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Automated Simulator Test And Assessment Routing (ASTAR): Abbreviated User's Manual

Brenda A. Bradley

Michael A. Companion

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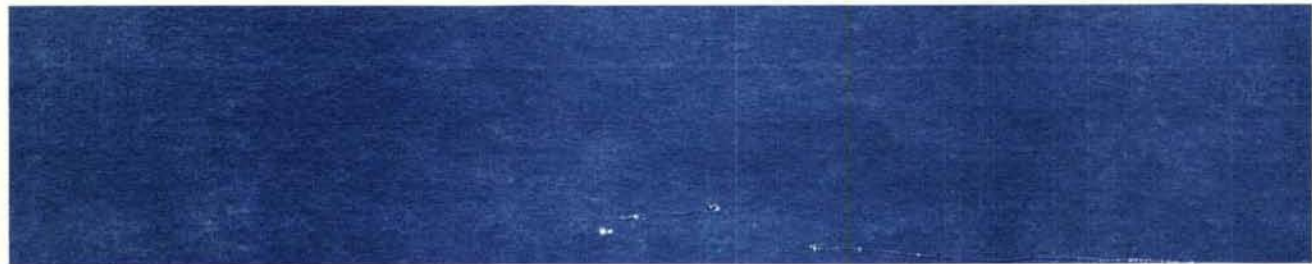
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INSTITUTE FOR SIMULATION AND TRAINING

The Automated Simulator Test and Assessment Routine

ASTAR

Abbreviated User's Manual

iST

Institute for Simulation and Training
12424 Research Parkway, Suite 300
Orlando FL 32826

University of Central Florida
Division of Sponsored Research

THE AUTOMATED SIMULATOR TEST AND ASSESSMENT ROUTINE

(ASTAR)

ABBREVIATED USER'S MANUAL

Brenda Bradley

Michael A. Companion

August 20, 1989

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This abbreviated user's manual was developed to ease the use of ASTAR. It was developed as part of the ASTAR Operational Evaluation and Implementation Project conducted by the University of Central Florida Institute for Simulation and Training under contract to the Naval Training Systems Center. Please refer to the complete ASTAR USER'S MANUAL developed by the American Institutes for Research as a reference of more detailed information on how to use ASTAR.

Chapter One: INTRODUCTION

Background

The Automated Simulator Test and Assessment Routine (ASTAR) is an automated decision aid designed to assist an analyst in evaluating the effectiveness of a training device or method. ASTAR runs on an IBM Personal Computer or compatible with a dual floppy or hard drive system, and uses minimal computer storage space.

ASTAR uses generally accepted training principles involving such issues as performance feedback and similarity of the trainer to operational equipment, to evaluate the effectiveness of any training method that involves practice on job tasks. ASTAR helps the analyst evaluate a training approach by asking questions about the training device features that affect learning difficulty or transfer of training to the job environment. ASTAR converts information and judgments provided by the analyst about various facets of the training system into a forecast of the system's effectiveness.

Levels of ASTAR

The program has three levels of evaluation based on the level of detail available. ASTAR level 1 uses general ratings from the analyst without building a data base of tasks and subtasks as is required for levels 2 and 3. The decision about which level is used depends upon the amount of information the analyst has about the training device/method, the operational equipment/performance, the tasks to be trained, and the trainees themselves.

To conduct an ASTAR Level 1 analysis, you will need:
   *   A general description of the types of information discussed in the following chapter. You will not need to develop a list of tasks, subtasks, displays or controls.

For a Level 2 analysis, you will need:
   *   Detailed descriptions of the training and operational equipment.
   *   A list of training and operational tasks.
   *   Skills and knowledge required to perform each of the tasks.
   *   The characteristics of the trainees and the plan for device utilization.

For Level 3, you will need everything for a Level 2, PLUS:
   *   Specific descriptions of the displays and controls in the training and parent equipment.
   *   Where the displays and controls are located, and what their functions are.
   *   A list of operational and training subtasks.
   *   Specific operational performance criteria.

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Example of Required Information

The following are examples of the information necessary to run an ASTAR analysis. It is provided to give you an idea of the type of information needed. Much of the information used in an actual analysis may not be in writing anywhere, but it is important to have as much specific information as possible for each information category.

Operational Equipment - TOW Weapon System.
    A crew-portable heavy antitank assault weapon. Consists of the Tube-Launched, Optically-Tracked, Wire-Command Link (TOW) missile and launcher. Perform tasks given a TOW weapon system positioned and prepared for firing (launcher assembled, day and night trackers installed, loaded, and mounted on jeep); various weather, terrain, and lighting conditions, and an established sector of fire.

Training Equipment -PGTS (Precision Gunnery Training System).
    The PGTS will replicate the missile system in physical shape and size. The device consists of an actual or simulated TOW missile launcher, including the pedestal, traversing unit, launch tube, day sight tracker and night sight. The trainer will simulate the recoil caused by the missile leaving the launch tube and correct missile flight characteristics. Also included are very realistic day and night visual scenes as well as realistic sounds generated by the weapon system and battle noise through headphones.

Training Objectives - Train the tasks necessary to acquire and track a target and fire the missile. In addition to actual missile firing, the TOW gunner must be proficient in estimating distances, handling misfires, performing system maintenance, and fundamental tactics of employment. These components of the gunner's job will be taught before the trainees use the training devices.

Trainer Utilization - The PGTS will be integrated into the existing TOW/Dragon training systems for initial skill attainment and for skill maintenance. PGTS conditions: tasks will be performed given a PGTS indoor training system positioned and prepared for firing (launcher assembled, day and night trackers installed, loaded, and mounted on jeep); various simulated weather, terrain, and lighting conditions; an IR target mounted on a truck at 800 meters; and an established sector of fire. The instructor will be responsible for monitoring student performance displays, introduction of problems to the students, scenario playback controls, and controls for operating the training devices.

Trainee Characteristics - The trainees are students in Marine Corps Infantry Training Schools (ITS). The skills and

knowledge that trainees must acquire before training on the PGTS include:

- Assemble the TOW launcher.
- Perform operator maintenance on the system.
- Load, arm, and unload an encased TOW missile.
- Prepare an anti-armor range card.
- Identify armored vehicles.
- Determine TOW firing limitations.
- Conduct a system self-test and pre-operational inspection of the TOW launcher and missile.

General Rating Information

ASTAR consists of rating scales from 0-100. It is important to use the full range of these scales and not to avoid using the end points. This will help to achieve a more accurate final rating.

It is also important to read the scales carefully while conducting the ratings, and rate each device independently of the other scales when possible.

Finally, it is very useful to make notes on how ratings are derived and list the assumptions that the ratings were based upon, especially if the ratings will be discussed later with others and possibly modified.

Chapter Two: PREPARATION OF REQUIRED INFORMATION

Required Information

A)   Determine information on each of the following:

Operational and training equipment
(i.e. their physical & functional similarity, including
displays and controls for each configuration.)

Operational and training task objectives
(i.e. the tasks & subtasks, and performance criterion for
each.)

Trainee Characteristics
(i.e. their skills & knowledge, educational background, job
experience, any other previous training.)

Trainer utilization
(i.e. the conditions & extent of practice, the role of the
instructor, device's role in training system.)

B)   Obtain or develop task listings (for levels 2 and 3) for both
operational and training equipment.

suggestions:
- Limit lists to no more than 20 tasks for ease of
use. (If you have only 20 subtasks, you will have
to answer 280 questions in ASTAR level 2, and 700
in ASTAR Level 3!)

- Use the same numbering systems for both the
operational and training lists.

C)   Once you have determined the above information, you should
now be ready to utilize the ASTAR Workbook program to create
your database work sheets. What this program does is
organize all of the information required to establish an
ASTAR database an prints the information out in a work sheet
format. In addition the workbook prompts you to answer the
questions that must be considered prior to conducting an
ASTAR analysis.

As with the ASTAR program, the ASTAR Workbook program runs
on an IBM PC or compatible with either a dual floppy or hard
drive and single floppy drive system.   NOTE: A printer is
necessary to fully operate both programs.

ASTAR Workbook Instructions

NOTE: BEFORE you begin you MUST COPY the DOS EDLIN.COM utility for the DOS version on your computer onto the WORKBOOK disk.

1) To start WORKBOOK insert the program disk in drive A: and at the A: prompt type WORKBOOK and press <ENTER>. On your monitor you will see the following opening screen:

THIS PROGRAM IS USED TO CREATE WORK SHEETS FOR AN ASTAR DATA BASE

ENTER THE NAME OF THE SYSTEM BEFORE YOU START OR REENTER AN ANALYSIS

    1 - ENTER NAME OF SYSTEM FOR ANALYSIS

    2 - PREPARE TASK LIST
    3 - PREPARE CONTROLS LIST
    4 - PREPARE DISPLAY LIST
    5 - PREPARE SKILLS LIST
    6 - PREPARE KNOWLEDGE LIST
    7 - PRINT WORKBOOK

    8 - EXIT

    Type NUMBER of the desired option AND press <ENTER>? __

[You must always perform option one first each time you enter the program. This is true whether you are doing an anlysis for the first time or modifying an existing analysis.]

2) Choose number 1 and the screen will read:

    NAME OF SYSTEM [MAX = 7 CHARACTERS]? __

3) Type in the name of the system for analysis. The system may be a new system or an existing system for which you wish to edit the data files. The following will then appear:

IS THIS A NEW SYSTEM FOR ANALYSIS? <Enter Y FOR YES OR N FOR NO>?

4) Choose one of the options 2 - 5 to begin creating the work sheets for the ASTAR databases. For example, enter 2 input the tasks and subtasks. The following submenu will appear:

        1 - CREATE TASK LIST
        2 - PRINT TASK LIST [to printer]
        3 - EDIT TASK LIST
        4 - RETURN TO MAIN MENU

    TYPE NUMBER OF DESIRED OPTION and press <ENTER>
    ? __

5) Choose option 1 and enter all of the tasks and subtasks and their titles as shown on the screen:

INPUT EACH TASK/SUBTASK NUMBER AND NAME IN THE FORM X.X TASK NAME
[Type QUIT and press <ENTER> if not more tasks]

6) Once you have entered all the tasks/subtasks and their titles and have entered "QUIT", the program will return you to the prepare task list submenu.

7) You can now either print the current task list as shown below, return to the main menu or edit the task list. Always print the task list prior to editing. It provides the edit line number for each task to that it will be easier to edit the file.

                              TASK LIST

EDIT #   #   TASK
   1   1.0 PREPARE TO FIRE
   2   1.1 CHECK TO ENSURE FIRING CONDITIONS SAFE
   3   1.2 ASSUME CORRECT FIRING POSITION
   4   2.0 DETERMINE TARGET ENGAGEABILITY
   5   2.1 IDENTIFY TARGET
   6   2.2 PLACE CROSSHAIRS ON TARGET
   7   3.0 TRACK THE TARGET
   8   3.1 AIM

By choosing option 3 (EDIT TASK LIST), the following screen will appear:

When the TASK file is ready to edit you will see
        End of input file
        *
on the screen. There are six edit commands that may be entered at the *. [Type the edit command and press <ENTER>]

[Press SHIFT - PRINT SCREEN for a printout of the edit commands.]

   1. 1L - lists the file starting at line 1.
   2. 1P - lists the file one screen at a time [use when more than 23 TASKS are in the file].
   3. n - lets you edit a specific line n.
   4. nD - deletes line n.
   5. nI - lets you insert a line(s) before line n. [When you finish inserting lines, you must press CTRL and C keys at the same time before entering another edit command!]
   6. E - exits the editing function and saves the changes to your list.

End of input file
*

8) Follow the instructions on the screen carefully. It is a very good idea that you print out a hard copy of the screen instructions, otherwise as you edit the lists, the screen will scroll-up and disappear. If you are going to delete or insert tasks always edit the lines in descending order. [When you delete a task it changes all the remaining edit line numbers.]

9) If you choose option 1 from the prepare task list submenu again and enter new tasks, these most recent inputs will OVERWRITE your previous task listing. If you find yourself in this situation, but BEFORE you have entered anything again, you can press the Ctrl and C keys simultaneously which will take you out of the program; then you can type RUN and <ENTER> to return to the main menu. However, this will only work if you have not entered any new tasks.

10) When you have completed entering all of the tasks/subtasks, choose option 4 to return to the main menu.

11) From there, begin entering the controls/displays and skills/knowledge using essentially the same methods as above.

* Be sure that the controls/displays and skills/knowledge are entered in the order you wish them to appear in the task listing. They will be labeled in chronological order when printed in the work sheets. Also, be careful not to exceed the maximum number of characters allowed for the titles.

12) Once the entire list is complete, choose option 7 from the main menu to print the workbook. You will notice that while the workbook is printing, your monitor will clear; this is NOT a problem, it will return with the main menu when printing is completed.

Chapter Three: RUNNING ASTAR

To start ASTAR following the instructions in Section A if you have a dual floppy system and the instructions in Section B if you have a hard drive system. [SEE THE APPENDIX FOR INSTALLATION INSTRUCTIONS]

You are required to build a database prior to running ASTAR so follow the directions closely.

NOTE: ASTAR is written to run on an IBM compatible PC equipped with either dual disk drives or a hard drive and one floppy drive system. The program is contained on one floppy disk, a second formatted disk is necessary to contain the databases and ratings.

A) Dual Floppy Disk Drive Operation

Perform the following four steps in order to start the ASTAR programs on a DUAL DISK DRIVE system:

1. Insert the ASTAR Program disk into the A: drive.

2. Turn the computer on, or press CTRL+ALT+DEL simultaneously to reboot the system. The A> should appear on the monitor.

3. Insert a formatted disk into drive B: to serve as the ASTAR data disk.

4. If you do not have an existing data base you must first create a data base. If your data base already exists go to step 8.

    Type BUILD (Filename) at the C:> prompt and press <ENTER>,

*   maximum of 8 characters in the filename.

*   BUILD, followed by a file name, creates a set of internal files on your data disk that will contain your databases and ratings.

    The following screen will appear:

```
*******************************************
*       Building new DEVICE files         *
*                                         *
*       Place ASTAR DATA Diskette in B:    *
*                                         *
*******************************************
```

    Strike any key when ready . . .

5. Be sure that you have the formatted disk in Drive B:, and hit any key.

The following will appear:

Building Task, Subtask, Device & Control Database

Hit any key to continue   Esc to ABORT

6. Again, hit any key and:

Database build completed!

Hit any key to continue

7. Hit any key, and you will return to the A> prompt.

8. Next, type ASTAR (Filename), and:

```
*****************************************
*                                       *
*     Place ASTAR DATA Disk in B:       *
*                                       *
*****************************************
   Strike any key when ready . . .
```

9. This will bring you to the ASTAR Main Menu below, where you can begin to construct your database.

ASTAR MAIN MENU
ver 2.0

(1)   ASTAR 1

(2)   ASTAR 2

(3)   ASTAR 3

(4)   Display Ratings

(5)   Database Maintenance

(6)   EXIT PROGRAM

Enter Option __

B) **Hard Disk Drive Operation**
Perform the following steps in order to start the ASTAR programs on a HARD DISK DRIVE system:

1. Change drive to the hard drive C:

2. Insert a formatted disk into drive A: to serve as the ASTAR data disk.

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3. If you do not have an exiting data base you must first create a data base. If your data base already exists go to Step 7.

   Type BUILD (Filename) at the C> and enter,

* maximum of 8 characters in the filename.

* BUILD, followed by a file name, creates a set of internal files on your data disk that will contain your database and ratings.

   The following screen will appear:

   ```
   ********************************************
   *      Building new DEVICE files           *
   *                                          *
   *      Place ASTAR DATA Diskette in A:     *
   *                                          *
   ********************************************
   ```

   Strike any key when ready . . .

4. Be sure that you have the formatted disk in Drive B:, and hit any key.

   The following will appear:

        Building Task, Subtask, Device & Control Database

        Hit any key to continue   Esc to ABORT

5. Again, hit any key and:

   Database build completed!

        Hit any key to continue

6. Hit any key, and you will return to the A> prompt.

7. Next, type ASTAR (Filename), and:

   ```
   ********************************************
   *                                          *
   *      Place ASTAR DATA Disk in A:         *
   *                                          *
   ********************************************
   ```
   Strike any key when ready . . .

8. This will bring you to the ASTAR Main Menu below, where you can begin to construct your database.

```
ASTAR MAIN MENU
    ver 2.0

(1)     ASTAR 1

(2)     ASTAR 2

(3)     ASTAR 3

(4)     Display Ratings

(5)     Database Maintenance

(6)     EXIT PROGRAM

Enter Option  __
```

Chapter Four: DATA BASE DEVELOPMENT

A) **Select Data Base Operation**
     From the ASTAR main menu, select the (5) Database
Maintenance
option and the Database Maintenance menu will appear, where the
tasks/subtasks & controls/displays can be entered.

Database Maintenance

(1) Training Device - Task and Subtask Maintenance

(2) Training Device - Control and Display Maintenance

(3) Operational Equipment - Task and Subtask Maintenance

(4) Operational Equipment - Control and display Maintenance

(5) Commonality Analysis

(6) Similarity Matching

(7) EXIT PROGRAM

Enter Option __

  * Options (1) & (3) are used to enter lists of training and
    operational tasks and subtasks into the database.
    Options (2) & (4) allow you to enter lists of controls and
    displays in the training and operational equipment by tasks
    or subtask.
    Option (5)   lets you identify which operational tasks are
    represented in the training system.
    Option (6) lets you identify which operational controls and
    displays are represented in the training system.

NOTE: Although no task lists are entered to conduct a level 1
analysis, you must BUILD a set of data files AND name the
training device using option (1) of the Database Maintenance
program.

B) **Entering tasks and subtasks.**

     1. Select option (1) from the Database Maintenance menu.

          (1) Training Device - Task and Subtask Definition

Enter Title of Training Device
       Title = __

     2. Enter the title of your training device.

     *limit: 60 characters including spaces.

The title will be listed in the database as task number 0000.0000; if you wish to edit the title you may do so by selecting task number 0000.0000.

3. Next, this will appear:

    (1) Training Device - Task and Subtask Definition

Enter Training Device Task.Subtask number 0000.0000

    Enter the training device task or subtask number, and:

(1) Training Device - Task and Subtask Definition

Task. Subtask =   1.0000
    Title =   __

    * When typing task numbers:
    -You do not need to type the zeros following the decimal place.

    -To type subtask number, type the task number, the decimal point, and the subtask number and press enter.

    -You are not required to enter your list in order and you can add task number at any time.

    * Enter the numbers carefully. You can correct mistakes as you type; but once a task/subtask or control/display number is entered, it cannot be removed from the database. The task names can however be corrected after being entered by choosing the task number and retyping the correct name.

4. Enter the name of the task or subtask. maximum of 60 characters.

5. Continue this until you have entered all the tasks/subtasks; you may exit to the Database Maintenance menu at any time by pressing the escape <ESC> key.

6. Now, begin entering the operational task list: from the Database Maintenance menu, choose option (3) to enter the operational task list, this is done in the same way as the training task list.

C) **Entering controls and displays.**

    * Numbers and letters can be used for controls and displays. A simple way to identify them is to use a combination such as C1 for control number 1, D1 for display number one and so on. If you are organized your data using the ASTAR WORKBOOK program, this type of number will already be assigned for each control and display.

Suggestions: -   Keep a written list of numbered
                        displays/controls within the task list.
                    -   Use the same code for the controls and
                        displays throughout both the task lists.

1. Access option (2) from the Database Maintenance menu to
    enter the training device displays and controls. The
    following will appear:

        (2) Training Device - Control and Display Maintenance

    Enter Training Device Task.Subtask number 0000.0000

2. Enter the number of the task or subtask that you want
    to enter controls and displays under.

        (2) Training Device - Control and Display Maintenance

    Task.Subtask =   1.0000
           Title =   task name

        Enter Control or Display number __

3. Enter a control or display number (such as C1).

        (2) Training Device - Control and Display Maintenance

    Task.Subtask =   1.0000
           Title =   task name

    Control/Display = 1.0000.C1
              Title = __

4. Enter the name of the control/display (such as
    joystick. The name is limited to 57 character.

5. Continue to enter numbers and names of each
    control/display for the first task/subtask. Press
    <ESC> when finished with each task/subtask.

6. When ALL the controls and displays are entered in the
    task list for the training device, press <ESC> to
    return to the Database Maintenance menu. Follow the
    same procedures to enter the operational equipment
    controls/displays.

D) **Commonality analysis.**

    1. Select option (5) from the Database Maintenance menu.

            (5) Commonality Analysis

    Enter Starting Operational Task.Subtask number 0000.0000

2. Enter the first number in your operational task list.

3. Following the directions on the screen, enter a 1 or a 0.

4. When you enter the rating for the last task in the list, the program will return you to the menu. If you have subtasks in your list, access option (5) again and repeat this process.

NOTE: any time a zero (0) is entered, it will not be displayed on the screen. The zero rating will be recorded when you press enter and it will be displayed if you re-perform this analysis or select an option to display the ratings.

E) **Similarity matching.**

1. Select option (6) from the Database Maintenance menu.

                    (6)   Similarity Matching

       Enter Operational Task.Subtask number   0000.0000

2. Enter the number of the first task in the operational task list.

                    (6)   Similarity Matching

       Operational Equipment
            Task.Subtask =   1.0000
                    Title =   task name

            Enter Control or Display number   __

3. Enter the number for the first control/display in the displayed task.

                    (6)   Similarity Matching

       Operational Equipment
            Task.Subtask =   1.0000
                    Title =   task name

            Control/Display = 1.0000.C1
                    Title = joystick

       Enter Training Device Task.Subtask number 0000.0000

4. Enter the corresponding training device task number.

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(6)   Similarity Matching

Operational Equipment
        Task.Subtask =   1.0000
                Title =   task name

        Control/Display = 1.0000.C1
                Title = joystick

Training Device
        Task.Subtask =   1.0000
                Title =   task name

        Enter Control or Display number _

5.   Enter the number of the control/display in the training
      task that in your judgment corresponds to the
      operational control/display shown on the screen.

                (6)   Similarity Matching

Operational Equipment
        Task.Subtask =   1.0000
                Title =   task name

        Control/Display =   1.0000.C1

Training Device
        Task.Subtask =   1.0000
                Title =   task name

        Control/Display =   1.0000.C1
                Title =   joystick

                                Hit any key to continue

*   If you believe that there is no comparable control/display
      in   the training task, hit return and you will be prompted
      for the   next operational control/display.

*   If there are more than one controls/displays that you feel
      are   comparable in the training device, hit any key to
      continue to   input the task and control/display numbers.

6.   Press <ESC>, and the program will then ask for another
      control/display in the first operational task displayed
      on the screen.

7.   Continue entering the training controls and displays
      that correspond to the operational controls and
      displays for the first task.

8. When you are finished with the first task, press <ESC> TWICE; the program will then request a new operational task number.

        (6)   Similarity Matching

Enter Operational Task.Subtask number   0000.0000

9. Continue with this process until you have finished all of the tasks/subtasks in the operational and training task lists.

Chapter Five: CONDUCTING ASTAR ANALYSIS

General Reminders

Before beginning, be sure to:

1.   Review your tasks lists, descriptions of the training and operational equipment, descriptions of the trainees, etc.

2.   Prepare a hard-copy version of the task listing in which the information about the skill and knowledge requirements and controls and displays is organized by task/subtask.

3.   Make notes on how you arrived at the ratings, and include any assumptions you made as a basis for ratings.

Now,

*   Call up the ASTAR main menu by entering ASTAR (Filename) at the system prompt.

*   Select the number of the ASTAR level of analysis that you want to use, and begin your analyses.

Reviewing and editing ratings

A) Display ratings.

1.   From wherever you are in the program, press <ESC> until you reach the ASTAR Main menu.

2.   Select option (4), Display Ratings.

B)   Changing ratings.

1.   Exit to the ASTAR Main menu and then return to the same point in the analysis where the previous rating was made.

2.   Enter the revised rating, this will erase the previous rating and store the new one.

Interpreting results

A)   Summary screens.

When you have completed your ratings for all eight analyses, select option (9), Evaluation Summary to display the outcome of the evaluation. For ASTAR 1, the Summary Screen will appear in a few seconds. For ASTAR 2 and 3, you will be asked whether you want a summary by task or subtask. For the ASTAR 2 summary, press T for task; for the ASTAR 3 summary, press S for subtask.

B) Using ASTAR results.

1. The Training Problem Summary Score is a reflection of the magnitude of how much trainees have to learn (Performance Deficit) and how difficult this deficit is to overcome (Learning Difficulty).   THE HIGHER THE INDEX, THE LARGER THE TRAINING PROBLEM

2. The Acquisition Efficiency Summary Score is a reflection of how well the device is designed to overcome the training deficits specified. THE HIGHER THE VALUE, THE BETTER THE DEVICE.

3. The Acquisition Summary Score is a combination of the above scores, and reflects how long it will take for typical trainees to reach proficiency on the training device. THE LOWER THE SCORE THE BETTER.

4. The Transfer Problem Summary Score indicates how much learning must occur on the parent equipment. A HIGH SCORE DOES NOT NECESSARILY MEAN A POOR TRAINING DEVICE.

5. The Transfer Efficiency Summary Score indicates how well the device incorporates training features and principles that will increase the efficiency of transfer to the operational situation. THE HIGHER THE VALUE THE BETTER THE DEVICE.

6. The Transfer Summary Score is a combination of the Transfer Problem and Transfer Efficiency Scores. it is a reflection of how long it should take the typical trainees to reach proficiency on the operational equipment. A LOW NUMBER INDICATES LITTLE REMAINING DEFICIT, A HIGH NUMBER INDICATES A LARGE REMAINING DEFICIT AND THEREFORE A POOR FIRST-TRAIL PERFORMANCE.

7. The Total Score adds the Acquisition and Transfer Summary Scores together. it reflects the time it would take for a typical trainee to go from the beginning of the training to proficiency on the operational equipment. when comparing two or more devices with the same training and operational objectives, THE LOWER THE TOTAL SCORE, THE FASTER THE TRAINEE WILL REACH PROFICIENCY ON THE OPERATIONAL EQUIPMENT.

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APPENDIX

A) **Installation on a Floppy Disk**
To install ASTAR on a floppy disk simply make a back-up copy of the MASTER disk you received.

B) **Installation on a Hard Disk**
Perform the following steps to install the ASTAR program on a HARD DISK DRIVE SYSTEM.

1. Turn on the computer and wait for the C: prompt to appear.

2. Insert the ASTAR Program disk into the A: drive, and a change the default drive to A:

3. Type INSTALL, and press <ENTER>, this will install the ASTAR program on the hard disk in a subdirectory C:\ASTAR.

   The following screen will then appear:

```
**************************************************
*                                                *
*            Install ASTAR to Hard Disk          *
*                                                *
*                                                *
*            Hit Ctrl + Break to ABORT           *
*                                                *
**************************************************
```

Strike any key when ready . . .

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