.S). However, the values assigned to VLIST(1) for the clusters following the one you have "deleted" must be renumbered. If you have dropped Cluster F (the sixth cluster), the value assigned to VLIST(1) for Cluster G (the seventh cluster) must be changed from 7 to 6. Likewise, Cluster H should now assign a value of 7 (instead of 8) to VLIST(1), and so on, until the last cluster has been renumbered. This number is used to display the cluster letter on the data entry page. If you do not change the VLIST(1) value for the clusters following the one you have "deleted", the wrong cluster letter will be displayed. You will also need to make identical changes to the data entry pages (see "Revise the Data Entry Pages" below).

Revise Other Menus

Because you are dropping a BNCOC Cluster "on the surface", you will have to modify the Cluster menus that follow. For example, if BNCOC has dropped Cluster C, Land Navigation, Cluster D will appear to become Cluster C, E will appear to become D, and so on.

- **Access all cluster menus that follow the cluster to be "deleted."** These menus are located in files ranging from DE.1.1.S to DE.1.11.S. Your revisions will be typographical: change the cluster letters identified on menu base pages to reflect the new BNCOC cluster order.

Revise the Data Entry Pages

- Revise the data entry pages associated with the cluster you are "deleting" and all clusters that follow. In "Revise the BNCOC Course Menu" above, you were instructed to change the VLIST(1) value assigned to the clusters following the one you are "deleting." Now adjust the data entry pages to reflect those revisions.

- The data entry pages are as follows: for Cluster L, Diagnostic Tests/Remedial Training, DE.1.1.1.S; for Clusters B-D, DE.1.1.2.S; for Clusters E-K, DE.1.1.3.S. Let us say that you have decided to "delete" Cluster C. You would need to access the data entry page at DE.1.1.2.S. and remove commands from the macro EVENT that reference Cluster C. (These are commands that contain the statement "Compute/If/VLIST(1)=3.") Then you must revise commands using "VLIST(1)=4" to say "VLIST(1)=3" (to reflect revisions made at the Course Menu).

- Access any data entry pages used for Clusters following the one you have "deleted" and reduce the values of VLIST(1) by 1. In this example, you would also access the data entry page located at DE.1.1.3.S and change all "Compute/If/VLIST(1)=n" commands to check for a VLIST(1) value of "n-1." Because Cluster H now appears on the surface as Cluster G, it has a new VLIST(1) value, and the old command in EVENT will not work.

Revise Current Print Routine Files

The 3 print routine files are located at: DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D) and DE.2.1.3.S (Clusters E-K). These files collect and print student "score" data on all BNCOC testable events. Revisions must be made so that the Master Record that is produced does not show the "deleted" cluster. Make the following changes.

- The Headers. The Master Record produced through Course 20 contains a header identifying all clusters and their tasks. Student test results are printed beneath the header. The header for each task takes the form of the Cluster letter and the task number. For example, the 5 tasks in Cluster B appear in the header as B1 B2 B3 B4 B5.

Revise the header identifiers as needed. If you have "deleted" Cluster B, for example, you must remove the header command that prints B1-B5. Then revise the header commands for Clusters C-K, so that they reflect their new designations. For example, the header for the 9 tasks within Cluster C should not read C1-C9, because Cluster C now appears on the surface as Cluster B. Change the header command to B1-B9. Repeat for all clusters whose letter designation has been changed by your "deleting" of a cluster. (See the description of HEAD in Part XII of this manual.)

- The SCORE macro. In the 3 print routine files, each cluster has a separate macro called SCORE (see description of SCORE in Part XII of this manual). SCORE collects student performance data from memory and holds this information in the array SC for eventual printing of the Master Record.

No data need to be collected about the cluster you have "deleted." Figure 2 in this section of the manual includes the specific name of the SCORE macro for your cluster and the print routine file where it is located. Remove the command that includes this macro. For example, you might drop Cluster B. Cluster B's SCORE macro is called SCOR2. Remove the "Include/Macro/SCOR2" command. Now, no data will be collected or printed about your "deleted" cluster. Leave commands including the SCORE macro for other clusters intact.

Revise Current Print Routine Files [cont.]

- The Print Command. In the printing of the Master Record, student data are extracted from memory and loaded into the array SC. SC is then strung together and loaded into a variable called LS(1). The contents of LS(1) is written to a file as a single line of data for each student.

After all data are collected and written to the appropriate file, a TICCIT menu will appear for each file created as a result of the Print command. MRCCCSS.DS, MRCCCSS.L1, and MRCCCSS.L2 are presently the 3 files created which contain results for the Diagnostic Tests, Clusters B-D, and Clusters E-K respectively. If no printer exists or you desire to print the file later, press **EXIT**.

Because you are no longer collecting or printing student data from the "deleted" Cluster, remove all references to the SC positions associated with that cluster. For example, you have "deleted" Cluster B. Currently, Cluster B data are collected in and printed from SC(18) - SC(22). Find the command that loads SC into LS(n) and remove all reference to these positions. Leave references to all other positions intact. Now the system will not print any information about your "deleted" cluster.

Important

Because you have **not** revised the course template established through Makecourse , you will **not** change any other references to the locations in memory where the system reads or writes student test data. As far as the system is concerned, your "deleted" cluster still exists. Student data will still be read from and written to the same places in memory as before, and the space associated with your "deleted" cluster will be blank.

Result

Course 20 will not branch the user to the "deleted" cluster's materials. Subsequent clusters have been relettered. On the surface, the Cluster appears to be deleted.

Deleting a Task

Introduction

If a task is deleted from the 19K BNCOC course, changes to its cluster's menu and to certain Course 20 variables must be made.

Revising the Cluster Menu

- **Access the cluster menu to which the task to be deleted belongs.** The cluster menus are located in files DE.1.1.S through DE.1.11.S. As an example, if a task is deleted from the second cluster (Cluster B), access DE.1.2.S.

- **Remove the task title** from the cluster menu base page. If the task to be deleted is located in the middle of other tasks, you will probably want to close the gap created on the base page by compressing the list of remaining tasks. In response analysis, branching commands for a user mark in this area should be removed and the window coordinates for the other task titles revised, if necessary.

- Each task listed on the Cluster menu is assigned a VLIST(2) value, starting with 1 for the first task, 2 for the second, and so on. When you remove any task but the last one, you must **renumber the VLIST(2) values assigned to the tasks that follow the deleted one** in that cluster. For example, if in Cluster B (which has 5 tasks) you decide to delete the second task, Task 3 becomes Task 2, Task 4 becomes Task 3, and so on. Change the VLIST(2) values to reflect these tasks' new positions on the screen.

Revise the Data Entry Pages

Currently the data entry pages are located at: DE.1.1.1.S (Diagnostic Tests), DE.1.1.2.S (Clusters B-D), and DE.1.1.3.S (Clusters E-K). **Access the data entry page pertaining to the cluster from which you are deleting a task.**

- **Go to the macro EVENT.** Symbol values for VLIST(1) and VLIST(2) are used here to assign a title for each task within the clusters covered by the data entry page. Example commands in EVENT (taken from DE.1.1.2.S for Cluster B) are as follows:

Command	Mod	Data Field
Compute	If	VLIST(1)=2 & VLIST(2)=1
	Calc	TITLE← Duties/Responsibilities of an NCO
Compute	If	VLIST(1)=2 & VLIST(2)=2
	Calc	TITLE← Conduct Performance Counseling with a Subordinate
Compute	If	VLIST(1)=2 & VLIST(2)=3
	Calc	TITLE← BTMS

Remove commands assigning a title to your deleted task. Using the example presented above, you would remove the second command. Then, you must revise the Cluster B commands that follow, so that the VLIST(2) values correspond to the revised assignments made when you revised the Cluster Menu (see above). For example, in the third command, the Compute/If/VLIST(2)=3 would become Compute/If/VLIST(2)=2. Do not alter any commands relating to other clusters, only those pertaining to the cluster from which you are deleting a task.

Revise Current Print Routine Files

Deleting a task requires you to make revisions to the print routine files. These files are currently located at: DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D), and DE.2.1.3.S (Clusters E-K). Make the following changes.

• The SCORE macros. In the 3 print routine files, each cluster has a separate macro called SCORE (see description in Part XII of this manual). SCORE collects student performance data from memory, converts it to GO, NOGO, or No Attempt, and holds this information in the array SC for eventual printing of the Master Record.

You must make minor revisions to the SCORE macros that gather data on all clusters following the one from which you have deleted a task. This revision is to the variable **E**. **E** identifies the starting position in the array SC to begin loading student test data into. Because you have deleted a task, the position of SC used to hold data on that task will now be used to hold data on another task. This shifts the positions into which all task data following your deleted task are loaded. You need to **redefine the value of E in all SCORE macros following the one to which your deleted task belongs.** See Figure 2 in this section of the manual for the SCORE macro name assigned to each cluster and the file where it is located.

As an example, you have deleted Task 2 from Cluster B. **E** is designated as beginning at 18. Because there are currently 5 tasks in Cluster B, SC positions for this cluster are SC(18) - SC(22). Deleting a task will result in using only positions SC(18) - SC(21). The macro for Cluster C, however, starts loading data at SC(23). You would need to access that macro and revise **E** to 22. Similar changes would need to be made in the SCORE macros pertaining to Clusters D-K.

Revise Current Print Routine Files (con't)

• The Headers. The Master Record produced through Course 20 contains a header identifying the cluster and task. Student test results are printed beneath this header. You will need to go to the header command and remove the identifiers for the number of tasks you are deleting.

Using the same example as above, you decide to delete Task 2 from Cluster B. The header for this Cluster is "B1 B2 B3 B4 B5." You now have one less task in this cluster, so you would remove "B5" from the header command. (See the description of HEAD in Part XII of this manual.)

• Other Changes. The print routine commands string together the data held in the array SC and print it as one line of student data. An example of this is taken from the Diagnostic Tests.

Command	Mod	Data Field
Compute	Calc	LS(1)← ID(n) & NAME(n) & SC(0) & SC(1) & SC(2) ... & SC(17)
Compute	Calc	BWRIT (CHAN, LS(1), 0, $ERP, ECD)

For the cluster from which you have deleted a task, you need to remove the last SC position designated for printing. In all other SC commands following the one you have altered, you need to adjust the SC positions to agree with the revisions you made in the data entry files (see "Revise the Data Entry Pages" above). Commands to print positions of SC for each cluster should be identical to the positions specified in each cluster's SCORE macro.

Using the commands above as an example, you would remove the "& SC(17)" from the first command. Then you would find the commands stringing together positions of SC for Cluster B and make sure that the first position to be printed was "SC(17)". You would also remove the final position specified and make sure that this became the first position printed in Cluster C, and so on through all the clusters that follow.

Reminder

Make sure you process all files you have altered at the highest level possible.

Using Course 20 With A Course Other Than Course 19

Introduction

The 19K BNCOC CMI System, Course 20, was developed to manage The 19K BNCOC for Tank Commanders program, Course 19 on MicroTICCIT. The System could be modified to manage other BNCOC courses which use MicroTICCIT to present part of the instruction.

Because it is impossible to predict the exact nature of the new course to be managed by Course 20, these instructions provide only general guidelines. More specific instructions are found in the other sections of this part of the Manual; however, only a person who thoroughly understands how Course 20 works should attempt to modify the course beyond those specific instructions that are included in the preceeding sections of Part X.

When to Modify Course 20

The TICCIT System's built-in courseware management capabilities allow MicroTICCIT users to track student performance data through the Student Progress Report utility. The 19K BNCOC CMI System, Course 20, was developed for three major reasons. They are:

- A significant part of the 19K BNCOC instructional program is conducted "off-line", i.e., not on MicroTICCIT. This situation will continue indefinitely because much of the instructional program requires students to perform outside of the classroom using actual M-1 tanks and other equipment.
- The Army Research Institute (ARI) which initiated the MicroTICCIT project required that MicroTICCIT courseware be light pen driven. This requirement precludes use of the built-in TICCIT maps and use of the MicroTICCIT function keys.
- MicroTICCIT does not provide the means to create specialized report formats or to modify the reports produced by the Student Progress Report utility.

If a course were conducted primarily on-line and if course managers were willing to use reports produced by the Student Progress Report utility, then the time required to modify The 19K BNCOC CMI System's Course 20 would <u>not</u> be justified.

Who Should Modify Course 20

The documentation is included in this Manual has been prepared so that both Course 19 and Course 20 can be modified as changes occur in the 19K BNCOC program. Changes may also include additional MicroTICCIT courseware development.

The documentation can also be used to modify Course 20 so that the CMI System can be used to manage another course with a similar structure; that is, a program with Task Clusters divided into Tasks with those Tasks being the "testable events" within the program.

Ideally, Course 20 should be modified by persons who are experienced ADAPT programmers, not merely ADAPT courseware developers. These people must be very knowledgable of the TICCIT operating system as well as RDOS. In addition, the people who modify the System need to understand the testing policies of the Army with respect to the new course to be managed. The people who set out to modify the System need to be very familiar with the structure of the new course and MicroTICCIT courseware to be managed.

User Interfaces

Any new course to be managed by the CMI System should follow the general guidelines established by the Army Research Institute (ARI) for MicroTICCIT courseware development. That is, the courseware should be menu-driven using a light pen as the primary input device. The TICCIT "map" requires use of the MicroTICCIT keyboard and is inconsistent with the courseware developed for 19K BNCOC including The 19K BNCOC CMI System, Course 20.

Course Structure

Because the CMI System was designed to manage the 19K BNCOC course, it assumes that the course is divided into Task Clusters which correspond to TICCIT units and that each Task Cluster consists of tasks which are scored as GO or NOGO. These tasks correspond to TICCIT lessons.

TICCIT Tests

TICCIT only allows testing at the course, unit, or lesson levels: the CMI System assumes all tests will be placed at the lesson level. Therefore, the new course to be managed by the CMI System must place all "testable events" at the lesson level.

TICCIT allows a student to take a test as many as 7 times. BNCOC policy, however, allows a student to take a test only 3 times. The CMI System, as it is currently designed, matches BNCOC philosophy and assumes that a student will take a test no more than 3 times. Any course to be managed by the CMI System will have this feature unless extensive modification of the program is performed.

Creating a New Course

- The first step to be taken in the creation of any course is to create the course template using Makecourse. The course structure should match the proposed BNCOC course to be managed by the CMI System. This course will correspond to Course 19, the course which contains the MicroTICCIT instructional materials for 19K BNCOC.

- To modify Course 20 so that it can manage this new course, first identify the number of units (Task Clusters) in the new course; then identify the number of lessons (Tasks).

- The "Task" level material should be developed at the TICCIT "lesson level." It is important that developers follow the instructions provided elsewhere in this Manual for developing TICCIT tests.

Changing Course 20

No changes will be required for the Course 20 structure unless the new course has more than 11 Task Clusters; however, it would be advisable to make a copy of the complete course, renaming and renumbering it, before beginning to modify the course. Changing Course 20 so that it can manage another course will result in its being unable to manage 19K BNCOC.

The major change that will be required is modifying the menus in Unit 1 so that they match the titles of the new course. Instructions provided in this part of the Manual provide the information needed to make these changes.

Revise Unit 1

Unit 1 of Course 20 contains the 19K BNCOC course structure. The file labeled DE.1.S contains the BNCOC Course Menu listing all the task clusters. The Cluster Menus are in lesson files ranging from DE.1.1.S to DE.1.11.S, a file per cluster. Marking a task title on any cluster menu leads to one of three places: DE.1.1.1.S, DE.1.1.2.S, or DE.1.1.3.S., where identical off-line data entry pages are stored. Here the student test results are entered and the program writes the data to the appropriate memory location in the student's permanent data file (.PD) associated with Course 19.

You would need to revise each of the files in Unit 1 starting with the Course Menu which should list the Task Clusters in the new course. Cluster Menus in each lesson file should be revised so that Menus list the appropriate Tasks.

The off-line data entry pages would not need to be revised; however, the variables which store the names of Tasks and place them on these pages would need to be revised so that the correct names would be displayed.

Revise Unit 2

The print routines for the Master Record are located at the segment level in files DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D), and DE.2.1.3.S (Clusters E-K). Each print routine creates a separate file to be printed: results of the Diagnostic Tests are printed from a listing file called MRCCCSS.DS; results for Clusters B-D are printed from a file called MRCCCSS.L1; and results from Clusters E-K are printed from a file called MRcccss.L2. (Note: "CCC" is the 3-digit course number and SS is the 2-digit section number.)

The print routine for the list of NOGOs is located at DE.2.2.1.S (for Clusters B-D) and DE.2.2.2.S (for Clusters E-K). The total number of NOGOs is collected from information contained in each student's .PD file but does not include NOGOs for the Diagnostic Tests. The listing file for the list of NOGOs is named NOGOCCCSS.LS. The printed result has three columns of information: student name, student ID number, and total number of NOGOs.

Assuming that the new course includes Prerequisite Tasks and Diagnostic Tests and other Tasks grouped by Task Cluster associated with the course, place all Prerequisite Tasks in the first Task Cluster (unit).

Header files will also need to be revised to match the name of the new course.

Unit 3

Unit 3 should not require revision as these programs produce the Master Record using data collected according to instructions which are included in Units 1 and 2.

FIGURE 2:

VALUES ASSIGNED TO VLIST(0), VLIST(1), VLIST(2), AND SC ARRAY ELEMENTS IN COURSE 20

Off-line Data Entry Page: DE.1.1.1.S.
Print Report Location: DE.2.1.1.
Listing File: MRcccss.DS

Cluster #	Task	Co.	Unt	Lsn	Macro*	VLIST (0)	VLIST (1)	VLIST (2)	SC**
L: Diagnostic Testing/ Remedial Training	1: Six Digit Grid	BN	1	1	SCORE	676	1	1	0
	2: Operate Radio	BN	1	2	SCORE	676	1	2	1
	3: Communicate Using Visual Signals	BN	1	3	SCORE	676	1	3	2
	4: Recognize Friendly/Threat Armored Vehicle	BN	1	4	SCORE	676	1	4	3
	5: Establish Tank Firing Positions	BN	1	5	SCORE	676	1	5	4
	6: APRT	BN	1	6	SCORE	676	1	6	5
	7: ID AMMO	BN	1	7	SCORE	676	1	7	6
	8: Load Main Gun	BN	1	8	SCORE	676	1	8	7
	9: Loader's Misfire	BN	1	9	SCORE	676	1	9	8
	10: Breechblock	BN	1	10	SCORE	676	1	10	9
	11: Subsequent Fire Command	BN	1	11	SCORE	676	1	11	10
	12: Driver Station	BN	1	12	SCORE	676	1	12	11
	13: M-240	BN	1	13	SCORE	676	1	13	12
	14: M-2	BN	1	14	SCORE	676	1	14	13

* The macro listed in this column is located in the same file as the Print Report listed at the top of the page.
**SC array element.

Off-line Data Entry Page: DE.1.1.1.S.
Print Report Location: DE.2.1.1.
Listing File: MRocoss.DS

Cluster	Task	Co.	Unt	Lsn	Macro	VLIST (0)	VLIST (1)	VLIST (2)	SC
L (cont.)	15: Gunner's Misfire	BN	1	15	SCORE	676	1	15	14
	16: Prepare Gunner's Station	BN	1	16	SCORE	676	1	16	15
	17: Precision Fire	BN	1	17	SCORE	676	1	17	16
	18: Battlestation	BN	1	18	SCORE	676	1	18	17

Off-line Data Entry Page: DE.1.1.2.S.
Print Report Location: DE.2.1.2.S
Listing File: MASTER.L1

Cluster	Task	Co.	Unt	Lsn	Macro	VLIST (0)	VLIST (1)	VLIST (2)	SC
B: NCO Duties and Responsibilities	1: Duties/Responsibilities of an NCO	BN	2	1	SCOR2	678	2	1	18
	2: Conduct Performance Counseling with a Subordinate	BN	2	2	SCOR2	678	2	2	19
	3: BTMS	BN	2	3	SCOR2	678	2	3	20
	4: Physical Fitness Instruction	BN	2	4	SCOR2	678	2	4	21
	5: MILES	BN	2	5	SCOR2	678	2	5	22
C: Land Navigation	1: Marginal Info	BN	3	1	SCOR3	680	3	1	23
	2: Azimuth/Back Azimuth	BN	3	2	SCOR3	680	3	2	24
	3: Field Expedient Methods	BN	3	3	SCOR3	680	3	3	25
	4: Identify Terrain Features	BN	3	4	SCOR3	680	3	4	26

Off-line Data Entry Page: DE.1.1.2.S.
Print Report Location: DE.2.1.2.S.
Listing File: MRCCCSS.L1

Cluster	Task	Co.	Unt	Lsn	Macro	VLIST (0)	VLIST (1)	VLIST (2)	SC
C: Land Nav (cont.)	5: Orient Map	BN	3	5	SCOR3	680	3	5	27
	6: Determine Location	Bn	3	6	SCOR3	680	3	6	28
	7: Intersection & Resection	BN	3	7	SCOR3	680	3	7	29
	8: Terrain Analysis	BN	3	8	SCOR3	680	3	8	30
	9: Navigate from A to B	BN	3	9	SCOR3	680	3	9	31
D: NBC Defense	1: NBC-1 Reports	BN	4	1	SCOR4	682	4	1	32
	2: NBC-4 Reports	BN	4	2	SCOR4	682	4	2	33
	3: M-174 Series Radiacmeter	BN	4	3	SCOR4	682	4	3	34
	4: Read/Report Radiation Dosages	BN	4	4	SCOR4	682	4	4	35
	5: Prepare NBC Attack	BN	4	5	SCOR4	682	4	5	36
	6: MOPP	BN	4	6	SCOR4	682	4	6	37
	7: M256 Chemical Detector Kit	BN	4	7	SCOR4	682	4	7	38
	8: Initiate Unmasking Procedures	BN	4	8	SCOR4	682	4	8	39

Off-line Data Entry Page: DE.1.1.3.S.
Print Report Location: DE.2.1.3.S.
Listing File: MRCCCSS.L2

Cluster	Task	Co.	Unt	Lsn	Macro	VLIST (0)	VLIST (1)	VLIST (2)	SC
E: Military Communications	1: CEOI	BN	5	1	SCOR5	684	5	1	40
	2: Recognize ECM & Implement ECCM	BN	5	2	SCOR5	684	5	2	41
	3: Hot-Loop Wire Communications	BN	5	3	SCOR5	684	5	3	42
	4: Conduct Field Expedient Antenna	BN	5	4	SCOR5	684	5	4	43
F: Mine Warfare	1: Prepare/Submit Standard Shelling Mortaring and Bombing Report	BN	6	1	SCOR6	686	6	1	44
	2: Install/Remove a Hasty Protective Mine Field	BN	6	2	SCOR6	686	6	2	45
G: Tactics	1: Prepare/Issue Oral Operations Report	BN	7	1	SCOR7	688	7	1	46
	2: Direct Consolidation & Reorganization on the Objective	BN	7	2	SCOR7	688	7	2	47
H: Maintenance	1: Inspect DA Form 2408-4 for Accuracy	BN	8	1	SCOR8	690	8	1	48
	2: Supervise Maintenance on TO&E Equipment	BN	8	2	SCOR8	690	8	2	49
I: TC Station/ Tank Gunnery	1: Call for Fire	BN	9	1	SCOR9	692	9	1	50
	2: Select Firing Position	BN	9	2	SCOR9	692	9	2	51
	3: Estimate Range	BN	9	3	SCOR9	692	9	3	52
	4: Training Devices	BN	9	4	SCOR9	692	9	4	53

Off-line Data Entry Page: DE.1.1.3.S.
Print Report Location: DE.2.1.3.
Listing File: MASTER.L2

Cluster	Task	Co.	Unt	Lsn	Macro	VLIST (0)	VLIST (1)	VLIST (2)	SC
I (cont.)	5: M1 CWS	BN	9	5	SCOR9	692	9	5	54
	6: M1 Tank/Main Gun	BN	9	6	SCOR9	692	9	6	55
	7: M2 Machinegun	BN	9	7	SCOR9	692	9	7	56
	8: Direct Main Gun	BN	9	8	SCOR9	692	9	8	57
	9: Engage Targets from CWS	BN	9	9	SCOR9	692	9	9	58
J: Tactical Field Training Exercises	1: FTX	BN	10	1	SCR10	694	10	1	59
K: Situational Training Exercises	1: STX B-C	Bn	11	1	SCR11	696	11	1	60

PART XI. Creating a TICCIT Test: Guidelines For MicroTICCIT Developers

Table of Contents

List of Figures

Introduction

The instructions presented in this section of the Manual were written to insure that MicroTICCIT courseware developed by other MicroTICCIT projects will properly interface with the 19K BNCOC CMI system, **Course 20**, The 19K BNCOC CMI System. MicroTICCIT courseware will be placed in **Course 19**, 19K BNCOC for Tank Commanders. Two major considerations impact on the 19K BNCOC CMI system:

1. Placement of the courseware in the appropriate unit/lesson level of the 19K BNCOC course; and
2. Placement of an ADAPT test file and other related files required to access that test at the appropriate TICCIT course locations.

BNCOC Course Structure and MicroTICCIT Course Structure

BNCOC Instructional Organization

The 19K BNCOC Program of Instruction (POI) divides instruction into Task Clusters (e.g., Land Navigation, Military Communications, etc.). Each Task Cluster is sub-divided into tasks and sub-tasks. Testable events (tasks listed on the BNCOC Master Record) usually correspond to primary tasks; however, this is not consistent. In some cases tasks are combined into one "testable event." In other cases the testable event corresponds to a sub-task. The 19K BNCOC course structure is dynamic and changes from cycle to cycle. Changes will also result from current TTFA projects. For example, the Land Navigation Cluster included eleven testable events in previous cycles, but will be reduced to nine testable events as a result of the MicroTICCIT Land Navigation development.

MicroTICCIT 19K BNCOC Course Structure

A TICCIT course (created through the Makecourse utility) consists of units and lessons. Segments are not defined as part of the course structure. The CMI System is based on a decision to place all testable events at the TICCIT Lesson Level in order to most efficiently produce the BNCOC Master Record. Thus, the 19K BNCOC TICCIT course (Course 19) corresponds to the 19K BNCOC Program of Instruction as follows:

- TICCIT UNIT — BNCOC Task Cluster
- TICCIT LESSON — BNCOC Task (or testable event)
- TICCIT SEGMENT — BNCOC Sub-Task

19K BNCOC Course Structure on MicroTICCIT

Course 19, 19K BNCOC for Tank Commanders, contains menus for the 19K BNCOC course. The course begins with a light pen driven course menu listing all the Diagnostic Tests and Remedial Lessons and all of the 19K BNCOC task clusters. The course also includes light pen driven menus for each task cluster listing all of the tasks associated with that cluster. All MicroTICCIT developers are currently developing courseware for tasks (lesson level courseware in the TICCIT environment). MicroTICCIT courseware eventually will be "inserted" within the 19K course structure at the appropriate lesson level. This courseware may have its own menus as well as instructional material; however, developers will not need to develop menus at the course level or the unit level which are required by TICCIT to access material at the lesson level. The course template for 19K BNCOC will be created at the Ft. Knox site using Makecourse. The course will provide the structure required to insert all appropriate (Menu) courseware as well as instructional courseware developed by the CMI project (Diagnostic tests and remedial activities), Land Navigation lessons, and other lessons developed by other MicroTICCIT developers.

TICCIT Course Structure at Development Sites

Each courseware site must create a TICCIT course template using Makecourse in order to begin development. If more than one developer is working on a project, each person will probably create a duplicate TICCIT course on the system, even though these "courses" will be combined when the project has been completed.

For example, the Land Navigation Task Cluster (Unit 3) includes nine Tasks (Lessons). At the development site, a course might be created containing one Unit and nine Lessons (one lesson for each task). Duplicate copies of this course structure might be created for each person working on the project. APT Map Files could be created temporarily to move through the courseware in student mode for debugging purposes; however, these files would not be transferred to Ft. Knox and in fact would cause problems if they were installed at the receiving site. MicroTICCIT developers will need to create a separate stand-alone version of their courseware for demonstrations and contractual requirements; however, to archive the courseware for transfer to Ft. Knox and inclusion in the 19 BNCOC course, developers should DUMP only the courseware files at the Lesson Level and below.

Each courseware development site could be given a copy of **Course 19** so that they can understand exactly how the system works and perhaps use appropriate ICONS or ADAPT programming sequences in their development efforts.

The sample TICCIT Labels below indicate the levels at which MicroTICCIT developers will create Task-Related courseware for 19K BNCOC.

BN.S	(Course menu)
BN.1.S	(Task Cluster menu)
BN.1.1.S	(Menu listing choices related to Task 1 of Cluster 1)
BN.1.2.S	(Menu listing choices related to Task 2 of Cluster 1)
BN.1.2.1.S	(Segment one of instruction for Task 2)
BN.1.2.1.T	(Test file for Task 2)

Eventually, all pieces of the course will be combined into one TICCIT course. MicroTICCIT courseware developed by each MicroTICCIT project must then fit into the 19K BNCOC course structure provided by **Course 19**. The reasons for combining all parts of the 19K BNCOC course into "one TICCIT course" is so that we can store student performance data into one TICCIT Permanent Data Area (PDA) and produce one 19K BNCOC Master Record.

Although each site will create its own course (or courses) for development purposes, the TICCIT operator at Ft. Knox will need to insert the various pieces of 19K BNCOC courseware in place. Developers at each MicroTICCIT site and the Ft. Knox operators, therefore, need to see how the courseware they are producing fits into the 19K BNCOC course structure. Figure 1, MicroTICCIT Courseware projects, and Corresponding TICCIT Labels, below lists each project and its location in **Course 19**.

Figure 1: MicroTICCIT Courseware Projects and Corresponding TICCIT Labels

MicroTICCIT Project	Corresponding Instruction	TICCIT Labels	Test Files
19K BNCOC Course Structure			
Course Menu		BN.S	
Unit 1 Menu	(Prerequisite Tasks)	BN.1.S	
Unit 2 Menu	(NCO Duties & Responsibilities)	BN.2.S	
Unit 3 Menu	(Land Navigation)	BN.3.S	
Unit 4 Menu	(NBC Defense)	BN.4.S	
Unit 5 Menu	(Military Communications)	BN.5.S	
Unit 6 Menu	(Mine Warfare)	BN.6.S	
Unit 7 Menu	(Tactics)	BN.7.S	
Unit 8 Menu	(Maintenance)	BN.8.S	
Unit 9 Menu	(Tank Commander's Station)	BN.9.S	
Unit 10 Menu	(FTX)	BN.10.S	
Unit 11 Menu	(STX B-C)	BN.11.S	
Diagnostic Testing and Remedial Training			
Six Digit Grid		BN.1.1.1.S*	BN.1.1.1.T**
Operate a Radio Set		BN.1.2.1.S	BN.1.2.1.T
Communicate Using Visual Signals		BN.1.3.1.S	BN.1.3.1.T
Recognize/Identify Friendly/Threat Armoured Vehicles		BN.1.4.1.S	BN.1.4.1.T
Establish Tank Firing Position		BN.1.5.1.S	BN.1.5.1.T
Land Navigation			
Azimuth and Back Azimuth		BN.3.2.1.S	off-line
Field Expedient Methods		BN.3.3.1.S	BN.3.3.1.T
Identify Terrain Features		BN.3.4.1.S	off-line
Orient Map		BN.3.5.1.S	BN.3.5.1.T
Determine Location		BN.3.6.1.S	BN.3.6.1.T
Intersection and Resection		BN.3.7.1.S	BN.3.7.1.T
Terrain Analysis		BN.3.8.1.S	BN.3.8.1.T
Navigate From A to B		BN.3.9.1.S	***
Military Communications			
CEOI		BN.5.1.1.S	BN.5.1.1.T
Tank Commander's Station/Tank Gunnery			
Call for Fire		BN.9.1.1.S	BN.9.1.1.T
19K BNCOC on-line tests			
Conduct Performance Counseling		BN.2.2.S ****	BN.2.2.1.T
Select Firing Position		BN.9.2.S ****	BN.9.2.1.T
Estimate Range		BN.9.3.S ****	BN.9.3.1.T

* All possible segment level chapters are not listed on this chart.
** Every ADAPT Test File will have a corresponding APT Test Control (TC) file.
*** Test Result data must be entered using the CMI System's Off-Line Data Entry System.
**** Sub-menu and instructions only; No instructional material provided on-line

CMI and BNCOC Reporting Requirements

Performance Data Requirements

The 19K BNCOC Master Record which records performance data for soldiers on each BNCOC task (created by **Course 20**) requires two kinds of information:

- Test Result (GO/NOGO)
- Test Attempt (Maximum of 3)

Other Test Requirements

All 19K BNCOC Tests must be restricted; that is, the student will not be allowed to take the test without PROCTOR intervention. Developers must indicate that the test is restricted in the APT Test Control File (TC). When creating the APT TC file, developers are asked "How many times a student may take a given test without Proctor Intervention." To make a test completely restricted, the correct response is Ø (zero).

Students will be allowed to take the test a maximum of three times. Developers must include that information using ADAPT in the ADAPT Test File.

Developers must also include an ADAPT Test Explanation File at the lesson level (e.g., BN.1.1.E.) This requirement is related to the use of ADAPT Menus and light pen responses in place of TICCIT APT map files and keyboard commands. Although the APT TEST Control (TC) file offers the option to include test explanation pages, choose the ADAPT Test Explanation (E) file because ADAPT files allow you to use a light pen and an APT file does not.

Other Kinds of TICCIT Data and Reports

TICCIT stores other kinds of data when instruction and/or tests are conducted on-line; such as the test score, time spent on the test, etc. However, such data are not required for the BNCOC Master Record. If the logging tape is activated, TICCIT also stores item data which can be used to produce a TICCIT Item Analysis Report. These TICCIT data and system utilities are available to ARI personnel or MicroTICCIT developers for evaluation purposes, but are not part of the CMI System itself. Instructions for collecting item analysis data and producing Item Analysis Reports are included in **Part VI** of this Manual.

TICCIT Student Progress Reports

On-line TICCIT Student Progress Reports (viewed on the screen or as printed reports) are available to users. These reports will provide ARI, MicroTICCIT Developers, or 19K BNCOC personnel with a variety of data regarding student performance; however, they too are separate functions from the 19K BNCOC Master Record report.

Data Collection and the TICCIT Course

When a student completes a TICCIT instructional activity or a test on-line, TICCIT automatically inserts a variety of data into a TICCIT file called the PDA (Permanent Data Area). TICCIT creates a course template (PDA file) when the course is created using the Makecourse utility. TICCIT also creates a separate data file for each student registered for the course (.PD file). TICCIT stores both "Lesson" and "Test" data at the course, unit and lesson levels. To create a TICCIT test, the developer must use an ADAPT TEST FILE (T) in order for test data to be entered into the student's data file. For instruction, the developer uses an ADAPT STANDARD FILE (S). ADAPT Test results may be used at three levels:

COURSE (When all unit tests are passed, the system records that the student has passed the COURSE),
UNIT (When all lesson tests are passed, the system records that the student passed the UNIT),
LESSON (When all segment tests are passed, the system records that the student passed the LESSON).

MicroTICCIT developers would, therefore, place their LESSON level tests (19K BNCOC Testable events) at the SEGMENT Level, one for each Segment if desired. See Figure 2, ADAPT TEST FILES, below for examples.

To understand the location of TEST Files, developers must understand the way TICCIT courseware is structured and how "TICCIT thinks." Segment level activities relate to the Lesson topic; therefore, a Lesson test must be placed at the segment level even though TICCIT records the test result at the Lesson Level. TICCIT records no information related to segment level activities. Since the CMI System expects only LESSON TESTS, all 19K BNCOC Tests must be placed at the SEGMENT Level.

Figure 2: ADAPT TEST FILES

BN.1.T **BN**.2.T	Tests Course Level (When all Tests at this Level are completed TICCIT records that the student has passed the course).
BN.1.1.T **BN**.1.2.T	Tests Unit One (When all Tests at this Level are completed, TICCIT records that the student has passed the Unit).
BN.1.1.1.T **BN**.1.1.2.T	Tests Unit 1, Task 1 (When all Tests at this Level are completed, TICCIT records that the student has passed the Task).

TEST SUB-DIVISIONS: Tests at any level may also be divided into up to nine sub-sections. A student would, therefore, pass the test when all sub-sections are completed. Such a division might be desirable if the test contained different groups of items such as a group of multiple choice, matching, or true or false items.

TICCIT Maps and APT Files

All 19K BNCOC MicroTICCIT instruction is expected to be light pen driven; that is, students will enter responses and move through the courseware without using the keyboard. This requirement eliminates the use of TICCIT's APT map files. Underneath, however, at the operating system level, TICCIT continues to "think" in terms of map boxes and colors. When a test has been passed, therefore, it records the color GREEN; when failed, it records the color RED, etc. Thus, even without creating APT map files, instructors can see results of student performance in the on-line utility, Student Progress Reports, in the appropriate TICCIT colors.

The CMI system completely eliminates the use of APT map files, but not APT test control files which are required by the TICCIT operating system whenever you create an ADAPT test file. The Test Control file also allows you to create a restricted test. APT files, however, do not allow students to use a light pen to advance to the next screen; for that you must have an ADAPT file. For that reason, an ADAPT Test Explanation (E file) must be included in the development. See Figure 3, Steps in Test Construction, below for the required components of each 19K BNCOC test.

Figure 3: STEPS IN TEST CONSTRUCTION

Step 1:	Create menus using ADAPT standard (S) files to advance to the appropriate lesson level.	BN.1.1.S
Step 2:	Create an APT TC file at the Lesson Level. Indicate that no tests may be taken without Proctor intervention. Also indicate that the test explanation will be provided in an E file.	BN.1.1.TC
Step 3:	Create an ADAPT E file at the Lesson Level.	BN.1.1.E
Step 4:	Create an ADAPT T file at the Segment Level.	BN.1.1.1.T

BNCOC Master Record

The current BNCOC Master Record lists tasks in no special order (possibly according to the order in which they are taught in the BNCOC schedule). The BNCOC Master Record created by **Course 20** will list tasks according to the order in which they are listed in the 19K BNCOC Program of Instruction (POI). The CMI system will print a label for each task (as opposed to the name of the task) indicating the corresponding Task Cluster and Task Number. The test result code will indicate both the pass/fail status and the attempt number for that task. See Figure 4 below, "Test Result Codes on Master Record."

Figure 4: TEST RESULT CODES ON MASTER RECORD

NR	No result
G1	Passed (GO) on first attempt
G2	Passed on second attempt
G3	Passed on third attempt
N1	Failed (NOGO) on first attempt
N2	Failed on second attempt
N3	Failed on third attempt

Entering Off-Line Test Results

Although the off-line test results system will not directly affect MicroTICCIT developers, it is useful to present a brief overview of how this system will work. TICCIT's primary purpose is to deliver on-line courseware. The 19K BNCOC course, however, is largely conducted off-line. Even though additional portions of the 19K BNCOC course may be put on-line, the nature of the instruction clearly requires that instruction will continue to be conducted in the field rather than in a classroom setting. The 19K BNCOC CMI system includes a second TICCIT course designed to allow BNCOC instructors or ARI personnel to enter off-line test results into the Permanent Data Area (.PD files) of students registered for the 19K BNCOC TICCIT course. Instructors will access the appropriate task cluster and task from a light pen driven menu and will then enter the test results. The ADAPT function which permits this system to operate is the SRDBI function which permits direct address of a PDA associated with a specific course and student ID number. This "separate" TICCIT course, **Course 20**, allows instructors to obtain a printed 19K BNCOC Master Record and other BNCOC reports.

Off-line BNCOC Courseware

"Off-line" courseware for 19K BNCOC includes any instructional material that is not delivered via the MicroTICCIT system. Test results from such material must be entered using the off-line data entry system which is part of **Course 20**.

An example of off-line "computer-assisted instruction" developed for 19K BNCOC is the material created by Decisions and Designs, Incorporated (DDI) titled Advanced Terrain Representation (ATR). DDI courseware will be delivered on a modified MicroTICCIT terminal but will function independently of the Data General computer (the MicroTICCIT host) and the TICCIT operating system. ATR corresponds to Unit 3, Lesson 9 in the 19K BNCOC ADAPT course environment. The student progress data, however, will not be entered into the TICCIT environment (e.g., the Permanent Data Area). Results will not be reflected in the Student Progress Reports.

To interface this material with the 19K BNCOC CMI System, ARI personnel or BNCOC instructions must treat this instruction as though it were conducted off-line in the same manner as they would treat test results obtained in the field. In actual use instructors must be able to record test results obtained by students using the ATR material (GO or NOGO and Test Attempt). DDI may need to store test results on their floppy disks so that instructors can retrieve results when students have completed the materials. The TICCIT environment provides a means to restrict students from taking tests without instructor (proctor) intervention. BNCOC allows students to attempt a test a maximum of three times. TICCIT also records that kind of information.

Internal Consistencies and Communications Among MicroTICCIT Developers

In addition to interfacing with the 19K BNCOC CMI system, there is a need to establish and maintain a method of communications among MicroTICCIT developers. MicroTICCIT courseware for 19K BNCOC can be produced more efficiently and certainly more appropriately if MicroTICCIT courseware developed at various sites is consistent with respect to the course menus, icons, and student interfaces. Portions of ADAPT chapters created for **Course 19** could easily be transported among developers to achieve this goal. Meetings where information was shared would be particularly valuable in as much as MicroTICCIT developers are designing materials with similar features: Light pen driven courseware, Menus replacing TICCIT maps, use of videodisc materials, etc. At the present time documentation from Hazeltine related to these innovations either does not exist at all or is very spotty.

Icons and Student Interfaces

A consistent use of icons and student interfaces (e.g., menus) among all MicroTICCIT courseware developed for 19K BNCOC serves several purposes. First, development time and cost would be reduced. Second, the resulting courseware would be easier for both student and instructor users of the courseware.

An **icon** is a visual symbol which appears on the screen. It may be a rectangle which contains the word MENU which the student is expected to mark with the light pen in order to return to the previous menu. Clearly, this icon could have a variety of meanings; also other words could have been used other than "menu." In some cases the icon does not include a word; it may be an arrow pointing to the left to indicate the student can return to the previous screen by marking there.

See **Part XII** of this Manual, Courseware Documentation, for information about setting the color palette, creating course icon macros, and other symbols used in test development files.

Test Development Requirements

Introduction

This section presents instructions for creating a MicroTICCIT test which will interface with the 19K BNCOC CMI System (**Course 20**) and comply with the test requirements of ARI and BNCOC. Two major assumptions have been made:

- MicroTICCIT tests will be light pen driven. Students will not use the keyboard.

- MicroTICCIT tests will be lesson-level tests which will assess student mastery of BNCOC tasks which are recorded on the BNCOC Master Record.

Test Location within 19K BNCOC Course 19

The only BNCOC tests on-line will be lesson (task) tests. For example, the test on "Select Firing Position" relates solely to determining whether or not the student has mastered the objectives in the task "Select Firing Position." The student's status within the Cluster (Cluster I: Tank Commander's Station/Tank Gunnery) is determined by his status on the individual tests of tasks within the cluster, not by a test at the Cluster (Unit) level. If he passes all tasks within the Cluster, he passes the Cluster. BNCOC, however, does not currently require information related to a particular Cluster for their recordkeeping.

Files Needed to Create a Test

Three types of MicroTICCIT files are created to form a complete MicroTICCIT test. The system will string these files together when presenting the test to the student. These files are:

BN. * . * . TC (created through the APT editor)
BN. * . * . E (created through the ADAPT editor)
BN. * . * . * .T (actual test file, consisting of TINT, QUES, and TRES frames; also contains Test Environment Specifications; created through the ADAPT editor)

Replace the astericks (*) with the numbers specific to the unit/lesson/segment for which you are designing a test.

Creating the APT Test Control (TC) File

Creating the TC File The first file you should create is the APT Test Control (TC) file. The steps are as follows:

- From Supermenu, select "**1**" (Author Menu).
- From Author Menu, select "**2**" (APT Courseware Editor).
- **Type** the MicroTICCIT label that corresponds to the unit and lesson you are working with.

Note: This will always be at the lesson level (e.g., BN.9.2.TC).

Your completed display (using numbers specific to the course/unit/lesson you are working with) should look similar to this:

MicroTICCIT Label: **BN.9.2** . **TC** /_____
Location (C.U.L.S.) File Func/Pg/Cmd

Further Instructions (Optional): [1] (for Create/Add a File)

- Press **ENTER**. The following display should appear. Fill in the responses contained in the [ ]. (These responses are explained on the following two pages.)

Mastery Boxes:

Test Explanation will be supplied: [ ]

1. in this file
2. in ADAPT E file
3. by system

Show explanation before testing each box?: [ ]

No. of attempts before password needed: [ ]

You should complete the TC boxes as described in the following pages.

Mastery Boxes

The numbers you enter into "Mastery Boxes" will indicate to the system the test files to be included in the mastery test you are creating. MicroTICCIT tests can be one part or multi-parts (segmented). When authoring a multi-part lesson test, separate test files are created at the segment level. For example, let us say that instruction for the lesson "Select Firing Position" (BN.9.2) is presented across 3 segments (BN.9.2.1.S; BN.9.2.2.S; and BN.9.2.3.S). You wish to create a lesson test testing the concepts contained in these segments. You could create 3 separate test files (BN.9.2.1.T; BN.9.2.2.T; and BN.9.2.3.T). MicroTICCIT would string them together and present them to the student as one multi-part lesson test, depending on what you entered in "Mastery Boxes" in the TC file. However, this is **not** recommended for the reason described below.

Creating a segmented test has one major pitfall. You can not suppress the system's display that appears when the student completes each segment. This display cannot be light-pen driven; it requires the student to press a key on the keyboard to continue to the next segment. Therefore, **you should not create a segmented test**.

Instead, enter a value of "1" in the Mastery Box and **place your entire test in one T file**. This T file must have a designation of "1" for the segment (e.g., BN.9.2.1.T). When TICCIT collects the parts of the test, it will pressent the contents of the segment identified in "Mastery Boxes."

Test Explanation

Test Explanation will be supplied: [ ]. **Enter** a value of "**2**" (in an ADAPT E file) in this box.

The ADAPT E file is selected principally because the light pen can be used to exit from this Explanation file into the test itself. If an explanation is provided in the TC file (option 1) or by the system (option 3), the student can only advance through the pages and into the test by using the keyboard.

Show Explanation

Show explanation before testing each box?: [ ]. **Enter** an **N** for No.

In a segmented (multi-part) test, you have the option of presenting the test explanation (specified in the step above) only at the beginning of the test OR after the student completes one part and is ready to begin the next part. Since you will not be creating a segmented test, respond **N** to this question.

Number of Attempts

No. of attempts before password needed: [ ]. **Enter** a value of "**0**" (zero). This restricts the student from taking the test without permission.

Test Restriction

All MicroTICCIT tests should be restricted. In other words, the student should not be able to access the test without authorization from the proctor. A value of zero means that the student can never take the test without the proctor intervening to enter that day's password.

- Press **EXIT**, after you have entered values into all boxes in this TC file.

- **Process** the file, as follows:

When the APT Courseware Editor display reappears,

- **TAB** to the "Further Instructions" box.
- Type a value of "**10**" (process the file).
- Press **ENTER**.
- Press **GO**. This will result in the processing of the TC file.

Creating the ADAPT Test Explanation (E) File

Introduction

The purpose of the ADAPT Test Explanation (E) file is to provide a brief explanation about the test the student is about to take. The E files for on-line tests developed for BNCOC **Course 19** consist of one page that presents the title of the test enclosed in a gold box. The system will display this box before it intervenes to request proctor authorization. After authorization has been entered, the system will redisplay the E file. For this reason no lengthy explanation has been included in the E file, just a simple identifier.

Creating the E File

Steps for creating this file are as follows:

- Log on to Course Ø.
- From Supermenu, select "1" (Author Menu).
- From Author Menu, select "1" (ADAPT Courseware Editor).
- **Type** the MicroTICCIT **label**.

Note: This will always be at the lesson level (e.g., BN.9.2.E).

Your completed display (using numbers specific to the course/ unit/lesson you are working with) should look similar to this:

MicroTICCIT Label: **BN.9.2** . **E** / _____
(C.U.L.S.) Location File Func/Pg/Cmd

Further Instructions (Optional): [1] (for Create/Add a File)

Creating an E File (con't)

• Press **ENTER**. The following display will appear:

ADAPT Environment

Level for Editing File: [ ]

Instructional Template: [ ]

1. None - design supplied by author
2. REP
3. Future option
4. Organizational

• Type "3" in the first box (level for editing file). This is the only legal entry. **TAB** to the second box.

• Type "1" in the second box (instructional template). You wish to supply your own design.

• Press **GO** to edit the frame. The "Name That Frame" display should appear.

• Type the name you would like this frame to have. As a suggestion: EFILE.

• Press **GO** to edit the frame. A blank base page will appear.

• Type the title of the test onto the base page. Make sure you put a GO ON arrow box in the lower right corner so that the student can proceed to the next page.

• Press **GO** and type the display construction commands for this page (RBOX, INPUT, etc.).

• To proceed to the response analysis command page, press **OBJ'CTIVE**. The following prompt appears at the bottom of the screen:

"Branch to: C.U.L.S.: EFILE/1/D."

Move the cursor to the right (using the arrow keys) until it covers the "D." Type "R" over the "D" and press **ENTER**. You will then be on the response analysis page and can enter the commands you need to interpret the student's responses and branch him correctly. This will include the system symbol START (see below).

Creating an E File (con't)

- Press **EXIT**. The ADAPT Courseware Editor display should appear.

- **TAB** to the "Further Instructions" box and **type** a value of **"10"** (process the file).

- Press **ENTER**.

- Press **GO**. This will process the E file.

Using "START"

To branch the student from the E file into the test, you must use the system symbol called **"START."** When you are entering the response analysis commands for your E file, do the following:

- Press **ATT'N**.
- **Type** "2" for the "External Symbol File."
- Press **ENTER**.
- In the first box of the display that appears, **type "TEST."**
- **TAB** to the second box and **type "CH"** for chapter.
- Press **ENTER**. You will be returned to the place in the E file where you were initially.
- Response analysis commands on the E file page should include a command to branch the student out of the E file when he touches his light pen to the GO ON arrow box. This command is:
  Go To START.

Creating the ADAPT Test (T) File

Introduction

The test itself is generally composed of three separate frames: TINT (Test Introduction), QUES (Questions), and TRES (Test Results). Note that, although the REP (Rule-Example-Practice) model is available for creating tests, none of the tests currently on-line were authored using REP (identified with a "theta", as in ΘTINT). All frames were creating using a design defined by the author in order to eliminate unwanted actions taken by the computer as part of the REP model (i.e., the intervention of the MicroTICCIT ADVISOR).

Note: The test file is created at the segment level (e.g., BN.9.2.1.T), although it evaluates mastery for the lesson (or task).

Creating the TINT Frame

- Log on to Course Ø.
- From Supermenu, select "1" (Author Menu). Press **GO**.
- From Author Menu, select "1" (ADAPT Courseware Editor). Press **GO**.
- **Type** the MicroTICCIT **label**.

Note: This will always be at the segment level (e.g., BN.9.2.1.T).

Your completed display (using numbers and letters specific to the course/unit/lesson you are working with) should look similar to this:

MicroTICCIT Label: **BN.9.2.1** (Location, C.U.L.S.) . **T** (File) / _____ (Func/Pg/Cmd)

Further Instructions (Optional): [1] (for Create/Add a File)

- Press **ENTER**. The ADAPT Environment display should appear.
- **Type** "3" in Box 1 of the ADAPT Environment display. **TAB** to Box 2.
- **Type** "1" in Box 2.
- Press **GO**. The "Name That Frame" display should appear.

Creating the TINT Frame (con't)

The first frame in the test file should be the Test Introduction or TINT frame. The TINT frame in the tests already on-line generally consists of 5-7 pages presenting: the number of questions on the test, how many must be answered correctly in order to pass, the time limit for the test, and how the student is expected to mark his answer. You will create this file now.

- **Type "TINT"** in the box on the "Name That Frame" display. (Do NOT use @TINT).

- Press **GO** to edit the frame. A blank base page appears.

Begin by entering the information you want the first page of the TINT frame to contain. To add pages, press **ATT'N** and type "13" (to add a page AFTER the current one) or "12" (to add a page BEFORE the current one).

From anywhere within the TINT frame, you will also access the Test Environment Specifications display and tell the system how you want test items to be scored and sequenced. The steps are outlined below.

Setting the Test Environment Specifications

- Press **ATT'N**.
- **Type** a value of **"18"** (edit item scoring and sequence) and press **ENTER**. The Test Environment Specifications display will appear.
- **TAB** through the boxes, entering the values shown below (if an asterick [*] appears in a box, refer to the discussion below to determine the proper value to fill in).

```
[ 1 ]  Mastery      (1=author coded)
         [ ] value
         [ ] must answer
[ 1 ]  Interrupt    (1=author coded)
         [ ] value
         [ ] must answer
[ * ]  Point Assignment
[ * ]  Item Sequencing
  by author? [ N ]

 Backing up ok? [ N ]    Enable test review? [ N ]
Reanswering ok? [ N ]    Color this box? [ Y ]
 Show feedback? [ N ]    Color others? [ N ]
```

Test Environment Specifications (con't)

Point assignment options are: author-coded, point per item, and point per part. A value of "2" has been entered for tests currently on-line (meaning each item is scored as one point and has no parts). If your test items are each separate questions (and no parts exist within a question), enter "2." If your questions have many parts with each part to be scored separately, enter "3" in this box. If you wish to score the items yourself, enter a value of "1." Refer to the ADAPT Reference Manual for more information.

Item sequencing options are: 1-source file; 2-shifted; 3-shuffled; and 4-random. Two of the tests currently on-line have a value of "3" (shuffled) in this box. One test has a value of "1" (source file).

If the items can be presented in any order, select "3". If the items should be seen in a specific order, select "1" (source file). Be sure that when you create the QUES frame and enter the question text, you order the questions as you want them to appear to the student.

Do NOT select option "4" (random order).

- Press **EXIT** when you have entered values in the Test Environment Specifications display as shown above. You will return to the TINT frame.

Note: The Test Specs govern administration of the entire test, not just the TINT frame. You can change these specifications from anywhere in the test file itself (e.g., BN.9.2.1.T). To access the specs for editing:

- Press **ATT'N**.
- Type "18" and press **ENTER**. The Test Environment Specifications display will appear and you can make changes as needed. Remember to process at least part of the test file in order to process the changes you have made in the specs.

- Press **EXIT** to leave the TINT frame. The ADAPT Courseware Editor display should appear.
- **TAB** to the "Func/Pg/Cmd" box and erase the text that appears there.
- **TAB** to the "Further Instructions" box and type "10" (process the file).
- Press **ENTER**.
- Press **GO** to process the TINT frame and create the test file (e.g.,BN.9.2.1.T).

Hints for Creating the TINT frame

- Label the base pages in the TINT frame sequentially, with labels such as INT1, INT2, INT3, and so on. Labeling the pages this way makes branching commands more understandable. Remember that if you add a page in the middle of the frame you will need to renumber the base page labels.

- Use the right and left lower corners of the screen for the GO ON and GO BACK arrow boxes. The student is expected to mark in these boxes to advance or reverse through the TINT pages.

- Make sure the entire screen is an **RBOX** (response box). Provide feedback to the student (via **IFFDBK** and **TOFDBK** mods) when he marks an area other than the NEXT or BACK box.

Creating the QUES Frame

- From the ADAPT Courseware Editor display, reenter the test file by typing in its MicroTICCIT label (e.g., BN.9.2.1.T).

From the TINT frame, you will now add the QUES frame.

- Press **ATT'N**.

- **Type** "3" (add frame at end of chapter).

- Press **ENTER**. The "Name That Frame" display will appear.

- **Type "QUES."** (Do NOT use ΘQUES.)

- Press **GO** to edit the frame. A blank base page will appear.

Enter the components neded to build the display and score actual test questions (see Hints below).

Note: The Test Environment Specifications you defined in the TINT frame govern the QUES frame as well. There is no need to define specs in the QUES frame if you have already done so in the TINT frame.

Creating the QUES Frame (con't)

After entering the base pages and the commands you want the QUES frame to have, process the file.

- Press **EXIT** to leave the QUES frame. The ADAPT Courseware Editor display will appear.

- **TAB** to the third box (Func/Pg/Cmd) and erase the text that follows ":QUES". (In other words, the box should only contain":QUES".)

- **TAB** to the fourth box (Further Instructions) and type "10" (process the file).

- Press **ENTER**.

- Press **GO** to process the QUES frame.

Hints for Creating the QUES frame

- Because the test you are creating is NOT a REP test, you are responsible for tracking many variables such as the item number. Consult the ADAPT Reference Manual to see what system variables are still available for use in non-REP tests.

- Three different versions of each test should be available. If the student fails the first test attempt and retakes the test, he should not see an identical test. Tests currently on-line have QUES frames with three (3) identical base pages using different display construction commands. Although the test items are the same from test version to test version, the way in which the option text is displayed on the screen will vary. For example, Option A of a test question in Version 1 might appear as Option D in Version 2 and as Option C in Version 3. In this way, the test looks different to the student each time he takes it. He is branched to a different QUES base page depending on the number of his test attempt.

Creating the TRES Frame

The TRES (Test Results) frame is where the student receives his results (how many questions he answered correctly and whether he passed or failed the test). It should follow the QUES frame and be the last frame in the test file.

- From the ADAPT Courseware Editor display, reenter the QUES frame of the test file (e.g., BN.9.2.1.T:QUES).

From inside the QUES frame you will now add the TRES frame.

- Press **ATT'N**.
- **Type** "3" (add frame at end of chapter).
- Press **ENTER**. The "Name That Frame" display will appear.
- **Type TRES**. (Do NOT use ΘTRES.)
- Press **GO** to edit the frame. A blank base page will appear.

Enter the text you want this page to contain and the commands for display construction and response analysis.

Note: Add pages to the TRES frame by pressing **ATT'N** and typing "13" (to add a page AFTER the current one) or "12" (to add a page BEFORE the current one). At present, all on-line tests contain only one page in the TRES frame.

Note: The Test Environment Specifications you defined in the TINT frame govern the TRES frame as well. There is no need to redefine specs in the TRES frame if you have already done this in the TINT frame.

Once you have entered the base pages and commands you want the TRES frame to contain, you will process the file.

- Press **EXIT** to leave the TRES frame. The ADAPT Courseware Editor display will appear.
- **TAB** to the third box (Func/Pg/Cmd) and erase the text that follows ":TRES". (In other words, the box should only contain ": TRES".)

Creating the TRES Frame (con't)

- **TAB** to the fourth box (Further Instructions) and **type** a value of "**10**" (process the file).
- Press **ENTER**.
- Press **GO**. This will result in the processing of the TRES frame.

Hints for Creating the TRES Frame

- The system wants to supply its own results pages, but these are not only too general, they also require the use of the keyboard. It is better to design your own display. To shut down the system's intervention, use the system symbol "NORESULTS." From the display construction command page in the TRES frame, call in **NORESULTS** as follows:

- Press **ATT'N**.
- **Type** "**2**" (External Symbol File).
- Press **ENTER**.
- In the first box of the display that appears, **type** "**TEST**".
- **TAB** to the second box and **type** "**CH**" for chapter.
- Press **ENTER**. Nothing will appear to have happened. You will be returned to the display construction page you were initially on.
- **Type** the command:

Compute Calc NORESULTS←True.

This prevents the system from displaying the first of its own Results pages. To branch the student around the system's second Results page, include an EXIT box in the lower right hand corner of the Results page you designed. The student marks this box to leave the test file and return to the menu. For response analysis commands of a student mark in this EXIT box use:

GO CHAPT 9,2

(Substitute your specific unit/lesson numbers).

- It is also advisable to enter the next two commands, both of which use system symbols called in through the External Symbol File "TEST" (as is NORESULTS, described above). Since you have already called the symbols stored in TEST into use in the step above, you do not have to do this again (unless you have exited the TRES frame and are returning to enter more commands).

TRES Frame Hints (con't)

Type the following commands:

Compute Calc NOREVIEW←True

Compute Calc TESTDONE ← True

The first command prevents the student from reviewing the test.

The second tells the system that the test is over. This command is very important. Because you have created an author-defined test and have used Test Environment Specs that do not identify for the system when mastery/interrupt will occur, YOU must define when the test is done and tell the system.

Final Notes On Creating A MicroTICCIT Test

• Every time you enter any part of the test and make changes, you MUST reprocess that particular file (or the entire test, if need be) for the changes to appear in object (or student) mode.

• It is useful to take the test in Student Mode. This is an option on the ADAPT Courseware Editor (option 5). However, some aspects to the test file will not be evident in this mode and bugs can be overlooked.

Register a dummy student in the course and take the test as that student. This is different from selecting Option 5 from the ADAPT Courseware Editor. When you take the test as a student registered in the course (as opposed to an author using student mode), you will find the bugs an actual student would encounter.

PART XII: Courseware Documentation

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Part XII: Courseware Documentation

Introduction

This section of the Operator's Manual includes documentation for **Course 19**, 19K BNCOC for Tank Commanders, and for **Course 20**, The 19K BNCOC CMI System, dealing with the special color palette settings and symbols defined in the ADAPT symbol table. This information will assist TICCIT operators and ADAPT programmers in making revisions to existing courseware or adding additional instructional segments on MicroTICCIT.

Part XII: Courseware Documentation

Color Palette

About the Color Palette

The Color Palette is a MicroTICCIT feature that allows you to choose your own foreground and background colors for use on an ADAPT page. The CMI developers at InterAmerica and HumRRO have altered the default color palette values assigned by TICCIT in favor of more muted colors against a gray background. In the event that ARI should develop new courseware to add to the present 19K BNCOC CMI (**Course 19** and **Course 20**) system, it is suggested that these altered color palette values be used in order to maintain consistency across materials.

Accessing the Color Palette

- Access the color palette through the **ATT'N** key.
- Select Option 19. Eleven pages will be presented to you; each page represents the values assigned to produce the particular color appearing in the square box labelled "Current Color."
- Advance through these eleven pages and alter the values described below in order to change the default colors to the shades used by the developers. Follow the steps presented below.

Adjust the First Color

Redefining the first color (red) to the specifications set by the developers involves one more step than altering the other colors so it is discussed separately. This step specifies a gray background to be placed on the screen. Specify this background only once (on the first display, "Define Color 1"). MicroTICCIT automatically transposes this background information to all other color definitions.

- Log on Course Ø and select the Author Menu.
- Select the ADAPT editor.
- Type the TICCIT label of the courseware chapter you want to edit or create.
- Enter the chapter in change mode (option 1).

- From the base page you are editing or creating, press **ATT'N** and type "19." Press **ENTER**. The "Define Color 1" display should appear and the "Current Color" box will show red.

Adjust the First Color

- The cursor will be located at the bottom right of the screen in the space following "option." Type "6" for "screen" and press **ENTER**. You have told the system you want to define option #6 - the screen - and the cursor will move to the "screen" box.

- Type "4" and press **ENTER**. This will tell the system to place a dark gray background on the base page you're creating.

- The cursor should return to the "option" box automatically. If it does not, press the **SKIP** key (at the top of the right keypad). This will move the cursor back to the "option" box, so that you can select the next option to be altered.

- Type "3" and press **ENTER**. The cursor will move to the "Hue" box of option #3 (redefining hue, intensity and saturation).

- The "Hue" definition will not be altered (it is predefined as 0 and will remain so). Press the **TAB** key to move the cursor to the "Intensity" box directly below. Change the "100%" default value to "87%." Press **ENTER**. Notice that values appearing in other boxes on the screen will automatically change. The color of red appearing in the "Current Color" box will also change.

- You are now ready to alter the remaining color values.

Adjust the Remaining Colors

- Press **GO**. The "Define Color 2" (green) display will be presented to you for editing.

For this and all remaining colors, you will change values only in the Hue, Intensity, and Saturation boxes (option #3). In each case, the steps are the same. Rather than outline a series of repetitive actions, the altered values for each color's hue, intensity, and saturation boxes are presented below, as well as general guidelines for how to move through the Color Palette displays until all colors have been altered in accordance with current CMI materials.

Adjust the Remaining Colors (con't)

- **TAB** between the Hue, Intensity and Saturation boxes, changing the default values to the redefined values (presented below for each of the ten remaining colors). When you have changed these values for one color, move to the next color by pressing **GO**. The cursor should appear automatically in the "Hue" box of this next color. If it does not, press SKIP to move the cursor to the "option" box. Type "3" and press **ENTER** to move the cursor to the "Hue" box.

- Note: The values held in other boxes on the screen will automatically change as you redefine the Hue, Intensity, and Saturation boxes.

- Define Color 2: Green

  Hue: [24]
  Intensity: [87]
  Saturation: [62]

- Define Color 3: Yellow

  Hue: [15]
  Intensity: [80]
  Saturation: [67]

- Define Color 4: Blue

  Hue: [60]
  Intensity: [87]
  Saturation: [62]

- Define Color 5: Black

No changes necessary. Press **GO** to move to the next color.

- Define Color 6: Cyan

  Hue: [45]
  Intensity: [87]
  Saturation: [100]

- Define Color 7: White

  Hue: [45]
  Intensity: [73]
  Saturation: [0]

Adjust the Remaining Colors (con't)

- Define Color 8: Background of Gray

  Hue: [45]
  Intensity: [53]
  Saturation: [0]

- Define Color 9: Background of Black

No changes necessary. Press **GO** to move to the next color.

- Define Color 10: Background of White

  Hue: [35]
  Intensity: [80]
  Saturation: [0]

- Define Color 11: Background of Dark Gray

  Hue: [0]
  Intensity: [27]
  Saturation: [0]

Exit and Save Color Palette Changes

• When you have finished with the "Define Color 11" display, press **EXIT** and return to the base page.

The base page should now have a dark gray background. Type on this page should show muted colors instead of the brighter default TICCIT colors.

• Colors and background for each new base page will need to be redefined in the manner described above. Instead of accessing the Color Palette and changing the values for each new base page you create, do the following to save time and effort.

Redefine the Color Palette for first page of the new courseware you are developing. Make a text temporary of the blank, newly defined page. This is done by pressing the **PRACTICE** key, typing in a name (i.e., your initials, followed immediately by "basepg"), and pressing **ENTER**. In this way, you have stored the standard base page in a text temporary.

Redisplay this base page on each new base page you create. Press **RULE**. Type in the name of the text temporary you created. Press **HARD**. The redefined base page will now be displayed on your new page. This saves you the trouble of accessing the Color Palette and redefining the color values every time you create a new page.

Introduction to Test Symbols

The purpose of this documentation is to provide an explanation of the symbols used in the following three on-line tests:

- Conduct Performance Counseling with a Subordinate (Cluster B, Task 2)
- Select Firing Position (Cluster I, Task 2)
- Estimate Range (Cluster I, Task 3).

In the event that the Army should decide to place more BNCOC paper and pencil tests on MicroTICCIT, this explanation can provide a more thorough framework for authoring the tests in ADAPT than the printouts of test files themselves.

A brief description of the test files' organization is provided below as an orientation to their structure.

1. Explanation File (E File). When the student indicates he wishes to take the test, the E file is presented to him. This file is nothing more than the title of the test.

2. The system breaks in, requesting a proctor password as permission for the student to take the test. Once the proctor has entered the password, the student proceeds into the test.

3. The E file is presented again. When the student exits this page, he goes directly into the Test File itself (designated by the file type "T").

4. Test Introduction (TINT) frame. The pages of the TINT frame explain the criteria for passing the test, how the student should mark his answers, and any time limits involved in taking the test. The student can review these pages again before receiving the test questions themselves, but once he has left the TINT frame, he cannot return there.

5. Question (QUES) frame. The test questions are presented in the QUES frame. The student advances to the next question by answering the one presented to him. He can neither skip questions or review questions already answered. The QUES frame is the only part of the test that is timed. If the student runs over the time limit, he is not stopped, but sees all the questions.

6. Test Results (TRES) frame. Once the student has answered all questions, he goes into the TRES frame, where his results are presented to him and a feedback message as to his GO/NOGO status. He exits the test from the TRES frame.

The following pages contain thorough descriptions of the symbols used to drive the tests. Use these explanations as a guideline to further test development.

Symbols in Course 19

Introduction The following symbols are used in **Course 19**, 19K BNCOC for Tank Commanders, and in the menu chapters for **Course 20**, The 19K BNCOC CMI System.

Symbol	Description of Use

ABOX ABOX refers to the area defined by the cyan colored box marked "A" which appears on the page where the test questions are displayed (frame: QUES; base page labels: TPRB1, TPRB2, and TPRB3).

The student choosing A as the answer to a test question would touch his light pen in the cyan colored "A" box. The computer accepts a mark in this area (and one row beneath it, in case the student's mark is slightly inaccurate) as a mark in the area ABOX, and treats it as an "A" response.

In response analysis, this input is converted into a number by use of a system function called WHICHMATCH and is matched against the correct answer to determine if the student answered correctly. Below is an example of how ABOX is used in Response Analysis.

Command	Mod	Data Field
Compare	Areas	Input= ABOX ! BBOX ! CBOX ! DBOX
Compute	Calc	W ← WHICHMATCH

The exclamation point (!) is interpreted by the system to mean "or." These commands can be read as follows: "If the student marks in the area of ABOX, assign this input a value of 1, to be held in the variable W. If he marks in BBOX (see definition of BBOX) this input is assigned a value of 2; a CBOX mark receives a value of 3; a DBOX mark receives a value of 4." If the student did not mark in any of those areas, his input is assigned a value of "0." The assigned value, stored in W, is then compared against the correct answer stored in the string variable called ANSR1, ANSR2, or ANSR3, depending on the test attempt number. If the two numbers match (W=ANSR1, 2, or 3), the student's response is scored as a correct answer.

Parallel Symbols: BBOX, CBOX, DBOX. (All these variables are areas and function in the same way.)

Symbol	Description of Use
AC	AC is a variable integer and stands for "Answers Correct." Its value is incremented by one every time the student answers an item correctly. This symbol is defined by the system and made available to authors for tracking the student score. It is called into use through the External Symbol File called "Advisor." If you have specified "point per item" or "point per part" in the test specs, the system automatically increments AC whenever response analysis determines that the student's input was a correct answer (Commands: If W=ANSR1, Result +). A specific command to increment AC is not necessary unless you specified "author defined" scoring. In this case, you would need a command such as AC ← AC + 1, everytime the student answers correctly. **Related Symbols:** AT
ANSCO	ANSCO stands for "Answers Correct" and is defined as a variable integer. It is used in the response analysis of each test's QUES frame, as well as in the display construction of the TRES (Test Results) frame. Use of ANSCO is necessary when the student has run over the time limit allotted for answering the questions. Although he is allowed to continue answering questions after time has elapsed, the number of correct answers he has given must be fixed at the point where he ran out of time. When the computer determines that time has elapsed, it loads the value of AC (also Answers Correct) into ANSCO. The system continues to increment AC (a system variable) each time the student answers correctly, but ANSCO remains fixed at the value AC had when time ran out. QUES frame response analysis commands are as follows: Command / Mod / Data Field Compute / If / (TIME ≥ 42) & (AC ≤ N) Calc / TESTF True; ANSCO AC; OVRTM ← 1 Note: OVRTM is set to 1 and used to prevent the system from returning to these commands a second time and resetting the value of ANSCO.

Symbol	Description of Use
ANSCO (con't)	Use ANSCO in display construction of the TRES frame to make sure that the right results message is displayed to the student. One command reads: "If the student was over the time limit AND the value of ANSCO was less than the criteria for passing AND the flag TESTF has been set to true, then show him the message stored in FAIL." A second command reads: "If the student was over the time limit AND the value of ANSCO was equal to or greater than the criteria for passing AND the flag F has been set to false, show him the message stored in TIMEP." **Related Symbols:** AC
ANSR1 **ANSR2** **ANSR3**	These three symbols are defined as frame level item strings (frame: QUES, where the test questions are presented). They store the correct answer to each question so that the computer can check to see if the student responded correctly. ANSR1 holds the correct answers to the items presented in TEST ATTEMPT ONE. Respectively, ANSR2 holds the correct answers to items presented in TEST ATTEMPT TWO, and ANSR3 to TEST ATTEMPT THREE. Each string holds the answers corresponding to the questions on each test attempt. The possible values stored in ANSR are: 1, 2, 3, or 4, representing respectively A, B, C, or D. The reason the values are numeric (and not a letter) is because the student's input (an area he touches with his light pen) is converted via WHICHMATCH to a number. This number is matched against the value held in ANSR and the correctness of the response is determined.

Command	Mod	Data Field
Compare	Areas	Input = ABOX ! BBOX! CBOX ! DBOX
Compute	Calc	W←WHICHMATCH
Go	If	W = ANSR1
	Result	+
	To	JJJ_C

If W equals the value held in ANSR1 for that particular test question, the result is positive (+) and the system scores the student response as a correct answer and increments AC (Answers Correct) by one. The next item is presented, and the process of student response and matching begins again.
Related Symbols: WHAT, RESP1, RESP2, RESP3, RESP4
See also: ABOX, W.

Symbol	Description of Use

AT

AT stands for "Questions Attempted" and is used to keep track of the number of items the student has answered. It is a system defined symbol called into use through the External Symbol File "Advisor." The system automatically increments AT's value by 1 every time the student responds to an item. Therefore, no specific command to increment AT is needed.

Commands using AT appear in the TRES (Test Results) frame display construction. Here the system is instructed to display the value of AT on the screen for the student to see how many items he attempted. These commands are:

Command	Mod	Data Field
Show	Window	7 33, 7 33
	Data	AT

Related Symbols: AC

AWIN

AWIN stands for "A Window" and refers to the rectangular area between the first and second white lines drawn on the QUES frame pages labeled TPRB1, TPRB2, and TPRB3.

The text of Option A in the test problems is displayed in AWIN. (Similarly, text for Option B is displayed in BWIN, text for Option C in CWIN, and text for Option D in DWIN.)

Display construction commands are as follows:

Command	Mod	Data Field
Show	Window	AWIN
Data	RESP1	

These commands are interpreted as: "Place in the area assigned to window AWIN the text held in RESP1."

Note: RESP1 stores the text associated with Option A of the particular question being presented.

Parallel Symbols: BWIN, CWIN, and DWIN. All function identically as windows where option text is displayed. Their only difference is the area they are defined on the screen.

Symbol	Description of Use

BBOX

BBOX refers to the area defined by the cyan colored box marked "B" (plus one row beneath it) on the page (TPRB) used to display the test problems.

The student choosing "B" as the correct answer to a test question would touch his light pen in the cyan colored "B" box. The computer accepts a mark in this area (and one row beneath it, in case the student's mark is slightly inaccurate) as a mark in the area BBOX and treats it as a"B" response.

For an explanation of the response analysis given this student mark, please refer to the description presented under the symbol "ABOX."

Parallel Symbols: ABOX, CBOX, and DBOX. All function identically as an area where the student might mark a response to a test question.

BKARW

BKARW stands for "Back Arrow" and is a macro commanding the display and coloring of a box showing a backwards arrow (pointing to the left). The macro commands place the BKBX symbol (described below) in the lower left corner of the screen (16 1,16 3) and color the background of this area white. The student marks in this area to return to the previous page.

Commands relating to the macro BKARW are used only in the TINT (Test Introduction) frame of each test. These commands are:

Command	Mod	Data Field
Include	Macro	BKARW
	Params	BKBX

Parallel Symbols: GOARW

Related Symbols: BKBX, GOBX

Symbol	Description of Use
BKBX	BKBX stands for "Back Box" and corresponds to a text page storing the symbol of a backwards arrow. This symbol is used in conjunction with the macro BKARW which displays the BKBX on the screen and colors it in a background of white. The student marks the BKBX symbol with his light pen when he wants to reverse to the previous page. This backing up is only permitted in the TINT (Test Introduction) frame. **Parallel Symbols:** GOBX **Related Symbols:** BKARW, GOARW
BWIN	BWIN stands for "B Window" and refers to the area between the second and third white lines drawn on the QUES pages labeled TPRB1, TPRB2, and TPRB3. The text of Option B in the test problems is displayed in the area (window) BWIN. For an explanation of how the system uses BWIN, see the description under AWIN. Both AWIN and BWIN (as well as CWIN and DWIN) function identically. Their only difference is that they define different areas. **Parallel Symbols:** AWIN, CWIN, and DWIN
CBOX	CBOX refers to an area defined by the cyan colored box marked "C" (plus one row beneath it) on the page where the test questions are displayed (frame: QUES; base page labels: TPRB1, TPRB2, and TPRB3). The student choosing "C" as the correct answer to a test question would touch his light pen in the cyan colored "C" box. The computer accepts a mark in this area (and one row beneath it, in case the student's mark is slightly inaccurate) as a mark in the area CBOX and treats it as a "C" response. For an explanation of the response analysis given this student mark, refer to the description presented under the symbol ABOX. **Parallel Symbols:** ABOX, BBOX, and DBOX. All function identically as an area where the student might mark a response to a test question.

Symbol	Description of Use
CWIN	CWIN stands for "C Window" and refers to the area between the third and fourth white lines drawn on the QUES pages where the questions are presented to the student. The text of Option C in the test problems is displayed in the area (window) CWIN. For an explanation of how the system uses CWIN, see the description under AWIN. Both AWIN and CWIN (as well as BWIN and DWIN) function identically. Their only difference is that they define different areas on the screen. **Parallel Symbols:** AWIN, BWIN, and DWIN
DBOX	DBOX refers to the area defined by the cyan colored box marked "D" (and one row beneath it) on the page where the test questions are displayed (base page TPRB of the QUES frame). The student choosing "D" as the correct answer to a test question would touch his light pen in the cyan colored "D" box that appears on the screen. The computer accepts a mark in this DBOX area (and one row beneath it, in case the student's mark is slightly inaccurate) as a "D" response. For an explanation of the response analysis given this student mark, please refer to the description provided under the symbol "ABOX." **Parallel Symbols:** ABOX, BBOX, and CBOX. All function identically as an area where the student might mark a response to a test question.

Symbol	Description of Use
DNPT	DNPT stands for "Did not pass test" and refers to a text page that stores a message to the student that he did not pass the test. When the student finishes the test and proceeds to the TRES frame (Test Results), he can receive one of four different messages regarding his pass/fail status. The DNPT message is displayed to him when his performance matches these conditions: • He completed the test in under the time limit, AND • He scored less than the number of answers correct needed to pass the test. Using the test on "Select Firing Position" as an example, the commands to display this message are as follows: Command / Mod / Data Field Show / If / (AC ≤ 5) and (TIME ≤ 419) Window 11 1,16 43 Data DNPT The message that appears when the student has met the above conditions is: "The criteria for passing this test was 6 items correct out of 7. You have NOT passed the test. You must report for counseling before taking this test again." (The exact message held in DNPT differs depending on the criteria for passing the test in question.) **Parallel Symbols:** FAIL, TIMEP, and PSDTS. (All of these symbols are text pages that store a message about the student's test results. Together, these three messages and the one contained in DNPT comprise the feedback messages the student receives about his performance.)

Symbol	Description of Use
DWIN	DWIN stands for "D Window" and refers to the area between the fourth and fifth white lines drawn on the page where the test questions are displayed (QUES pages labeled TPRB1, TPRB2, and TPRB3). The text of Option D in the test problems is displayed in the area assigned to DWIN. For an explanation of how this works, please see the description provided under the symbol AWIN. Both AWIN and DWIN (along with BWIN and CWIN) function identically. Their only difference is that they define different areas on the screen. **Parallel Symbols:** AWIN, BWIN, and CWIN
F	F is a variable flag used to track a very specific student status as he proceeds through the test. This status is best explained by first presenting the scenario under which he takes the test. The test "Select Firing Position" will be used as an example. The student is allowed 7 minutes to complete the test. He must score at least 6 items correct in order to pass. It is possible that he might run out of time before he gets to all items on the test. While he is permitted to answer the remaining items on the test, his passing or failing must be determined at the point where he runs out of time. Two variables are used to track this: F and TESTF (standing for Test Failed). The system checks his time after each response and determines if he has exceeded the time limitation. The special status, then, comes into play when the student runs out of time before completing all 7 items. When the system determines that the total of his timed responses exceeds the 7 minutes, it checks to see how many answers he has correct. If AC=6 (the minimum for passing), F is set to FALSE, meaning that the student has not failed the test, although he ran out of time before completing all items. Below are the commands in the response analysis section of the QUES frame that allow the student to run out of time before completing the test, yet still pass provided he has answered six items correctly: Command / Mod / Data Field Go / If / (TIME ≥ 420)$\wedge$(AC=6) Calc / F ← False These commands read as follows: If the student has exceeded the 7 minutes for taking the test AND has answered six items correctly, the flag F is turned to FALSE, meaning the student has NOT failed the test.

Symbol	Description of Use
F (con't)	Once the student has completed the test and passes into the TRES frame where his results are presented to him, the value of F is examined. If its value is FALSE, the message contained in the text page symbol TIMEP (standing for Time Pass) is displayed, along with his test results of AT and AC. (See TIMEP for the contents of this message.) Note: F is the flip side of the system flag TESTF which is used when the student runs out of time but has NOT answered at least six items correctly. See TESTF for a description of what happens in this case. **Parallel Symbols:** TESTF
FAIL	FAIL is a system defined variable flag called into use through the External Symbol File "Advisor." When FAIL is set to true, it indicates to the system that the student has failed the test, and interrupt occurs. FAIL is used only in the TRES (Test Results) frame. It is not used in the QUES frame to interrupt the student when he has failed because he still must see all items on the test. Example commands associated with FAIL are: Command / Mod / Data Field Show / If / (AC ≤ 6) & (TIME ≤ 419) Calc / FAIL ← true Window / 9 1, 15 43 Data / DNPT These commands are interpreted as follows: If the student did not score the minimum number of answers correct (AC) needed to pass, set FAIL to true and show the message contained in the text page DNPT (did not pass test). Setting FAIL to true has the same effect on the system as using SETGRADE. The system automatically sets the student's score on this lesson, stores the fact that he failed, and records the color RED in his .PD file. What the author would do using SETGRADE is done automatically by the system when FAIL is used. **Parallel Symbols:** PASS **Related Symbols:** TESTF, F

Symbol	Description of Use

FAILT FAILT is a text page message that tells the student he has failed the test. Using the test "Select Firing Position" as an example, the student receives this message when his performance meets two conditions:

- He exceeded the time limit of 7 minutes, AND
- He did not score at least six items correct.

FAILT works in conjunction with the system flag TESTF, which is set to TRUE when the above conditions are met. When TESTF is TRUE, the student will receive the FAILT message when he finishes the test and proceeds into the TRES frame for his results. The following commands are used to display the FAILT message.

Command	Mod	Data Field
Show	If	TESTF=True
	Window	11 1,16 43
	Data	FAILT

FAILT's message for "Select Firing Position" is as follows: "You have failed this test because you did NOT correctly answer at least 6 items within the required 7 minutes. You must report for counseling before taking this test again."

In summary, FAILT is displayed in all tests whenever the student has run out of time without enough correct answers to pass. To see the exact FAILT message each test displays, refer to the program listings using the ADAPT Editor.

Parallel Symbols: DNPT, TIMEP, and PSDTS

Symbol	Description of Use
GETGRADE	GETGRADE is a system function whose purpose is to find out the current status of a unit, lesson, or segment. It is used here to extract the number of the last test attempt made by the student. GETGRADE has the following arguments: color, score, unit, lesson, segment, extra, and tries. A typical GETGRADE command would look like this: GETGRADE (VRBL1, VRBL2, 9, 2, 0, 0, NATM). This is interpreted by the system as follows: Go into the student's .PD file and find out how he performed on the test for Unit 9, Lesson 2. The color of his performance (red, green, black) is placed in the variable VRBL1. The score he achieved on the test is placed in the variable VRBL2. The number of test attempts is placed in NATM. Once GETGRADE has done this, the values contained in VRBL1, VRBL2, and NATM can be examined and actions taken depending upon their status. For example, if the color value placed by GETGRADE in VRBL1 is green, it means that the student has already taken and passed this test. He should not be taking it again and can be branched to an appropriate message telling him this. (This particular use of GETGRADE occurs in the files BN.2.2.S, BN.9.2.S, and BN.9.3.S, where the student elects to take the test. The system checks via GETGRADE to see if color is green or NATM (number of test attempts) is greater than allowed.) In the test files themselves, the most important reason behind using GETGRADE is to find out how many times the student has taken the test previously. See NATM and TA for a discussion of what is done with the value placed by GETGRADE in NATM. **Related Symbols**: VRBL1, VRBL2, and NATM

Symbol	Description of Use
GOARW	GOARW stands for "Go On Arrow" and is a macro commanding the display and coloring of a box showing a forwards arrow (pointing to the right). The macro commands place the GOBX symbol (described below) in the lower right corner of the screen (16 41,16 43) and color the background of this area white. The student marks in this area to go on to the next page. Commands relating to the macro GOARW are used only in the TINT (Test Introduction) frame of each test. These commands are: Command / Mod / Data Field Include / Macro / GOARW Params / GOBX **Parallel Symbols:** BKARW **Related Symbols:** GOBX, BKBX
GOBX	GOBX stands for "GO On Box" and corresponds to a text page storing the symbol of a forwards arrow. This symbol is used in conjunction with the macro GOARW which displays the GOBX on the screen and colors it in a background of white. The student marks the GOBX symbol with his light pen when he wants to go on to the next page. The GOBX symbol is only used in the TINT (Test Introduction) frame. **Parallel Symbols:** BKBX **Related Symbols:** BKARW, GOARW

Symbol	Description of Use

ILMAR

ILMAR stands for Ill Mark, meaning that the student has pressed his light pen to an area on the screen that cannot be interpreted as either a correct or incorrect answer. This is known as an unanticipated response and might happen if the student marks somewhere at the top of the screen, when the computer is expecting him to mark his response in one of the cyan colored boxes (A, B, C, or D).

When this happens, the computer must present a message telling the student to clearly mark in an area it can interpret as a right or wrong answer. It does this through the text page message contained in ILMAR. The message reads: "Mark clearly in one of the cyan boxes." (The word "cyan" is colored in cyan.)

To present this message when appropriate, commands are paired in display construction and response analysis through IFFDBK (if feedback) and TOFDBK (to feedback) mods. These commands are:

Display Construction

Cmd	Mod	Data
Show	IFFDBK	1
	Window	17 1,17 43
	Erase	
	Data	ILMAR

Response Analysis

Cmd	Mod	Data
Go	If	W=0
	Result	?
	Retry	
	TOFDBK	1

ILMAR is the only feedback message the student can receive while answering test questions. Feedbacks are not provided for correct or incorrect answers, only for unanticipated ones.

See also: W, WHICHMATCH, and ABOX for how the statement "W=0" is determined.

Parallel Symbols: TCHBX

Symbol	Description of Use
Latency	Latency is a system variable. It indicates the number of seconds the student took to complete his response to the last display. Because each test has a time limit, it is necessary to track the amount of time the student spends in the test and determine his pass/fail status at the point where he exceeds the allotted time. This is done through two variables: Latency (system defined) and TIME (author-defined). The timer begins when the student sees the first test question. Response analysis commands to calculate student response time are: TIME ⟵ Latency + Time. By adding together the latencies of each student response, a total figure called TIME can be matched against the time limit established for each test. The student's pass/fail status is determined at the point where he goes beyond the limit. Latency (as well as TIME) is defined in terms of seconds. If a test has a time limit of 7 minutes, this must be expressed to the system as 420 seconds. To see what happens when TIME is greater than the time limit, please refer to: TESTF, FAIL, TIMEP, F To see what happens when TIME is less than the time limit, please refer to: PSDTS, DNPT **Related Symbols:** TIME
LCORN	LCORN stands for "Left Corner." It refers to the window with an upper left corner of 16 1 and a lower right corner of 16 3. Its location on the screen is at the lower left corner. This symbol is used to analyze the student's marks in the TINT (Test Introduction) frame. Here he is allowed to reverse through and reread the screens. To do this, he would touch his light pen to the back arrow box (which appears in the area defined as LCORN). Response analysis commands determine if he has marked in the LCORN area and return him to the previous page if he has. **Parallel Symbols:** RCORN

Symbol	Description of Use

MESSG MESSG stands for "Message" and is defined as a text page. When the student is on the final page of the TINT (Test Introduction) frame, he has the option of marking either to review the instructions or to begin the test. If he marks anywhere but the boxes for these two options, he receives the MESSG feedback: "Mark either to review the instructions or to begin the test."

Parallel Symbols: ILMAR, TCHBX

NATM NATM stands for "Number of Test Attempts." NATM is a variable integer whose value changes according to which test attempt the student is on.

For a number of reasons, it is important to keep track of the number of times the student has tried to pass a test. For one, he is only allowed 3 tries to pass, according to established Army criterion. Second, he receives slightly different items each time he takes the test. Therefore, the system must know which attempt the student is on, so it can either deny him any attempts greater than 3, or branch him to the appropriate display construction command section so that the test he's currently taking varies from previous ones.

The series of steps to determine the number of test attempts is contained in the following response analysis commands, found on TINT/1:

Command	Mod	Data Field
Compute	Calc	GETGRADE (VRBL1, VRBL2, 9, 2, 0, 0, NATM)
Compute	Calc	TA←NATM
Compute	Calc	TA←TA+ 1

This can be interpreted as follows: Via the GETGRADE function, the system goes into the student's Permanent Data Area (PDA) and extracts the number of times the student has taken the test for Unit 9, Lesson 2. It puts this number into NATM.

So as not to interfere with the way the system itself tracks test attempts (it increments NATM after the test is finished, not as the student begins), the value extracted by GETGRADE and loaded into NATM is also loaded into a second variable called TA (for Test Attempt). TA is then incremented by 1 to account for the new test attempt underway.

Symbol	Description of Use
NATM (con't)	Note: When NATM is incremented (instead of creating and incrementing TA), the system still follows its own procedures and increments NATM again at the test's conclusion. This means that one test attempt was tracked by the system as two attempts. Therefore, TA was created to prevent this double counting. When the student has finished the test and is in the TRES (Test Results) frame receiving his results, the system automatically increments the test attempt number and places this in the student's PDA. Once the grade has been updated from the system's point of view to account for the test attempt just completed, the file is ready for the student's next test attempt (if one is necessary or permitted). At that time, the number of test attempts will again be extracted by the GETGRADE function, loaded into NATM, transferred to TA, and incremented by 1. The value of TA will be used to branch the student to the appropriate version of the test. **Parallel Symbols**: TA **See also:** GETGRADE
NORES	NORES stands for "No Results" and is a system defined flag called into use through the External Symbol File "Test." It is set to TRUE to indicate to the system that page one of the system test results display should not be shown. The reason for setting NORES to true and suppressing the display of the system results page is the nature of the display itself. First, because the system provides the display, it is necessarily general and may seem somewhat irrelevant to the student. Second and more importantly, the student could only exit from this display by using the keyboard. The display is not light pen driven; the student proceeds to the next screen by pressing the **ENTER** key. This violates the criterion that all tests be light pen driven. Therefore, NORES has been set to true in the TRES frame of all tests, and the results page the student sees is author-created and requires a light pen mark to exit the student. **Related Symbols:** NOREV, TESTD

Symbol	Description of Use

NOREV

NOREV stands for "No Review" and is a system flag called into use through the External Symbol File "Test." It is set by the author to indicate to the system that the student should not be allowed to review the test after he has finished.

NOREV is included to reinforce the environment specifications selected using **ATT'N** "18." In test specifications, the author indicates whether or not to enable test review. In all tests, this has been answered "no", due to the fact that the same items are used across all three versions of each test. NOREV is set to true as double insurance against review.

Related Symbols: NORES, TESTD

OVRTM

OVRTM is an author-defined variable integer used in response analysis of the test problems. Its use is necessary because each test has a time limit. OVRTM is initially set to 0 (zero) in the TINT (Test Introduction) frame of each test. In the QUES frame where the student sees the test problems, OVRTM's value will be changed to 1 (one) if the student exceeds the time limit.

Using "Select Firing Position" as an example: When the student has exceeded the time limit for the test, response analysis proceeds through the following series of commands:

Command	Mod	Data Field
Go	If To	OVRTM=1 RITEc
Go	If Calc	(Time ≥ 420) & (AC ≤ 5) TESTF ←True; ANSCO ←AC; OVRTM← 1
Go	If Calc	(Time ≥ 420) & (AC ≥ 6) F←False; ANSCO←AC; OVRTM←1

These commands are interpreted by the system as follows: When the student exceeds the time limit, the system checks the value of OVRTM. If it has already been set to 1, analysis skips to the command labeled RITE where the student's answer is checked for correctness. However, if OVRTM is not equal to 1, analysis moves to the next command (OVRTM can only be 0 or 1). The value held in AC (Answers Correct) is checked. If AC is not enough for the student to pass, TESTF is set to true, and the student fails the test. However, if AC is enough for the student to pass, F is set to false, and the student passes the test. In both cases, OVRTM's value is changed from 0 to 1.

Symbol	Description of Use
OVRTM (con't)	The student continues the test and answers the remaining questions. The system scores these as correct or incorrect (and increments AC accordingly). However, because he exceeded the time limit on a previous question, the value established for TESTF and F at that time must not be changed. OVRTM prevents analysis from returning to the commands which set the values of TESTF and F. The first time analysis goes to these commands, OVRTM's value becomes 1. When OVRTM equals 1, analysis skips forward to the command labeled RITE and avoids the commands that set TESTF and F. In this way, analysis can only go to these latter commands only once.
PASS	PASS is a system defined variable flag called into use through the External Symbol File "Advisor." When PASS is set to true, it indicates to the system that the student has passed the test. Mastery occurs. PASS is used only in the TRES (Test Results) frame. It is not set in the QUES frame when the student achieves mastery because he must still see all remaining items on the test. The system would stop him as soon as he passed if this symbol were used there. Setting PASS to true has the same effect on the system as using SETGRADE. The author uses SETGRADE to set the student's score on a lesson, store the fact that he has passed, and record the color green in the student's .PD file. The system does this automatically when PASS is set to true. **Parallel Symbols:** FAIL **Related Symbols:** TESTF, F

Symbol	Description of Use

PSDTS PSDTS stands for "Passed the Test" and corresponds to a text page that stores a message to the student that he has passed the test. When the student finishes answering all test items, he proceeds to the TRES frame (Test Results) and receives one of four different messages regarding his pass/fail status. The PSDTS message is displayed to him when his performance matches these conditions:

- He completed the test in under the time limit, AND
- He answered correctly at least the minimum number of items needed to pass this test.

Using "Select Firing Position" as an example, the commands to display this message are as follows:

Command	Mod	Data Field
Show	If	(AC ≥ 6) ∧ (TIME ≤ 4199)
	Window	11 1,16 43
	Data	PSDTS

The message that appears when the student has met the above performance conditions is: "CONGRATULATIONS !!! You passed!!!" This message is colored in green and surrounded by a rectangular green box.

Parallel Symbols: FAIL, TIMEP, and DNPT. (All of these symbols are text pages that store a message about the student's test results. Together, these three messages and the one contained in PSDTS comprise the feedback messages the student receives about his performance.)

Symbol	Description of Use
QUES	QUES is the frame where the test questions are presented to the student. QUES in these tests consists of three identical base pages labeled TPRB1, TPRB2, and TPRB3. Depending on the student's test attempt number, he will be branched from the TINT (Test Introduction) frame to one and only one of these pages, where the test items are then presented to him. While the three pages are identical in appearance, the display construction commands differ so that, from one test attempt to another, the student sees the items, as well as the text of the A, B, C, and D options, presented in a different order. One test ("Conduct Performance Counseling with a Subordinate") contains two situation pages in the QUES frame as well as the TPRB pages. The questions in this test revolve around the situations; however, the screen is not large enough to display both the situation text and the question as well, so the situations are presented separately. The student can refer back to these pages at any time while in the QUES frame. Their base page labels are: SIT_C and $SITN2_C$. When the student has answered all items on the test, he is automatically branched from the QUES frame to the TRES (Test Results) frame, where his test results are displayed for him. Note: QUES is not equivalent to θQUES. θ QUES corresponds to a TICCIT provided model which gives the author many built-in functions and capabilities. The θ (pronounced "theta") symbol identifies a frame as part of TICCIT's REP (Rule-Example-Practice) Template, which makes many special functions automatic and not author-driven, such as the automatic display and advance of questions upon student response. However, it was found that control of the many variables in these tests was undermined by using the REP model. For example, branching among the TPRB base pages and the display of items became extremely complicated when the θQUES model was used. Therefore, all frames in the tests are author-defined, not REP (θ) defined. **Parallel Symbols:** TINT, TRES

Symbol	Description of Use
QESBX	QESBX stands for "Question Box" and refers to the window (area) where the question stem of each test problem is displayed. Its area is at the top of the screen. The command using QESBX is as follows: Show Window QESBX, Data WHAT. This is interpreted by the system as: "Show in the window area of QESBX the text stored in the variable WHAT." (WHAT holds the text of the question stem.) **Parallel Symbols:** AWIN, BWIN, CWIN, DWIN (The texts of the options for each question are displayed in these windows.)
RCORN	RCORN stands for "Right Corner." It refers to the window with an upper left corner of 16 40 and a lower right corner of 16 43. Its location on the screen is at the lower right corner and is the area where the forward arrow (Go On) box appears. RCORN is used to analyze the student's light pen mark in the TINT (Test Introduction) and TRES (Test Results) frames, using the following response analysis command: "Compare Areas Input=RCORN." In the TINT frame a light pen mark in the area of RCORN (where the forward arrow box is placed) advances the student to the next page. In the TRES frame, a light pen mark in RCORN (where the EXIT box is placed) exits the student from the test. RCORN is not used in the QUES frame. Here the student moves forward to the next display by answering the question. **Parallel Symbols:** LCORN

Symbol	Description of Use

RESP1
RESP2
RESP3
RESP4

These symbols are chapter level item strings that store the text for the test options. Each test question is divided up into parts: the question itself is held in an item string called WHAT. The options (A, B, C, D) are stored in RESP1, RESP2, RESP3, and RESP4 (not respective). From test attempt to test attempt, the position of the option text on the page is moved to a different location. For example, in test attempt one, the text in RESP1 might appear as option A. This same text might appear as option B in test attempt two, and as option C in test attempt three. In this way, test questions and their possible answers appear different to the student every time he takes the test.

Example display construction commands, taken from "Select Firing Position", are as follows:

TA 1			TA2			TA 3		
Cmd	Mod	Data	Cmd	Mod	Data	Cmd	Mod	Data
Show	Window Data	AWIN RESP1	Show	Window Data	AWIN RESP2	Show	Window Data	AWIN RESP3
Show	Window Data	BWIN RESP2	Show	Window Data	BWIN RESP3	Show	Window Data	BWIN RESP4

Related Symbols: WHAT, ANSR1, ANSR2, ANSR3

Symbol	Description of Use

SETITEM SETITEM is a system defined symbol (an integer) used to change the current item number before presenting the next display.

The tests have not been authored using the TICCIT REP (Rule-Example-Practice) model. In the REP model, advancing from one item to the next is done automatically by the system. Because these tests are author-defined (not REP), advancing the item counter must be done by the author.

Commands using SETITEM appear in the QUES frame and are as follows:

Command	Mod	Data Field
Go	If	Item ≤ 7
	Calc	SETITEM ← Item + 1
	To	HHH_C

ITEM is the current number of the question being shown. HHHc is a label identifying the first command in display construction. The system checks to see that the student is not on the last problem (If Items≤7), then increments the number of the item (SETITEM Item +1), and finally returns to the top of display construction (to HHH), where it then displays the next question.

Note: ITEM is also a system symbol (integer). However, its value is not changeable by the author except through using SETITEM. Therefore, "ITEM←Item + 1" is not a valid command.

Symbol	Description of Use

TA TA stands for Test Attempt and is defined as a variable integer. TA's value changes according to which test attempt the student is on.

For a number of reasons, it is important to keep track of the number of times the student has tried to pass a test. For one, he is only allowed 3 tries, according to established Army crtierion. Second, he receives slightly different items each time he takes the test.

Therefore, the system must know which attempt the student is on, so it can either deny him any attempts greater than 3 or branch him so that the test he's currently taking varies from previous ones.

The series of steps to determine the number of test attempts is contained in the following response analysis commands, found on TINT/1:

Command	Mod	Data Field
Compute	Calc	GETGRADE (VRBL1, VRBL2, 9,2,0,0, NATM)
Compute	Calc	TA← NATM
Compute	Calc	TA ← TA + 1

These commands can be interpreted as follows: Via the GETGRADE function, the system goes into the student's .PD file and extracts the number of times the student has taken the test for Unit 9, Lesson 2. It puts this number into NATM.

So as not to interfere with the way the system itself tracks test attempts (it increments NATM after the test is finished, not as the student begins), the value extracted by GETGRADE and loaded into NATM is also loaded into a second variable called TA (also for Test Attempt). TA is then incremented by 1 to account for the new test attempt underway.

Symbol	Description of Use

TA (con't) When the student has reached the end of the TINT frame, he must be branched into the QUES frame to receive the test questions. However, each test attempt should present him with a different version of the test. To this end, the QUES frame contains 3 identical base pages with different display construction commands. Which page he is sent to depends upon the value of TA. If TA=1, he is sent to the first base page (labelled TPRB1). If TA=2, he is sent to the second page (TPRB2). TA=3 takes him to the third page (TPRB3). Because the display construction commands differ, the test will appear differently to the student each time he takes it.

Note: In one test (Conduct Performance Counseling), these TA commands appear in the response analysis of the TPRB1 (as opposed to the last page of the TINT frame). This is because the first page the student sees in the QUES frame is a situation page presenting the specific scenario around which the questions are built. From this situation page, the student is branched to the test questions depending on the value of TA.

Parallel Symbols: NATM

See also: GETGRADE

Symbol	Description of Use

TCHBX

TCHBX stands for "Touch the Box." This symbol is a text page that stores a message to the student. This message is displayed whenever the student gives a response other than the expected one of touching either the forward or backward arrow box.

In the TINT frame, the student should only advance a page (by touching the forward arrow) or reverse a page (by touching the backward facing arrow). If he touches another area on the screen, he receives the TCHBX message: "Please mark either the ← box or the → box ." The system then gives the student a retry and waits for a correct response.

To present this message when appropriate, commands are paired in display construction and response analysis through IFFDBK (if feedback) and TOFDBK (to feedback) mods. These commands are:

Display Construction

Cmd	Mod	Data
Show	IFFDBK	1
	Window	14 1,15 43
	Erase	
	Data	TCHBX

Response Analysis

Cmd	Mod	Data
Go	If	W=0
	Result	?
	Retry	
	TOFDBK	1

See also: W, WHICHMATCH, and ABOX to see how the statement "W=0" is determined.

Parallel Symbols: ILMAR, TSTBX

TESTD

TESTD stands for "Test Done" and is a system flag called into use through the External Symbol File "TEST." It is used by the author to indicate to the system that the student has finished the test. This is necessary because the environment specifications for each test (accessed and edited through **ATT'N** "18" indicate that mastery and interrupt will be author-coded, not tracked by the system. When these options are selected in the Test Environment Specifications, it is necessary to tell the system when the test is done.

The TESTD command appears in the display construction section of the TRES (Test Results) frame, as follows: Compute Calc TESTD←True.

Related Symbols: NOREV (for No Review), NORES (for No Results)

Symbol	Description of Use
TESTF	TESTF stands for "Test Failed" and is a system variable flag called in from the External Symbol File "Test." When TESTF is set to "true", the student has failed the test. TESTF is used in the QUES and TRES frames to keep track of a special student status arising when the student has failed the test because the time limit has elapsed without him correctly answering the minimum number of items to pass. (For a complete description of this scenario, refer to the description of how the variable flag "F" is used.) When the student exceeds the time limit and has not correctly answered the minimum number of questions for passing, the flag TESTF is set to true. The system holds this value and when the student finishes the test and proceeds to the TRES frame (test results), the value of TESTF is examined. Depending on its value, an appropriate feedback message is displayed. The following commands using TESTF appear in the QUES frame of "Select Firing Position." After each student response the system checks the student's TIME in the test. If he is over time, the number of answers correct (AC) is checked to see if TESTF should be set to true. Command / Mod / Data Field Go / If / (TIME ≥ 420)∧(AC ≤ 5) Calc / TESTF←True Later, in the display construction section of the TRES frame for this test, TESTF is checked to see if it has been set to true. If it has, the student receives the message contained in "FAILT", which informs him that he has failed the test due to exceeding the time limit of 7 minutes. Command / Mod / Data Field Show / If / TESTF=True Window / 11 1,16 43 Data / FAILT **Parallel Symbols**: F **See also**: F (for a complete description of why the use of TESTF and F is necessary); FAILT (for the message displayed to the screen when TESTF=True).

Symbol	Description of Use

TIME

TIME is a variable integer used to keep track of the amount of time the student takes to complete the test. Its value is determined by the equation:

TIME ← Latency + Time

where Latency is a system variable used to clock the student's response time to each question. By adding the latencies of each response together, a total figure, TIME, can be determined.

Because each test has a time limit, it is necessary to track the student's TIME. After each response to a question, his TIME is updated and compared to the limit. If TIME exceeds the limit, TESTF or F is set depending on how many answers correct the student has at this point. In this way, the student's passing or failing the test is held within the time limitation.

The timer begins as soon as the first test item is presented. No tracking of TIME is done in the TINT or TRES frames.

Related Symbols: Latency
See also: TESTF and F, FAIL and TIMEP

TIMEP

TIMEP stands for "Time Pass" and refers to a text page storing the following message: "You have run out of time allotted to answer these questions. However, you answered at least six items correctly, which is a PASSING score. CONGRATULATIONS!!" (The words "passing" and "congratulations" are colored green.)

When the student finishes the test and proceeds to the TRES frame for his results, he can receive one of four different messages regarding his performance. The TIMEP message is displayed to him when he meets the following conditions:

- He exceeded the time limit, AND
- He answered correctly at least the minimum number of items needed to pass.

The commands to display this message are as follows:

Command	Mod	Data Field
Show	If	F=True
	Window	11 1, 16 43
	Data	TIMEP

For a description of the specific conditions under which F would be set to True, refer to the symbol F and the symbol TESTF.
Parallel Symbols: DNPT, FAIL, and PSDTS.

Symbol	Description of Use
TINT	TINT is the frame where the student receives the Test Introduction. TINT consists of several pages explaining the conditions of the test, the criteria for passing, and the way in which the student is expected to mark responses. The base page labels for these pages are: INT1, INT2, INT3, INT4, and so on. **Parallel Symbols:** QUES, TRES
TRES	TRES stands for Test Results and is the frame where the student receives information on how many correct answers he scored and whether or not he passed the test. There is one page in this frame: its base page label is RES1c. Because the REP (Rule-Example-Practice) model has not been used in creating these tests, the system will not provide its own results page. RES1c is author-created. **Parallel Symbols:** TINT, QUES

Symbol	Description of Use

TSTBX TSTBX stands for "Touch the Test Box." This symbol is a text page that stores a message to the student. The message is displayed only in the QUES frame of the test entitled "Conduct Performance Counseling with a Subordinate" (BN.2.2.1.T).

This test contains two situations around which all test questions are built. Because the screen is not large enough to present both the situation text and the questions, each situation has been placed on a separate page in the QUES frame. The student sees these pages before he receives relevant test items. To move from the situation pages to the page where the test items are presented, he touches his light pen to the lower right corner of the screen where a cyan colored box saying "TEST" appears. If he marks anywhere else on the screen, he receives the message stored in TSTBX: "To continue, mark clearly in the TEST box at the bottom right of the screen." The system then gives the student a retry and waits for a correct response.

To present this message when appropriate, commands are paired in display construction and response analysis of the situation pages, using IFFDBK (If Feedback) and TOFDBK (To Feedback) mods. These are:

Display Construction			Response Analysis		
Cmd	Mod	Data	Cmd	Mod	Data
Show	IFFDBK	1	Go	If	W=0
	Window	17 1, 17 43		Result	?
	Erase			Retry	
	Data	TSTBX		TOFDBK	1

See also: W, WHICHMATCH, and ABOX for how the statement "W=0" is determined.

Parallel Symbols: ILMAR, TCHBX

Symbol	Description of Use

VRBL1
VRBL2

VRBL1 and VRBL2 are used as arguments in the system's GETGRADE function. Both are defined as variable integers.

Before the student enters the test file, the system is commanded to "get his grade" on previous attempts to pass the test. Information about the color of his status (green if he has already passed the test, red if he has failed it, and black if he has never tried this test before) is temporarily stored in VRBL1. Information about his score on the last test attempt is placed in VRBL2. It is then possible to determine if he should be allowed in the test file at all. For example, if the value taken from memory and loaded into VRBL1 is "green," the student has already passed the test and should not be permitted to take the test again. He will receive a message to that effect.

For a complete description of the way that VRBL1 and VRBL2 function, see GETGRADE.

Related Symbols: GETGRADE, NATM

Symbol	Description of Use

W

W is a variable integer used in conjunction with WHICHMATCH in processing the student's marks on the screen. The student may respond in one of three ways: correct answer, wrong answer, and unanticipated answer. The system uses W as an intermediary step between the student's input (which is an area) and storage of the correct answer (which is a number).

The following commands are used to assign a number to the student's input and "hold" that number in W so that it can be interpreted and the proper action taken by the computer.

Command	Mod	Data Field
Compare	Areas	Input = RCORN ! LCORN
Compute	Calc	W ←WHICHMATCH
Go	If	W=1
	To	NEXT
Go	If	W=2
	To	BACK

This is interpreted as follows: The expected student response is either in RCORN (where the forward arrow box appears) or LCORN (where the backward arrow box appears). WHICHMATCH is a system function that converts the student's area input into a number. If the student has marked in the area assigned to RCORN, his input is given a value of 1. If he has marked in LCORN, his input is given a value of 2. (If he marked in neither place, his input is given a value of 0.) This number is loaded into the variable W. A series of "If" commands follow. When the computer finds a command using the present value of W, that command is executed. All others are ignored.

The example above is used in the TINT frame of all tests where the student will either go forward or back. However, in the QUES frame, W is compared against the correct answer held in ANSR1, ANSR2, or ANSR3, depending on the student's test attempt number. If W matches the value contained in ANSR1, 2, or 3, the student has answered a test item correctly. A complete description of this process is presented under the symbol named "ABOX."

Related Symbols: WHICHMATCH

Symbol	Description of Use

WHAT WHAT is an item string used to store the question stem of all test problems.

Each item is divided up into parts: the question itself is held in WHAT. The option text (A, B, C, and D) is stored in item strings called RESP1, 2, 3 and 4 (not respective).

The position where the text held in WHAT is displayed on the screen does not change from test attempt to test attempt. WHAT is always displayed at the top of the screen. The option text will appear in different positions in order to present different versions of the test (see RESP for an explanation of how this works). WHAT is only used in the QUES frame.

Parallel Symbols: RESP1, 2, 3, and 4; ANSR1, 2 and 3.

WHICHMATCH WHICHMATCH is a system variable used in response analysis. It assigns a number to a student response in the following way: The system is given a list of acceptable student responses. WHICHMATCH assigns a number to the response the student actually makes by first checking to see if the answer is included in the list. If it is not, WHICHMATCH assigns the response a value of 0. If the response is listed as acceptable, WHICHMATCH assigns it the number of its position in the list. Commands are as follows:

Command	Mod	Data Field
Compare	Areas	Input = ABOX ! BBOX ! CBOX
Compute	Calc	W ←WHICHMATCH

These commands are interpreted: Acceptable student responses are in the areas of ABOX, BBOX, and CBOX. If the student marks in ABOX, give this response a value of 1. Correspondingly, a BBOX mark receives a value of 2, and a CBOX mark a value of 3. (If the student did not mark in any of these areas, this is considered an unanticipated response and is given a value of 0.)

The number assigned by WHICHMATCH is placed in the variable integer W and then compared against the correct answer to see if the student responded corerctly. If W is equal to 0, a feedback message is displayed telling him to mark clearly in a cyan colored option box (in this example, A, B, C, or D).

Related Symbols: W

Symbols in Course 20

Introduction The following symbols are used in Course 20, the 19K BNCOC CMI System.

Symbol	Description of Use

BOX1 - BOX7 Box1 through Box7 are symbols used to store seven different text pages in the files DE.1.1.1.S., DE.1.1.2.S., and DE.1.1.3.S, where the data entry pages are located.

When the Course 20 user comes to the data entry page, he is shown the first student's name and test status on the task in question. The student's current test status is displayed in the form of three test attempt boxes that are colored red (R), green (G) or white (W), depending on whether the student has failed, passed or not attempted the test. This information is extracted from the student's .PD file (using the GETSC and SHOSC macros) and loaded into a variable called LI(0). Depending on the value held in LI(0), one of seven BOXes is displayed to the user to reflect the student status. These boxes are:

Box1 (shown when LI(0)=49): No attempt; boxes are W,W,W
Box2 (LI(0)=50): GO on first attempt; boxes are G,W,W
Box3 (LI(0)=51): GO on second attempt; boxes are R, G, W
Box4 (LI(0)=52): GO on third attempt; boxes are R, R, G
Box5 (LI(0)=53): NOGO on first attempt; boxes are R, W, W
Box6 (LI(0)=54): NOGO on second attempt; boxes are R, R, W
Box7 (LI(0)=55): NOGO on third attempt; boxes are R, R, R.

IFFDBK/TOFDBK commands are used to display the appropriate box. In response analysis of the data entry page, the value of LI(0) is established and the system is commanded to GO/TOFDBK. Example display construction commands are:

Command	Mod	Data Field
Show	Always	
	If	LI(0)=49
	Window	1 1,16 43
	Mode	Replace
	Data	BOX1
Show	Always	
	If	LI(0)=50
	Window	1 1,16 43
	Mode	Replace
	Data	BOX2

Symbol	Description of Use
BOX [cont.]	Thus, if the student failed on the first attempt and passed on the second, the Course 20 user sees this status as a red first test attempt box, a green second box, and a white third box, taken from the text page stored in BOX2. **See also:** GETSC, SHOSC, and SRDBI
BYTPN	BYTPN is an expression located in the file DE.3.S (frame: NAMID). BYTPN contains an index which places a byte position into the variable RGBYT. RGBYT is used to access the proper byte position to read information from REGISTER.AF. BYTPN is also used at DE.S (frame: MRFIL) which contains commands for the "Review Roster" option on the Main Menu. Each value in BYTPN after zero is an increment of 512. Every person registered in a course on the TICCIT system is given 512 bytes of information. The BNCOC CMI system uses the information from the TICCIT roster file (i.e., Mailbox number and ID) to access these blocks of information in REGISTER.AF and gather the necessary information.
CONV	CONV stands for "Convert" and is a macro used in DE.S to convert the student mailbox number and ID number to integers. TICCIT stores both the student mailbox number and the student ID in TICCIT decimal in a .RO file created via an on-line utility. CONV converts this information from TICCIT decimal into integer form. CONV does this by using two positions in the array LI to store the converted mailbox number and four positions in the array LI to store the converted ID number. LI(0) and LI(1) are loaded into the variable MB (for mailbox) and LI(2) through LI(5) are loaded into the variable ID. CONV does this for each student, until the mailbox and ID numbers of all students listed in the Roster File (.RO file) have been changed to integer values. The REGISTER.AF file is then accessed and the integer values are used to match up the ID number found in the .RO file with the ID number and name found in the REGISTER.AF file.

Symbol	Description of Use

COURS COURS stands for "Course" and is defined as a variable string at the course level. When using Course 20 to enter student off-line test results, it is necessary to identify for the system the course to which the test results belong. The course number specified by the user in the Main Menu option "Identify Course and Section" is loaded into COURS. (In most cases, the course number identified will be "019" for 19K BNCOC on MicroTICCIT.)

COURS is used by the system in conjunction with the variable SECT (for section number) to identify the group of students registered in that particular course and section number. In order to permit the user to enter off-line test results or print the Master Record, the system must use COURS and SECT to access the correct Roster File and Master Record File of students. The TICCIT Roster File of students and the Master Record File are identified with the following commands:

Command	Mod	Data Field
Compute	Calc	ROSTR ← COURS & SECT & ↓.RO↓; SFILE MASTER & COURS & ↓.↓ & SECT

If the user has identified COURS as "019" and a section number (SECT) of "00," these commands are interpreted as: The Roster File to be used is 01900.RO. The Master Record File to be used is MR019.00.

Parallel Symbols: SECT

Symbol	Description of Use

EVENT EVENT is a macro used in display construction of the data entry pages located in files DE.1.1.1.S, DE.1.1.2.S., and DE.1.1.3.S. Here is where the Course 20 user comes to enter the results of off-line student testing.

The data entry page shows the user the titles of the Cluster and task for which s/he is entering data, as well as the names of the students and their current status within that task. The macro EVENT determines what task title should be displayed to the user, through the following example commands:

Command	Mod	Data Field
Compute	If	VLIST(1)=1 and VLIST(2)=16
	Calc	TITLE ← Prepare Gunner's Station

"Prepare Gunner's Station" is the sixteenth task within the first cluster. EVENT checks the values assigned to VLIST(1) (the number of the cluster) and VLIST(2) (the number of the task within the cluster) and loads the appropriate task title into TITLE. This is then displayed on the data entry page with a SHOW/DATA/TITLE command.

Note: The file DE.1.1.1.S is used for Cluster L (Diagnostic Tests/Remedial Training). DE.1.1.2.S is used for Clusters B-D. DE.1.1.3.S is used for Clusters E-K.

See also: VLIST(1), VLIST(2)

Symbol	Description of Use

F

F is defined as a chapter level variable integer and appears in DE.S, where the Course 20 user specifies the course and section number of students for whom s/he wishes to enter off-line test results.

When the user enters the "Identify Course and Section Number" frame, F is set to Ø (zero). As soon as the user identifies the first digit of the course number, F is set to 1. F becomes 2 when the user specifies the second digit of the course number, and 3 for the third digit. Since the course number must contain exactly 3 digits, the value of F is checked to make sure that the user has not specified a course number that is longer or shorter. When the value of F exceeds 3, the user receives a feedback message that says: "The course number must be 3 digits. Mark START OVER or ENTER SECTION." When F is less than 3 and the user marks to ENTER SECTION, he receives the feedback message: "The course number must be 3 digits. Complete the number or mark START OVER."

F is also used to load the course number specified by the user into the system array GI and show it on the screen. The following commands do this (the variable W is the number marked by the user as he specifies the course number, digit by digit):

RESPONSE ANALYSIS

Command	Mod	Data Field
Go	If	(F=1) or (F=2) or (F=3)
	Calc	GI(F)← W
	Retry	
	TOFDBK	F

DISPLAY CONSTRUCTION

Command	Mod	Data Field
Show	IFFDBK	1
	POSIT	8 16
	Data	GI(1)
Show	IFFDBK	2
	POSIT	8 17
	Data	GI(2)
Show	IFFDBK	3
	POSIT	8 18
	Data	GI(3)

Symbol --	Description of Use
F (con't)	These commands are interpreted as follows: If F is 1 (the user is specifying the first digit of the course number), load the number he marks into GI(1) and show this number on the screen at position 8 16. When the second digit of the course number is specified, F is 2 and GI(2) is loaded with the number the user marks, and so on. When the user moves to the "Enter Section" page, F is 3. It becomes 4 when the first digit of the section number is entered, and 5 when the second number is entered. On this page, F is used in the same way as on the "Identify Course" page, namely to make sure the user specifies a two-digit section number and to load GI(4) and GI(5) with the numbers marked and show these numbers on the screen.
FILE	FILE is a macro used in the data entry pages (DE.1.1.1.S, DE.1.1.2.S, and DE.1.1.3.S). Its purpose is to read the contents of the Master Record File (which contains the total number of students registered in a particular course and section, student names and their ID numbers). When the Course 20 user comes to the data entry page to enter student test results, s/he must be presented with the student names and ID numbers, one by one. FILE goes into the Master Record File and extracts this information, loading it into arrays called NAME(n) and ID (n). The contents of these arrays are what is shown to the user. Note: The READ macro located in the print routines performs identical actions in order to produce student names and IDs to print on the Master Record. **See also:** READ

Symbol	Description of Use
FLAG	FLAG is a variable flag defined at the page level. This symbol is used in both display construction and response analysis of the frame in DE.S that asks the Course 20 user to "Identify Course and Section Number" of the students. When the user marks to "Identify Course and Section Number," FLAG is turned ON before the user is exited from the Main Menu page and branched to where s/he will specify a course and section number. When FLAG is ON, the system erases any course number previously specified by a user and prepares to accept a new course number. Once the user has specified the first digit of the course number, FLAG is turned OFF so that this information can be held.in memory. If the user marks to enter the section number of his students, FLAG is turned ON again so that any previously specified section number is erased and the system can accept a new number. As soon as the user specifies the first digit of the section number, FLAG is again turned OFF, so that this number can be held in memory.

Symbol	Description of Use
GETSC	GETSC stands for "Get Score" and is a macro used in display construction of the data entry pages located in files DE.1.1.1.S, DE..1.1.2.S, and DE.1.1.3.S. Here is where the Course 20 user comes to enter the results of off-line student testing. The data entry page shows the user the titles of the Cluster and task for which s/he is entering data, as well as the names of the students and their current status within the task. In order to display the student's status (GO/NOGO/No attempt made yet), the system must go into the student's .PD file, extract the relevant information, and interpret it for display on the screen. This is done for the first student through the macro GETSC. (For subsequent students, the system uses the macro SHOSC.) GETSC uses the SRDBI function to read the location in memory holding the test results of a particular student on a particular cluster and task (see explanation under SRDBI for how this command functions). This is done in two steps. First, the system uses the SRDBI function to return the position (pointer) of the beginning of the lesson table for the Cluster in question. This pointer is used (along with the number of the task within the cluster) to determine the exact byte position storing the student status on that task (or lesson). Then the system uses the SRDBI again to read what is stored in that position. The information extracted can be one of 7 conditions: No attempt; GO on the first, second, or third attempt; or NOGO on the first, second, or third attempt. A value ranging from 49-55 is assigned in GETSC to each of these conditions and is loaded into the symbol LI(0). In other commands on the data entry page, the value held in LI(0) is used to color the three test attempt boxes with the student's current status (see BOX1-BOX7). **See also:** BOX1-BOX7, SHOSC, SRDBI

Symbol	Description of Use

HEAD1-HEAD8

HEAD1 - HEAD8 stand for "Headers" and are constant expressions to hold the headers that go at the top of the Master Record produced by the print routines (DE.2.1.1.S, DE.2.1.2.S, and DE.2.1.3.S).

For example, HEAD1, which is printed at the top of the Master Record, contains the header "BNCOC 19K Division" and the command needed to print it. HEAD1's expression is as follows:

```
HEAD(0)
↓                          BNCOC 19K Division• ↓;
BWRIT (CHAN, HEAD(0), 0, $ERP, ECD)
```

Because the MicroTICCIT screen is bitmapped, it is necessary to include in the HEAD expressions the number of blank spaces needed to produce correct spacing on the page. There are no print commands that allow the user to select a starting position other than the top left corner. For this reason, the information contained in the headers generally looks somewhat strange and may contain quite a few blank spaces before actual text begins. If you need to create a new header or revise an existing one, keep this system constraint in mind.

At present HEAD expressions print the following:

Symbol	Array	What's Printed
HEAD1	Head(0)	BNCOC 19K Division
HEAD2	Head(1)	USA NCOA/DSS
HEAD3	Head(2)	Fort Knox, Kentucky 40121
HEAD4	Head(4)	Master Record - Diagnostic Tests
HEAD5	Head(5)	----------
HEAD6	Head(4)	Master Record - Page 1 of 2
HEAD7	Head(4)	Master Record - Page 2 of 2
HEAD8	Head(3)	• (return or blank line)

An example command used to include the header on the Master Record page is: Compute/Calc/@HEAD1; @HEAD2; @HEAD3. This produces the heading:

```
BNCOC 19K Division
USA NCOA/DSS
Fort Knox, Kentucky 40121
```

Symbol	Description of Use

HEAD
[con't]

Another way of commanding a header to be included on the Master Record is:

Command	Mod	Data Field
Compute	Calc	Head(3)← ↓ ° ↓ ; BWRIT (CHAN, Head(3), 0, $ERP, ECD)

The above command prints a carriage return (which appears as a blank line). This latter method is used to produce cluster-specific information, for example, the header identifying the 18 tasks in the Diagnostic Test Cluster. Then student test results for each task are printed below the header.

Command	Mod	Data Field
Remark	Rmk	Headers for Diagnostic Tests
Compute	Calc	GS(0)← ID; GS(1)← NAME; GS(2)← L1 L2 L3 L4 L5 L6; GS(3)← L7 L8 L9 L10 L11 L12; GS(4)← L13 L14 L15 L16 L17; GS(5)← L18°
Compute	Calc	Head(6)← GS(0) & GS(1) & GS(2) & GS(3) & GS(4) & GS(5); BWRIT (CHAN, Head(6), 0, $ERP, ECD)

Head(6), then, is the printed result and is a line that reads:

ID NAME L1 L2 L3 L4 L5 L6 L7 L8 L9 ... L18

When you program in ADAPT, it is not always possible to fit all the information you want to appear as one line into the "Data Field" of the command/mod. The above commands are a good exmaple of this. It was not possible to produce Head(6) by simply typing one line of text to appear on the printed Master Record. First, GS(0) - GS(5) had to be loaded with as much information as one line in the ADAPT "data field" would hold. Then GS(0) through GS(5) had to be concatenated (strung together with the ampersands - "&") and loaded into the variable Head(6). It is the printing of Head(6) that creates the solid line of text appearing on the Master Record.

Symbol	Description of Use

IIGET

IIGET is a course level variable integer. This symbol is used to hold the total number of students registered in a particular course and section.

The Course 20 user must first specify the course and section number of students before he can perform other actions within Course 20. IIGET is used throughout Course 20 in a number of ways. For example, in both the "Review CMI Roster" and "Create/Update Master Record File" options, the value of IIGET is checked to see how many students are registered in the course and section specified. If this number is less than 6, only one page is needed to display the student names to the user. If the number is more than 6, a second page is needed. IIGET is used in the macro SHOPG (show page) to number the page(s) listing the students and to display a GO ON arrow box, if more than one page exists. Additionally, when a new Master Record File is created, the value of IIGET is shown to the user in a message that tells him "(n) students have been placed into the Master Record File for this course and section." (n) is the number of students registered for the course and section indicated and is drawn from the value of IIGET.

Another use of IIGET is found on the data entry pages (DE.1.1.1.S., DE.1.1.2.S., and DE.1.1.3.S). Here, IIGET is used in conjunction with the variable INCR (for increment) in cycling through the names of students, presenting one name at a time to the user so that test results can be entered for each individual. The first student name to appear is given an INCR value of 0. Each time the user marks the GO ON arrow to see the next student name, INCR is incremented by 1, until the user has cycled through the entire list of students. If he marks the GO ON arrow at this point, he should be taken back to the beginning of the student list and shown the first student name again. The following commands do this.

Command	Mod	Data Field
Compare	Areas	Input=16 41,16 43 (User marks GO ON.)
	Calc	INCR← Incr + 1
Compute	If	INCR > (IIGET-1)
	Calc	Incr← 0

IIGET is used in the file DE.S in the display construction of the frame MRFIL and in the macros LIST3 and SHOPG. It is also used in the display construction of file DE.3.S and in the data entry pages specified above.

Symbol	Description of Use
LIST1-2	LIST1 and LIST2 are macros that command the system to show a list of names and ID numbers of students registered in the course and section number specified by a Course 20 user. When a Course 20 user marks to "Create/Update the Master Record File," he is first shown a list of student names and ID numbers found in the currently existing Master Record File for that course and section. The first six names and ID numbers are displayed to him through using the macro LIST1, and (if necessary) the second set of six names and ID numbers through LIST2. LIST1 and LIST2 are also used when the user selects to "Review the CMI Roster." These macros display the list of names and ID numbers the user sees when examining the Roster file.
OPENR	OPENR stands for "Open Roster File" and is a macro used in creating/updating the Master Record File in the file DE.S. OPENR supplies the system with file specifications to open and use the TICCIT Roster file (the list of students registered in a particular course and section and their ID numbers). OPENR does this by accessing the correct directory and opening a free channel on which to work with the Roster file. The system can then open the Roster file and make it available for reading or writing. OPENR uses such system funtions as MDIR (to obtain the name of the master system directory), DIR (to change the current working directory), and GCHN(to get the number of a free channel on which to open a file).

Symbol	Description of Use

READ

READ is a macro located in the print routine files, DE.2.1.1.S, DE.2.1.2.S, and DE.2.1.3.S. Together these files collect all student data needed to print the BNCOC Master Record.

READ reads the Master Record file identified in the variable SFILE. The Master Record file for a particular course and section contains data on the total number of students registered in that course and section, and their names and ID numbers. READ commands the system to open the Master Record file, extract the total number of students registered, and put this number into a symbol called GI(0). GI(0) is then loaded into IIGET, which is used throughout Course 20 to cycle through the list of student names and then return to the first name.

READ also extracts the ID numbers and names of all students listed in the Master Record file and loads these (respectively) into GS(1) and GS(2). GS(1) is then loaded into ID(N) and GS(2) into Name(N). These latter symbols are used throughout Course 20 whenever ID numbers and names of students are displayed to the user or are printed.

Note: READ has the same function as the macro FILE. Both macros access the Master Record file and read its contents of total number of students registered in a specified course and section, the student ID numbers, and their names.

Symbol	Description of Use

REGID

REGID stands for "Registration ID" and is the student ID number in decimal that the user sees when s/he reviews the CMI Roster file or inspects the current Master Record File.

REGID is displayed with the following command in the LIST macros in the file DE.S:

Command	Mod	Data Field
Show	POSIT	A 5
	Data	REGID(B)

where A is the starting position on the screen and B is the position in the string REGID. The value of A starts at 4 and B starts at 0 (zero). The first student's ID number is held in REGID(0) and is displayed on the screen at a starting coordinate of 4 5. A is then incremented by 2 (the IDs are displayed in double space) and B is incremented by 1, and the next student's ID number is displayed.

REGID is also used in the file DE.3.S, where the Master Record File is created/updated.

Symbol	Description of Use

SCORE SCORE is a macro used in two places in Course 20. These are: the print routines located in DE.2.1.1.S, DE.2.1.2.S, and DE.2.1.3.S; and the software used to produce the list of NOGOs (located in DE.2.2.1.S and DE.2.2.2.S). There are, in fact, 11 SCORE macros, each one instructing the collection of student "score" data for a different cluster. These macros, in combination with the macro TEE, find the appropriate location in memory that stores student test results for tasks within the cluster (in other words, the lesson table for each cluster).

SCORE in the Print Routines. Using the SRDBI function to read the contents of the lesson table for each student, SCORE loads this information (the student's score on all tasks within the cluster) into a variable called LI(0). The value of LI(0) is checked to see if the student has passed, failed, or not yet attempted the task test. Depending upon his status, a second variable, the array SC, is loaded with one of 7 conditions:

Student Status	SC becomes:
No attempt	NA
GO, 1st attempt	G1
GO, 2nd attempt	G2
GO, 3rd attempt	G3
NOGO, 1st attempt	N1
NOGO, 2nd attempt	N2
NOGO, 3rd attempt	N3

The array SC is loaded with the student's results on all tasks within the cluster. For example, for the SCORE macro pertaining to the Diagnostic Tests, SC(0) holds the student's status on the first task, SC(1) holds his status on the second task, SC(2) his status on the third task, and so on, up to SC(17) for his results on the eighteenth and final task in that Cluster.

Refer to Figure 2 in Part X of this manual for the name of the SCORE macro used for each cluster and the file where it is included. The names vary slightly. For example, SCORE is used to collect student performance data on the Diagnostic Tests, and SCR11 is used for collecting results in Cluster K.

Once the SCORE macro has collected student performance data, the Master Record can then be printed, using the codes specified above (NA, G1, G2, etc).

Symbol	Description of Use

SCORE (cont.)

SCORE in the NOGO Routines. In the software used to produce a student list of NOGOs, SCORE is slightly different from the description above. The value loaded into LI(0) is checked to see if it represents a GO, NOGO, or no attempt result. Each time the system finds a NOGO for a student, it increments the student's count of NOGOs by 1, 2, or 3, depending upon whether the latest NOGO was received on the first, second, or third test attempt.

The number of NOGOs for the first student whose file is read is held in the variable VLIST(V + N). V is originally designated as 10. Since the first student is considered as N=0, his number of NOGOs is stored in VLIST(10). The second student's number of NOGOs is stored in VLIST(11) and so on. All clusters (except the Diagnostic Tests) are read for a student before the system moves on to compiling the next student's number of NOGOs.

As with the print routine files, SCORE in the NOGO files is used in conjunction with the macro TEE to determine where in memory to begin and end reading data.

See also: SRDBI, GETSC, SHOSC, TEE

SECT

SECT stands for "Section Number" and is a variable integer defined at the course level.

Students are registered into Course 19 to receive 19K BNCOC on-line instruction. Each student is also assigned a section number of two digits (such as "00"). There may be up to 15 students in a each section of Course 19. This restriction is a function of Course 20 and not the TICCIT operating system.

When using Course 20 to enter off-line student test results, it is necessary to identify for the system the course and SECTION number of the students to which the test results correspond. The section number specified by the user in the Main Menu option "Identify Course and Section" is loaded into SECT. SECT is used in conjunction with the course number to identify the correct Roster File and Master Record File to access, so that the correct student names can be displayed for the off-line test results to be entered. See the explanation under COURS for the commands that use SECT to do this.

Parallel Symbols: COURS

Symbol	Description of Use
SFILE	SFILE is defined as a chapter level variable string and is used to hold the Master Record File data for the course and section number of students specified by a Course 20 user. In display construction of the Main Menu, the following command identifies the name of the Master Record File to be accessed in subsequent actions (such as data entry or printing of the Master Record). This name is loaded into SFILE. Command: Compute — Mod: Calc — Data Field: SFILE← ↓ MR↓ & COURS & ↓ . ↓ & SECT If, for example, the Course 20 user specifies a COURS (course number) of "019" and a SECT (section number) of "00", the Master Record File for students registered in 019, section 00 is MR019.00. The name MR019.00 is loaded into SFILE. Subsequent commands reference SFILE, and this permits access to the correct Master Record file. (The Master Record file contains information about how many students are registered in that course and section, the student names, and their ID numbers.) On the Data Entry Pages the system is instructed to open the Master Record file name held in SFILE. The SRDBI function is then be used to read and write test results data from each student's .PD file listed in the Master Record file identified in SFILE.

Symbol	Description of Use
SHOSC	SHOSC stands for "Show Score" and is a macro appearing in the response analysis of the data entry pages (located in DE.1.1.1.S, DE.1.1.2.S, and DE.1.1.3.S). Here is where the Course 20 user comes to enter the results of off-line student testing. The data entry page shows the user the titles of the cluster and task for which s/he is entering data, as well as the names of the students and their current status within the task. In order to display the student's status (GO/NOGO/No attempt made yet), the system must go into the student's .PD file, extract the revelant information and interpret it for display on the screen. For the first student name displayed to the user, this is done through the macro GETSC. For subsequent students, this retrieval and display of current test status is done through the macro SHOSC. The two macros are quite similar. They differ only in that GETSC must identify the location in memory used to store this student information. When SHOSC is used (with the second and all following students), this lesson location information is already available. SHOSC commands simply go to that location and extract the data stored there. The student status extracted can be one of 7 conditions: No attempt, GO on the first, second, or third attempt; or NOGO on the first, second, or third attempt. SHOSC commands assign a value ranging from 49 to 55 to each of these conditions and load this value into LI(0). In other commands on the data entry page, the value held in LI(0) is used to color the three test attempt boxes with the student's current status. **See also:** BOX1 - BOX7, GETSC, SRDBI

Symbol	Description of Use

SRDBI

The SRDBI is a system function called into use through the External Symbol File called "SRDBI." It is used to read data from and write data to the student's .PD file for a particular course. Course 20 uses the SRDBI to read and write student test results in BNCOC to their .PD files for Course 19. IN this way, both on-line and off-line student performance in BNCOC (Course 19) can be stored on MicroTICCIT.

The SRDBI is used in the following macros: GETSC (used to read the first student's .PD file and get his score on a BNCOC task), SHOSC (used to read subsequent students' .PD files), PUTSC (used to write off-line test results to students' .PD files for Course 19), and SCORE (used to read each student's .PD file for eventual printing of the Master Record).

As examples of using the SRDBI to read data from a student's .PD file, the following two commands are used in the macro GETSC (get score):

Command	Mod	Data Field
Compute	Calc	SRDBI (↓ .D ↓ , OPLRD, $ERP, ECD, LESN, VLIST(0), 6, ID(n), COURS)
Compute	Calc	SRDBI (↓ .D ↓, OPUL, $ERP, ECD, LESN, VLIST(0), 6, ID(n), COURS)

The arguments of the first SRDBI command are interpreted as follows:

↓ . D ↓	Go to the ,D area in memory, where student records are held.
OPLRD	Lock this area to prevent inadvertent writing to it, then read it. (This is a system symbol.)
$ERP	If an error occurs in reading, go to the page labeled $ERP.
ECD	If an error has occurred, display its error code on the page specified above.

Symbol	Description of Use
SRDBI (cont.)	LESN VLIST(0) 6 — VLIST(0) is the area inside the .D area to begin reading. Each BNCOC Cluster is assigned a distinct VLIST(0) value that references the word position in memory holding the pointer to that cluster's lesson table. For example, Cluster B assigns a value of 678 to VLIST(0). The 678th word in the .D area holds the pointer to Cluster B's lesson table (or where in memory lesson information for Cluster B begins). These 3 arguments command the system to: go to the VLIST(0) position in memory and transfer the numbers stored there (which is 6 characters long) into LESN. LESN is, therefore, the location of the first word in that Cluster's lesson table. (The first word stores the number of lessons in the Cluster.) ID(n) COURS — Perform the above operations for the student whose ID number is referenced here, using the student's .PD file for the course number specified by COURS.

Thus, the first SRDBI command goes into the referenced student's .PD file and locks it to prevent other actions from being performed on it. Then the system extracts the position where the lesson table begins for the cluster in question.

The second SRDBI command is used to unlock the area, so that the area is again available to be written to.

A subsequent command (not using the SRDBI) finds the specific location <u>within</u> the lesson table where data is stored for the task in question. Then the SRDBI is used again to read the data held at that location (this command is not shown here) - namely, whether the student has passed, failed or not attempted the task test. This information is used to color the student's test attempt boxes on the data entry page.

Symbol	Description of Use
SRDBI [cont.]	When a Course 20 user enters data on a student's off-line test performance, the SRDBI is used to write to the student's .PD file. Writing test scores to a student's .PD file is done in the macro PUTSC (for "Put Score"). This macro is found in the data entry pages. When a user marks a student result of GO or NOGO, the system interprets the mark and assigns it a LI(0) value between 49 and 55. Commands in PUTSC convert the LI(0) value into the value stored in memory and assign this value to the variable PUT. The SRDBI command used to write the data to the student's .PD file reads as follows: Command: Compute — Mod: Calc — Data Field: SRDBI (↓ .D ↓, OPWRU, $ERP, ECD, PUT, WRD, 6, ID(incr), COURS) where OPWRU is a system argument that writes the data specified in PUT to the memory location specified in WRD (in all cases, the location storing test results for the task in question) for the student identified by ID(incr). The SRDBI, in summary, is used in Course 20 to read and write student test data for Course 19 into appropriate locations in memory. **See also:** GETSC, SHOSC, PUTSC, and SCORE

Symbol	Description of Use

TEE

TEE is a macro used to perform two options in Course 20. The first is in the print routine files that produce the Master Record, located in DE.2.1.1.S (Diagnostic Tests), DE.2.1.2.S (Clusters B-D), and DE.2.1.3.S (Clusters E-K). TEE is also used in the files that produce the NOGO report listing all students in a particular course and section, their ID numbers, and their total number of NOGOs. The software that produces the NOGO list is located in: DE.2.2.1.S (Clusters B-D) and DE.2.2.2.S (Clusters E-K).

TEE is used in each of these files to find the pointer to the beginning of each cluster's (unit's) lesson table. The lesson table holds information on how many tasks there are in the cluster and the student status on each task. TEE is used in combination with the SCORE macros to read each student's .PD file and collect information on his performance within BNCOC.

TEE uses the starting position of the first cluster (position 676 in the .D area of memory) in order to calculate the positions where lesson table pointers are stored for every other BNCOC cluster. The algorithm for determining each cluster's lesson table pointer is:

Command	Mod	Data Field
Compute	Calc	UNIT← VLIST(3) + ((Δ1 x 2) - 2)

where UNIT is the word location for the lesson table pointer of the cluster in question and VLIST(3) is position 676 in memory. Δ1 is the number of the cluster on which data is being collected, and its value is specified in the PARAMS mod of the command that executes TEE (see command below). For example, if the system is gathering student performance data within Cluster B, Δ1 will be specified as 2 in the PARAMS mod. The algorithm then becomes: UNIT← 676 + ((2 x 2) - 2), or 678. The position in memory holding the pointer to Cluster B's lesson table is 678.

Symbol	Description of Use

TEE [cont.] TEE then uses this number (loaded into the symbol UNIT) as an argument in the SRDBI command. It goes to position 678 in memory and reads the number that is stored there, placing it in the symbol LTAB (for Lesson Table). The SRDBI is used again to read the number contained in the LTAB position in memory and to place this number (the number of lessons or tasks in the cluster) into the symbol LNUMB. The final command in TEE determines where in memory the lesson table for the cluster stops and calls this number HALT. HALT is then used in the SCORE macros to stop collecting data from a student's .PD file when all information on the cluster in question has been collected.

Commands to execute TEE always precede commands to execute SCORE. Using Cluster B as an example, these commands are:

Command	Mod	Data Field
Include	Macro	TEE
	PARAMS	2
Include	Macro	SCOR2

See also: SCORE, SRDBI

Symbol	Description of Use
VLIST(0)	VLIST(0) is a system variable used in the file DE.1.S, which houses the BNCOC Course Menu. Here, each task cluster assigns a different value to VLIST(0), starting with 676 for the first cluster, 678 for the second cluster, 680 for the third, and so on (see Figure 2 in Part X of this manual for a complete listing of the values assigned to VLIST(0) for each task cluster in BNCOC.) VLIST(0) tells the CMI system the position in memory that stores the pointer to the lesson tables for each task cluster. For example, Cluster B's pointer is located at 678. The pointer indicates the position in memory where the lesson tables begin for tasks within Cluster B. VLIST(0) is used as an argument in the SRDBI function. See the description under SRDBI for how VLIST(0) is used to read data from and write data to the appropriate location in memory. **See also:** SRDBI

Symbol	Description of Use

VLIST(1) VLIST(1) is a system variable used in the file DE.1.S, where the BNCOC Course Menu is held. Each Task Cluster listed on the course menu is assigned a VLIST(1) value, starting with 1 for the first cluster, 2 for the second, and so on. (See Figure 2 in Part X of this manual for a complete listing of the values assigned to VLIST(1) for each cluster.)

VLIST(1) is used to display the correct Cluster letter on the data entry pages. The following command does this:

Command	Mod	Data Field
Show	Calc	TC← VLIST(1): ?, L, B, C, D, ... K
	Window	3 22,3 24
	Data	TC

TC is indexed from the value of VLIST(1). For example, if VLIST(1) is 4, the cluster letter D is shown. This allows the Course 20 user to make sure that he is entering data within the correct cluster.

VLIST(1) is also used in conjuction with VLIST(2) to assign a title to each testable event and display this on the screen as well. An example command for assigning a title is shown below for the first task within the first task cluster:

Command	Mod	Data Field
Compute	If	VLIST(1)=1 & VLIST(2)=1
	Calc	TITLE← Six Digit Grid

See also: VLIST(2)

Symbol	Description of Use

VLIST(2) VLIST(2) is a system variable that is used to hold the number of the task the Course 20 user is working with. Each task is assigned a VLIST(2) value depending upon its position on the Task Cluster menu. For example, the first task listed on the Cluster menu is given a VLIST(2) value of 1, the second task is assigned a value of 2, and so on. These assignments are made in the files DE.1.1.S through DE.1.11.S, where the Cluster menus are housed.

The number assigned to VLIST(2) is displayed on the data entry pages with the following command:

Command	Mod	Data Field
Show	Window	3 32,3 35
	Data	VLIST(2)

Displaying the task number (VLIST(2)) allows the Course 20 user to make sure that s/he is entering data within the correct task. VLIST(2) is also used in conjunction with VLIST(1) to assign a title to each testable event and display this on the screen as well. An example command for assigning a title is shown below for the first task within the first task cluster:

Command	Mod	Data Field
Compute	If	VLIST(1)=1 and VLIST(2)=1
	Calc	Title← Six Digit Grid

VLIST(2) is also used to calculate where in memory to read and write student data to. When a Course 20 user enters off-line student test results, the value of VLIST(0) is used to find the pointer to the lesson table for the cluster in question. The first position of the lesson table stores the total number of lessons (tasks) in that cluster. VLIST(2) is added to the pointer held in the VLIST(0) position in memory, and the resultant number indicates where in memory data for the task in question is stored. The system can then write data to that position when student status within the task needs to be updated. In a similar way, VLIST(2) is used in conjunction with VLIST(0) when the BNCOC Master Record is printed. Here, however, data is read from (not written to) the student's .PD file.

See also: VLIST(1), SRDBI

Part XIII: Recordkeeping

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Part XIII, Recordkeeping

Introduction

The TICCIT operator should keep careful records regarding the day-to-day operations. Record information about backups and other types of normal operations procedures, and problems that are encountered.

Also keep records regarding courses currently on the system and users in each course. A list of the courseware currently archived on tape will be useful. Instructions regarding the creation of course templates using Makecourse should be written down for each course. In addition, a list of the directories on the system will be useful in case other people from other sites use the system to load courseware.

This section of the Manual is designed to provide a structure for Recordkeeping; however, each TICCIT operator may wish to design his own forms and replace these pages.

A sample showing the format of the BNCOC Master Record created by using **Course 20** is also included.

Part XIII, Recordkeeping

The BNCOC Master Record

BNCOC 19K DIVISION
USA NCOA/DSS
Fort Knox, Kentucky 40121

G1 = Passed First Attempt
G2 = Passed Second Attempt
G3 = Passed Third Attempt

2/5/85

MASTER RECORD-PAGE 1

		B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	C8	.....
Number	**Name**														
214352605	BOYD, JOHN	G1	G2	G1	G2	G1	G1	G1	G1	G1	G1	G2	G3	G1	.
123121121	CALLOWAY, P. R														
879098721	DENNIS, CARL														
334567223	ELLIS, KENNETH														
234156789	KNOTT, JOSEPH														
908760008	LANHAM, EDWAR														
514364523	MELTON, DAVID														
214908709	NORRIS, WILLIAM														

Operations Log

Introduction Record routine transactions here.

Things to Do
- Record the time and date of each backup.
- Check diskspace and record the amount of free space on the disk.
- Delete break files on the disk.

Date Time	**Problems noted if any. Diskspace Remaining**[1]

1 From the Operator Menu, select File Utilities Menu. Select DISKSPACE to determine how much free space is on the disk and record the amount left here.

Courselist.LS

Introduction

Run the Courselist.LS utility from the Makecourse menu. Record the current information about courses on the disk. See **Part IV**, page 11, of this Manual for instructions.

Date entered _____

COURSE	START	END	RANGE		NO.	GR DIR	TITLE[2]
IA	110000	119999	9999	31	3		ADAPT TRAINING

[2] Course Name, starting module number, ending module number, module range, course number, graphics directory number, title of course.

Registration Directory

Introduction

Write down the information about each user at the time of registration.

You can also use the utility on the Registration Menu to check the users registered into each course on the system.

Note their section number (if any), password (if any) authorization code and user mode. Users may be registered in up to 10 courses.

Name	Course	Section	Authorization Code	User Mode	Password
Jones, Gerald	Ø	none	OP	IN	none

System Directories

Introduction Names of system directories can vary from site to site. It is a good idea to write down the directories that exist on your system.

Master Directory DMØ

Source Courseware _____

Source Graphics _____

Audio/Graphics Directory(s) _____

Directory where Registration System Files are stored, e.g. TREGISTER _____

Directory storing System Modules, e.g, TPROGRAMS _____

Object Courseware (Module) Directory _____

others:

_____

Examining A Macro File

A MACRO file is a file containing a list of CLI commands and arguments which allow the user to perform a series of tasks by typing in only one word -- the name of the macro file. When you type in the word UP, you are calling up a MACRO created by Hazeltine personnel. You can write your own MACROs to perform other frequently performed series of tasks.

1. At the R prompt type **LIST DM0/A/E -.MC**

2. You should see the following list:

DELTAL	
NOCMAP	Deletes processor's ability to create object course maps
DOWN	Releases TICCIT and returns control to RDOS; returns user to master directory
CRCMAP	
BACKUP	
TEMP	
REGSORT	Updates the User Directory and adds new information to Registration file
UPDATE1	
UP	Releases RDOS and transfers control to the TICCIT operating system

3. To initialize (install) the master directory type **DM0.**

4. To list out the contents of a Macro file type **TYPE UP.MC.**

   You will see the following information on your screen.

   UNLINK MPOS.<OL,SV,LS,CO,ST,US>
   LINK <MPOS< EPCO @UPRV@ >.(OL,SV,LS)
   LINK <MOS,EPCO @UPRV@ >.(CO,ST)
   LINK MPOS.US ITC.US
   TICCIT.SV/U/G 8/D 7/P 6/X 1001/E 1/0 NL/L 3 3/C/R↑

5. To list out the contents of DOWN type **TYPE DOWN.MC.**

   You will see the following information on your screen.

   DIR %MDIR%; **CLEAR** CLI.OL CLI.ER; **BOOT** %MIR%

Problem Log

Introduction

Record any problems that occur as soon as possible. Record the sequence of events just before the problem came up under "Problem History." Describe what steps were taken to resolve the problem.
Include both hardware and software problems in your log.

Date	Problem History	How Problem was Resolved

GLOSSARY

ADAPT — The name of the courseware authoring language which runs in the TICCIT (MPOS) environment.

APT — The name of the courseware authoring language which runs in the TICCIT environment which has been replaced by ADAPT. APT is currently used to create TICCIT maps and test control files for TICCIT courseware written in ADAPT.

ASCII File — A file which stores characters coded according to the the American Standard Character International Institute.

Authorization Code — The code assigned to each user during registration in a TICCIT course which alerts the system as to the degree of access to TICCIT utilities. A user may be assigned to a different USER modes in each course but has only one authorization code. Examples are ST (student), IN (instructor), OP (operator), SY (programmer). Authorization codes indicate whether a user may access certain menus from the Supermenu.

Backup — (v) To make a copy of a program, file, or contents of system disk; (n) A copy of a program, file, or contents of system disk.

Bit-mapped (screen) — Graphics built by addressing each bit (pixel) of the display screen. Both text and graphics are displayed by bit-mapping on the TICCIT screen.

Break File — A file created by the operating system to store error messages and which should be deleted periodically from memory. Files created automatically by TICCIT when an error occurs. Breakfiles are created for each MicroTICCIT terminal (e.g., BREAK000.BR, BREAK001.BR, etc.). They may be printed using a line printer.

Byte — An eight bit addressable unit of memory; Each **word** contains two bytes.

CLI — Command Line Interpreter; a special interface program which allows the system user to communicate more easily with the computer's operating system by entering a single command. The CLI is available both offline (RDOS version) and online (TICCIT version).

Command Line Interpreter — *See* CLI.

Core Memory — The 256K random access memory area of the TICCIT system containing the programs currently in memory; *see also,* Random Access Memory.

Course Ø — A TICCIT course which provides access to TICCIT system modules (utility programs) to authorized users; *see also* Supermenu.

COURSELIST.LS — A TICCIT system file that stores information about all courses currently stored on the system.

Disk Block — A 256 word (512 byte) section of the disk; also called a sector

DISKMAINT — A system utility that checks the system disk for errors, commonly run before performing a backup of the system disk.

DMØ — The name of the Master Directory on a TICCIT System II.

Dump File — A collection of other files which retains information such as dates, directory information, etc.

ECLIPSE S/20 — The microprocessor installed in TICCIT System II.

ECLIPSE S/120 — The microprocessor installed in TICCIT System III.

File Extension — Part of the file name which appears after the decimal point which usually has a special meaning to the system such as .DR (indicates a directory file). The RDOS file naming convention allows users to add a two character extension.

Input Device — A device used to enter (input) data into the computer such as a keyboard or a light pen.

Line Printer — A printer interfaced to the system such as the Versatek or Epson which will print the contents of system files.

LPT — The name of the system line printer.

Log Off — To exit the system by pressing ATT'N, typing "off" and pressing ENTER.

Log On — To begin using the system by pressing ATT'N and typing user identification, course number, and (optionally) a password.

Macro — A special file consisting of a list of **CLI** commands which are frequently used by the TICCIT operator. A Macro filename has an extension of .MC, e.g. UP.MC. Note: Macros may also be created using ADAPT commands.

Makecourse — A TICCIT system utility that creates a course template (PDA file) which stores information about the structure of the course such as the number of units and number of lessons per unit.

MicroTICCIT — The term applied to TICCIT system configurations using the IBM-PC terminal.

Module — A TICCIT file with a numeric name and no file extension, used to store TICCIT object courseware and TICCIT system programs

Module Range — A set of numbers assigned to a particular module directory, e.g., 1-3999 is the module range for TPROGRAMS, the directory which stores TICCIT system modules

MPOS — The TICCIT Operating System; also referred to as TICCIT.

MT0 — The name of the magnetic tape input/output device.

Network Controller — The MicroTICCIT terminal that controls the flow of information to and from the TICCIT system and each of the other MicroTICCIT terminals and which is used to perform shutdown operations.

Object Courseware — The processed form of TICCIT courseware modules.

Octal — A number system with base 8 which is used by the Eclipse S/20 system to store binary data.

Off-line — Generally used to mean that the TICCIT operating system is down (not running); e.g., an Off-Line Utility must be accessed from the Data General Console. You are on-line in relation to RDOS but off-line in relation to TICCIT.

On-line — Generally used to mean that the TICCIT operating system is up and running; e.g., an On-line utility means a utility you can access from the MicroTICCIT terminal. Also, any time a particular system is in use; e.g., on-line at the Data General Console.

Output Device — A device used to retrieve information from the computer such as a display screen or a printer.

PDA — The Permanent Data Area-- a section in core memory designated to hold student performance data about a particular course.

PDA019000 — The name of the file that contains the template for the course number "19."

0000002201.PD — The name of the file that contains the permanent data for a particular student (ID #220).

Process — To create an object file from a source file; also called "compile."

Proctor — A term used to identify the individual in charge of the TICCIT laboratory who is familiar with the course content and MicroTICCIT usage; *see also*, Proctor Password and Proctor Functions.

Proctor Functions — A group of commands providing authorized users with access to parts of the system other than the course they are logged on to; one command allows a user to access a restricted TICCIT test.

Proctor Password — A password used to access Proctor Functions including accessing restricted TICCIT tests.

Prompt — A character displayed by the system which indicates that the user may enter data or a command; e.g., "R" indicates that you are in RDOS; "?" indicates that you are in TICCIT, etc.

Random Access Memory (RAM) — A volatile type of memory which allows read/write access; ***see also***, Core Memory

Restricted Tests — A TICCIT test which cannot be accessed by a student user without assistance from a Proctor; ***see also***, Proctor, Proctor Functions, Proctor Password

RDOS — The Data General Real-time Disk operating system.

Roster File — A TICCIT file which includes the names and IDs of students registered for a particular course and section which is used by the 19K BNCOC CMI program software to create file which stores the BNCOC Master Record File Data. This file must also be created to access class reports for the TICCIT Student Record utility.

Student ID — A unique number from 1 to 9 numbers assigned to a user at registration.

Source Courseware The unprocessed form of TICCIT courseware modules which can be accessed using the ADAPT Courseware Editor.

Supermenu The menu of TICCIT Course Ø which provides access to TICCIT utilities and programs: Author Menu, Operator Menu, Instructor Menu, Programmer Menu, and Student Menu.

Switches Arguments added to a command to restrict its application such as global switches which modify the command and local switches which modify the argument only.

SYSOP A term abbreviated from **Sy**stem **Op**erator.

TAL The name of a former version of the TICCIT authoring language which has been replaced by ADAPT.

TICCIT The MicroTICCIT operating system; also called MPOS.

TICCIT Decimal System A code used to identify characters typed at the MicroTICCIT keyboard to the TICCIT system which is similar to the ASCII code.

TICCIT label The label given to a TICCIT courseware file which identifies its location within a course (course, unit, lesson, segment); e.g., BN010103.CW.

TPROGRAMS The name of the module directory that stores the TICCIT system modules.

TREGISTER.DR The directory which contains the files which have registration and authorization data: REGISTER.AD and REGISTER.AF.

User Mode The type of user registered in a particular TICCIT course, e.g., student, instructor, author. The system only records performance data for users with a student mode.

Utility A program such as Makecourse which performs some task for the user as opposed to courseware.

Wildcard — A character which replaces the names of all files with a similar characteristic or attribute; for example: DUMP BNCW -.- dumps all files with the name BNCW regardless of the rest of the name or the extension; system wildcards include: hyphens (-), asterick (*), and comma (,).

Word — An addressable unit in memory; The Eclipse S/20 word has 16 bits.

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