A Tool for Preparing for, and Testing on, the

**TECHNICIAN CLASS
FCC EXAMINATION**

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FOR IBM/COMPATIBLE COMPUTERS

FEATURES:

- Simple, intuitive system for preparing for the Technician Class FCC License

- Perfect tool for Volunteer Examiners for creating tests

- Manages entire Technician Class question pool, including graphics

- Begin reviewing at any question

- Review questions sequentially or randomly

- Shuffle answers for each question if desired (except questions with graphics)

- Take a test on either Element 2 or 3A from randomly chosen questions (within the guidelines of the FCC testing criteria)

- Full set of options for customizing tests, including a Test Design Screen

- Print complete Element 2 or 3A tests, along with answer sheets and score key

- Save tests to disk for later use

- Study assist screen tells you what areas you need to study after taking a test

- Pop-up on-screen calculator

- Automatically "remove" a question from the "question card deck" when answered correctly, if desired

- Manually remove any question from the "deck" at any time

- Reinsert into the "deck" any previously removed question

- Start review all over by putting all "cards" back into the deck

- Show answers always or only after an attempt at the answer has been made

- Saves option settings, deck, and last question number to disk to "pick up where you left off"

- Print any part of the question pool

PRACTICAL-ly Software

Technician Class Manager - Version 2.0, for Windows
- On-screen cross-reference to the book, <u>New No-Code Technician Class</u>
<u>FCC License Preparation</u>, by Gordon West, available at Radio Shack

PRACTICAL-ly Software

TECH MANAGER
(Version 2.3 for Windows)

A Tool for Preparing for the New Technician Class Examination

. WHAT IS TECH MANAGER?

TECH MANAGER is TWO things. 1) It's the most versatile tool ever written to assist the learning process for <u>anyone preparing for the Technician Class FCC Examination</u>. And 2), it also provides to the <u>Volunteer Examiner</u> a completely configurable way to generate tests to administer to examinees for the Technician Class FCC license. This program provides a user-friendly Windows environment to manage the question pool from which tests on Element 2 and Element 3A are taken. TECH MANAGER also provides page reference to the book, **New No-Code Technician Class FCC License Preparation**, available at Radio Shack, for detailed question explanations.

IMPORTANT!!

TECH MANAGER is distributed in shareware form. This means that you are able to look at the program and see how it functions, but the FULL FUNCTIONALITY OF THE PROGRAM WILL NOT BE AVAILABLE TO YOU UNTIL YOU REGISTER YOUR COPY. Your unregistered copy will allow you to browse around through the program and see for yourself exactly what the program can do before you register it. **If you decide that you like TECH MANAGER (and you will!), register by following the directions in Section , and PRACTICAL-ly Software will provide you with a registration number that will completely unlock your copy of the program.**

. INTRODUCTION

The question pool which is effective from July 1, 1993 to June 30, 1997, consists of 645 questions, and TECH MANAGER manages these questions as if they were 645 cards, each containing one question. A deck of question cards really describes how TECH MANAGER handles the questions and that terminology will be used frequently in this manual.

TECH MANAGER lets you go through the deck of question cards in almost any way you could want. When you look at a question, you have the option of seeing the answer when you see the question, or seeing the answer after you have attempted to answer the question. When you determine that you know a question sufficiently that you need not see it again, you can remove that question card from the deck, either automatically when you correctly answer the question, or manually at any time. Thus, as you become more and more comfortable with the questions, the size of the question deck decreases, letting you concentrate only on the questions with which you still are not comfortable. When you have worked your way completely through

the question deck in this way, you will have a complete mastery of the Technician Class question pool.

At any time, TECH MANAGER allows you to take a test on Element 2 or Element 3A, just as you will see when you actually test for your Technician Class License. As you progress through the test, your score is constantly shown as you answer each question. When you consistently make high scores on TECH MANAGER, you can be assured of a high score on your actual Technician Class License examination!

. GETTING STARTED

Hardware Requirements

- Hard drive with about 1.7 megabytes of free disk space available

- DOS 3.3 or higher

- Microsoft Windows 3.0 or 3.1

- EGA or VGA display monitor (color desirable, but not required)

. Installing TECH MANAGER To Your Hard Drive

TECH MANAGER is a Windows application program that is compatible with Windows 3.0 and 3.1. The installation process is done at the DOS prompt. The installation steps for each are listed below.

1. Make a subdirectory on your hard disk where you want to put the program. (For example, at **C:** type **MD TECHMGR2** to create a subdirectory called TECHMGR2 in your root directory.)

2. Change to the directory which you just created by typing **CD TECHMGR2** (or whatever name you chose to use).

3. Copy all the TECH MANAGER files into the new subdirectory on your hard disk.

4. Now run Windows.

. Setting up the Windows Application:

TECH MANAGER is now installed on your hard disk, and now you need to set up the program in Windows. This section explains how to do that.

1. From the Windows Program Manager, select **NEW** from the **FILE** menu.

2. Select **PROGRAM ITEM**.

3. On the **Description** line, type the name you want to give the TECH MANAGER program on your Windows Desktop (e.g. TECH MANAGER).

4. If you are running Windows 3.0, on the Command line, type **C:\ TECHMGR2\TECHMGR2.EXE**. If you have Windows 3.1, you only need to type **TECHMGR2**.

5. If you have Windows 3.1, for Working Directory, type **drive:\TECHMGR2**, where **drive** is the drive on which you installed the program.

6. Now click on **OK** and your installation is complete. The TECH MANAGER icon will show up on your windows desktop and is ready for you to use!

> NOTE ABOUT PRINTING: All of the functions in TECH MANAGER that involve printing do so through your computer's Windows Printer Setup. All print functions do so in a Courier 10 cpi font which is a standard font. If you have any problems printing, make sure your printer is correctly configured in Windows.

. About Controlling TECH MANAGER

TECH MANAGER is designed to be used primarily with a mouse, but to a large extent, it can be controlled by the keyboard, too. However, some screens in the program need more than just a keyboard entry, and a mouse is required.

. Keyboard Control

TECH MANAGER is controlled by using the "control buttons" on each screen, that is, graphic buttons which are shown on the screen. In this documentation, these buttons will be shown as **[BUTTON]**. Most of the buttons have a letter underlined in the caption on the button. This indicates the letter on the keyboard which will activate the button. To use the keyboard "HOT" keys, press the **ALT** button at the same time as the underlined letter. One of the buttons on the screen will usually be highlighted by a shadow around part of it. If you press **ENTER**, the highlighted button will be "pressed". If you want to highlight a different control button, **TAB** will switch to the next control. **SHIFT TAB** will switch to the previous control button.

Not all control buttons have an underlined character. These buttons can be "pressed" only by clicking the left mouse button when the mouse pointer is on the button or by tabbing to them and then pressing **ENTER**.

. Mouse Control

Using a mouse is the easiest way to use TECH MANAGER. All you have to do is point to the control button that you want to press and click. Most buttons that are TECH MANAGER specific only require one mouse click, but buttons that are more Windows specific, such as when loading and saving

files require a double-click. As a rule, just assume one click is required; if that doesn't work, use two.

TECH MANAGER is very intuitive; you can run the program successfully with what you know now. However, to take full advantage of the many features that TECH MANAGER has built in, come back and finish reading about the details of the program. You'll find that TECH MANAGER probably does what you want it to do, and if it does, register your copy to fully enable all the features of your copy of TECH MANAGER.

. THE TITLE SCREEN

The Title Screen is the first thing that you will see in TECH MANAGER. When you see this screen, TECH MANAGER is loading all the data that it needs to begin. This data includes most of the option settings which TECH MANAGER found when it last terminated. (This allows you to pick up where you left off when you come back to TECH MANAGER after leaving the program. For more information on this, refer to the section on the Main Menu, section .) Loading the data is almost instantaneous, but the actual speed depends on your computer.

The Registration Block will initially say that it is registered to UNREGISTERED and a button underneath is labeled **[Enter Registration Number]**. This indicates that your copy of TECH MANAGER is still an unregistered shareware version. When you register your copy, PRACTICAL-ly Software will provide you with a registration number. To register your shareware copy, press the **[Enter Registration Number]** button. You will then have to enter your name **EXACTLY** as you were provided with your registration number, along with the registration number itself. Once you have the data entered correctly, press the **[Enter]** button. If you have done everything correctly, your name will now show in the Registered To: box. If there's a problem, enter the data again, making sure that you enter upper case and lower case and all spaces and punctuation EXACTLY as shown with your registration. If you still have trouble, call the PRACTICAL-ly Software Technical Support number.

Once you are ready to either look at TECH MANAGER in unregistered mode, or if you're ready to fully use your registered copy, press or click **[Start]** to begin the program.

. THE MAIN MENU SCREEN

The Main Menu lets you select which activity you want to do, whether it's reviewing the questions, accessing the test menu, changing the default options, or printing from the question pool. The default options can either be changed now or while you are reviewing questions. However, the option screen is not available while you are taking a test. (More on that in the Taking a Test section.) The menu items available to you on the Main Menu Screen are now described in detail.

. Review Questions and Answers

When you select this option, a window and two buttons pop up onto the screen to allow you to enter which question card you want to start with. The cards are numbered from 1 to 645. If you are running the program for the first time, the number will be 1. If you are not running TECH MANAGER for the first time, the highlighted number in the box is the number after the last question you looked at when you last quit the program.

To start with a different question than the one shown in the block, simply type the number of the question card and select **[Begin]**, or simply press **ENTER**.

If you decide that you don't want to review questions yet, select **[Cancel]**, and choose another option.

   NOTE: If you are using an unregistered shareware copy of TECH MANAGER, you will only be able to look at one question at a time on the Question Review Screen. You will not be able to go forward or backward while you are at the review screen. However, you can look at each question in the question pool by coming back to the main menu, which will automatically increment the question number, and then go back to the review screen.

   You will probably be especially interested in looking at the graphic questions. Take a look at questions 253-260. You can find the other 22 graphic questions if you try!

. Testing Menu

This menu contains options available to you that you might want to either take a test on the computer or to print a test. You can even save tests to disk for later use! The details of the Testing Menu are discussed in detail in section .

. Default Option Menu

The default option screen will allow you to customize the way you review the questions. This screen is also available to you at any time when you are reviewing the questions. However it is not available during testing.   A detailed explanation of the Default Option Menu is found in section .

. Print from Question Pool

Select this menu item if you want to access any or all of the question pool to print. Unfortunately, you are restricted from actually printing from the unregistered version, but you can see how easy this function is to use. The details of how to use the Print from Question Pool option are discussed in detail in section .

. Quit

Selecting **Quit** will take you out of TECH MANAGER and put you back into Windows. This might take a few seconds, because TECH MANAGER has some housekeeping to do. There are several files that TECH MANAGER saves to disk so that when you restart the program later, you can pick up where you left off. The files that are saved are listed in section , <u>Files That TECH MANAGER Creates</u>.

. TESTING MENU

The testing menu is laid out to represent a logical sequence of events. In other words, when you make a selection, the testing menu screen will guide you to the next input that you need to make, if that is the case. The first menu block involves either the automatic generation or manual creation or the loading from disk of a test. The center block indicates if there is a test in memory, and if so, what the name of the test is (which also indicates how the test was generated), along with whether the test is Element 2 or 3A. The third block lets you select what you want to do with the test in memory: practice it, print it, or save it to disk. Each of these options will be explained in detail now.

. Loading a test

This block of options lets you tell the program how you want to load a test into memory.

. Generate Element 2 or 3A Test

When you select an option to generate either the Element 2 or 3A test from the Main Menu, TECH MANAGER generates the test you select from the appropriate set of questions. TECH MANAGER doesn't just randomly pick the questions out of the entire pool, but randomly chooses one question for each subelement. For instance, one question must come from the first 11 questions, that is one question must come from subelement N1A. TECH MANAGER will randomly pick one of those 11 questions to ask if you are taking an Element 2 test.

TECH MANAGER selects the questions for your test: 30 for Element 2 or 25 for Element 3A. Later, you will have the option for the questions to be shuffled so they won't be in order, and you can also opt to have the answers jumbled so you won't get used to D being the answer to a particular question each time, for instance.

If you let the computer generate an Element 2 or 3A test for you, the Test Name block will indicate the name "NEW" and the test identification will be displayed under the name: either Element 2 or Element 3A. Now you're ready to select Practice, Print, or Save. See section for a discussion of those options.

. Test Editor

The test editor is a utility to allow you to either create a test from scratch, or to modify an already existing test. This screen allows you to have total control over the questions in a test. The **[Test Editor]** button is placed in the test generator block on the Testing Menu because it is not necessary to have created a test before you enter the test editor. The test editor can create a test from scratch, or it can modify a test that the computer has already generated. If you already have a test in memory (a tests' name is displayed in the Test Name block), then the test editor will display the questions which make up the test already in memory, and you can change the question selections if you wish.

. Opening Screen

When you first select the testing menu, you will be presented with a screen that prompts you to select either Element 2 or Element 3A to begin the session. This is done by clicking on the menu bar at the top of the screen. The box below the prompt tells you whether there is a test in memory. If there isn't, the message will say **No element in memory** or it will tell you that there is an **Element 2** or **Element 3A in memory**.

You can open an Element 2 session with an Element 3A test in memory if you want, and vice-versa, but before your session begins, you will be warned that you are about to clear the test which you have already in memory. If that's OK with you, then click on **[OK]**, otherwise, click **[Cancel]**.

. Test Editor Operation

If you open an editing session for the same Element that you have in memory, the test editor will initially display the questions for the test in memory. If there is no test in memory, no question selections will be highlighted; you will need to select each question manually.

The screen consists of ten columns (subelements), and in each column are listed the question codes for each subelement. To select a particular question in a subelement, just click on the code number. You can only select one question for each subelement. If a test is already in memory, the question codes will be highlighted in each subelement. If you want to select a different question, just select the one you want. The buttons at the top of the screen will shift the columns to the left or the right either by one column or by ten columns. The single arrows shift by one, the double arrows shift by ten.

Remember there are 30 questions in an Element 2 test, and 25 questions in an Element 3A test.

Once you have set up the test to your satisfaction, press the **[Make Test]** button at the bottom of the screen. (This function is available to

registered users.) The questions which are currently selected in the test editor become the questions for the test in memory. Now when you return to the Testing Menu, the Status Block will show a Test Name of "MANUAL", since the test was manually created.

   NOTE!!   No changes which you make in the Test Editor become effective until the **[Make Test]** button is pressed.

If you press **[Make Test]** without a question selected for each subelement, the program will tell you that the list of questions is incomplete. Complete the selection process for all subelements, and then click **[Make Test]**.

The **[Clear All Questions]** button is self explanatory.

. Load Test

If any tests have been saved to disk, they can be reloaded into memory by selecting the **[Load Test from Disk]** option. All tests are saved with the filename extension ".tst". See section for more details. The box on the upper-left of the window will indicate the filename that you select to retrieve. If the test you wish to retrieve is located in another directory or on a different drive, then select the correct path using the subdirectory and drive selection boxes. Once the filename has been selected, either press **ENTER** or click **[OK]** to load the test. When the test is loaded, the filename will be displayed in the File Name box along with the appropriate test element designation underneath.

It should be noted that when a test is saved, any randomization of the question and answer order is not saved. If you want to have the questions and/or answers randomized, you will have to do that just prior to either practicing the test or printing the test.   The randomization procedure is reaccomplished each time a test is practiced or printed.

Three sample test files should be in your default program subdirectory for illustration purposes, TEST1.TST, TEST2.TST and MYFILE.TST. However, you will not be able to load these sample tests with the unregistered version of the program.   Once registered, this function will be fully enabled.

. Test Actions

Once a test is loaded into memory, you can either practice taking the test, print the test, or save the test to disk for later. If you try to select one of these options before a test is loaded (no test name visible), the program will remind you to load a test first.

. Practice

This is where you actually get to see how well you know the material.

When this button is selected, a pop-up screen will show you how the program defaults are currently set as far as randomizing test questions and test answers. You have the chance at this screen to change the settings for the test that you are about to practice. Changing these options here will NOT change the DEFAULT SETTINGS as you have set them on the default option screen (see section), but it does provide a temporary override of the default options.

When the testing options are set, press **[Continue]** to practice the test. You can also press **[Cancel]** to abort the procedure.

A detailed explanation of the actual practice test is in Section , the **EXAMINATION SCREEN**.

. Print

If you want the test to be more realistic, print out the test and take it on paper. Also if you're a Volunteer Examiner, then you want to be able to generate tests to administer. This function will print out the test for you. The test which will be printed out, of course, is the one in memory.. the test whose name is currently showing in the Test Name window. You have complete control over which questions are on the test, too, as discussed in section .

Just as occurs when you select the option to practice a test, a pop-up screen will show your default randomization options, and you have the chance to change these options before printing. Make sure that your printer is ready to print before going on. When ready to print, select **[Continue]**.

The first printed page is a cover sheet for the test, with spaces for the examinee's name, the names of the Volunteer Examiners and the date. The following pages will list the questions and answers, presented as you selected with the randomization options. The last page is the answer sheet for the test along with a scoring key.

Notice that at the top of each page, an ID number is printed in the upper right-hand corner. This number is a randomly generated ID for the purpose of keeping the test questions and answer sheets together in a test. If you print out several tests, you shouldn't run the risk of mixing up the answer sheets. The odds of getting two different tests with the same ID number are low, but not non-existent.

. Save

If there's a test in memory that you want to save to take again or to save for someone else to use later, for instance, select the **[Save Test]** option. A pop-up window will provide you with a save screen.

The upper-left box shows if you have selected a filename. Until you select

a filename, this block will say "*.tst". The extension for all test files is ".tst". Furthermore, ".tst" is the only extension that is allowed. If you enter a filename with no extension, the program will add it for you. If you add the ".tst" extension, the program recognizes a correct extension. If you append an extension other than ".tst" the program will change the extension to ".tst". Underneath the filename block, all test files in the current subdirectory will be displayed. If you want to save the test with a filename that already exists, you can simply click on the filename itself. A message box will ask you to verify that you want to overwrite the existing file. If you want to save the test under a new filename, simply type that filename in the box. Once a filename is entered, the test can be saved either by pressing **ENTER** or by clicking on the **[OK]** button.

If you want to save the test in a different subdirectory or on a different drive, you can change the path by selecting the desired subdirectory and drive. The drive and subdirectory that the test will be saved to will be highlighted in their respective boxes.

When a test is saved, no question or answer randomization data is saved. However, when a test is reloaded, you can again have the questions and answers randomized prior to practicing or printing.

The Save action will not be performed if your copy of the program is unregistered. Once registered, this function will be completely enabled.

. DEFAULT OPTION MENU

The Default Option Menu is available from the Main Menu and from the Question Review Screen. It is not available while practicing a test, however. This menu displays, and allows you to change, the default main options for the program. It also provides three functions for managing the "cards" in your "deck".

NOTE: This screen lets you set the DEFAULT options for the program. But each time you either practice a test or print a test, a window will pop up and offer you the chance to deviate from the defaults temporarily. Deviating from the defaults when practicing or printing a test will not change the DEFAULTS, though.

The Option Screen is controlled by pressing/clicking the control and radio buttons with the mouse or the hot keys or by tabbing to the control and then pressing **ENTER**. If you don't have a mouse, you will need to use the TAB key to move around the Option Screen. The radio buttons cannot be tabbed to; however, you can TAB to the control button beside each radio button.

The radio buttons will indicate which option in each group is selected. Only one option can be selected at a time. When one is selected, the other option is deselected.

The options that you select will govern the operation of TECH MANAGER

while you're reviewing questions, but may be temporarily overridden if you take one of the tests.

These options will also be saved to a file on your disk called "DEFAULTS.DAT" when you exit the program. TECH MANAGER will load this file whenever the program is run, allowing you to pick up where you left off; you will find your options the same as when you left the program.

. Pull Cards From Deck When Answered Correctly

If you select **[Yes]**, when you answer a question correctly, that card will be removed from the deck, and you will not be asked that question again. If you answer a question incorrectly, that card will stay in the deck so that you can go over it again. This allows you to concentrate on the questions that you still haven't learned. As you answer questions correctly, the deck will begin to thin out. This is a good strategy to prevent wasting time on reviewing questions that you have already learned.

> NOTE: You can always put a question back into the deck. When you pull a card from the deck, it isn't lost, it's just flagged that you've answered it correctly and have chosen not to leave it in the deck for now. The function to reinsert a card into the deck is on the Option Screen, and is explained in section .

If you select **[No]**, answering a question correctly will not pull the card from the deck. You can review the questions by either having the answers displayed all the time or by attempting to correctly answer the questions before the answer is shown, but the question card deck will not be altered in any way while **[No]** is selected.

This option block is tied to the **DISPLAY ANSWERS** option block, described next. The relationship between the two option blocks is described in section .

. Display Answers

The answer to a question can be shown at the time that the question is first displayed, or it can be hidden until you attempt to answer the question.

If you select **[Always]**, the answer to a question will be visible to you when the question first pops onto the screen. This is good when you are first going through the questions to learn them.

Selecting **[After Attempt]** will hide the answer to each question until after you have pressed one of the answer buttons.

. Relationship Between Modifying the Deck and Displaying Answers

If you have selected the option to pull a question from the deck when you answer it correctly, it makes sense that the answer shouldn't be shown until

after you try to answer.

So, if you select the option to Display Answers **[Always]**, the option to modify the deck will automatically change over to **[No]**. Likewise, if you select the option to modify the deck **[Yes]**, the option to display answers will change to **[After Attempt]**.

. Randomize Answers

When you practice taking a test or when you print a test, you have the option of randomizing the answers. Before you practice or print a test you are also given an opportunity to temporarily override this default.

If you select **[No]** for this option, the answers that you see on the review screen will always be in the same A, B, C, D order. By selecting **[Yes]**, as each question comes up on the screen (except questions with graphics), the answers will randomly be shuffled so that you won't necessarily get used to seeing the answer in the same place every time. This is how the FCC examination will be; they don't have to always list the answers in the same order.

Don't worry, TECH MANAGER still knows which answer is the correct one, no matter how they have been rearranged.

  NOTE: There are 30 questions between the Element 2 and 3A question pools that have graphics associated with them. TECH MANAGER has these graphics in bitmap (*.BMP) files, and it loads them whenever a graphic question is accessed. Due to screen space allocation, the four multiple choice answers for these questions are a part of the graphic itself. Therefore, the answers for the questions with graphics cannot be shuffled, even if the option to do so is selected.

. Randomize Test Questions

This option is very similar to the Randomize Answers option, and it adds another level of reality to the testing environment. Don't expect to get the questions in the same order as they occur by subelement when you take your FCC exam. By selecting the option to randomize the test questions, you set the default condition to randomize the questions when you either practice a test or print a test. As was discussed in the last section, you are given the opportunity before practicing or printing a test to temporarily override the defaults without changing the defaults.

. Put One Question Back In Deck

If a question has been pulled from the deck and you decide that you want to put it back into the deck until you learn it better, it's very easy to do. Press the **[Put One Question Back In Deck]** button.

Once you press this command button, a smaller window will pop up and

allow you to enter the question (card) number that you want to put back into the deck. The number that TECH MANAGER puts into the box automatically is the number of the next question with respect to the last question you looked at. Thus, if you were on question 50 and you selected this option, the number in the box would be 51. If this isn't the number you want to replace in the deck, simply type the number of the question that you do want.

TECH MANAGER looks at the card that you have selected. If that card is already in the deck, then no action will take place. You will simply be returned to the option screen. If the card really has been pulled from the deck, TECH MANAGER will put the card back and when you return to the question screen, you will find that the card you're seeing is the one that you just put back into the deck.

If you have entered the option screen directly from the main menu after starting TECH MANAGER, the number shown in the window when you select this option will be the number following the last question that you looked at when you last terminated the program. (TECH MANAGER saves the last question to a data file when it terminates.)

. Remove A Question From Deck

When you are reviewing questions, you can select the option to have the program automatically remove cards from the deck when you answer a question correctly (discussed previously). Aside from this automatic function, however, any time you decide that you would like to pull a particular question from the deck, TECH MANAGER makes this easy to do by pressing the **[Remove a Question From Deck]** button.

When this option is selected, a smaller window pops up so that you can enter the question number that you would like to pull from the deck. By default, the number that appears in the window is the number of the question you last looked at. This even includes if you have just started the program. (The last question you looked at was saved to disk when you exited the program and automatically loaded by TECH MANAGER when you restarted the program.) If you are starting TECH MANAGER for the first time, and you have never looked at any questions, the number seen in the box will be 1.

If you have entered the Option Menu from the Question Review Screen, when you return to the Question Review Screen, the question which will be displayed will be the one following the question you just pulled.

If you tell TECH MANAGER to pull a question from the deck which has already been pulled, TECH MANAGER will simply return you to the Option Screen without taking any action.

. Put All Questions Back In Deck

If you decide to start all over again, you can use the **[Put All Questions Back In Deck]** button. When you select this function, a WARNING window will ask you if you're **REAL** sure you want to do this. If you have pulled, for instance, 500 questions from the deck, whether it was done automatically by answering them correctly, or by pulling them manually, or both, you have narrowed the deck down to only 145 questions left to study. If you select **[Yes]** from the warning screen, all 500 of those pulled cards will go back into the deck, and you will be starting from scratch!

. Done

When you have selected the options you want to use, select **[Done]**. If you entered the Option Screen from the Main Menu, you will be returned to the Main Menu. If you entered the Option Screen from the Question Review Screen, then that is the screen you will be returned to.

. PRINT FROM QUESTION POOL

The situation may arise where you just want to print out questions from the question pool. This option lets you print out questions, with or without the answers. The screen is simple and easy to use.

First of all, the question pool identifies questions by their codes, such as N1A01. However, TECH MANAGER manages the questions by assigning them numbers, 1 through 645. To make it easy to relate the question codes with the TECH MANAGER numbers, you can print out a cross reference sheet for either Element 2 or Element 3A. Click on the **[Print Cross-Reference Sheets]** on the Menu Bar. Then select either Element 2 or 3A.

Once you decide which questions you want to print out, fill in the appropriate areas with the TECH MANAGER numbers. You can enter only 5 ranges of numbers to print out at a time, but it only takes 1 range to specify question 1-645 and print out the entire pool! If you only specify 1 number to print and you don't enter anything in the second box, the second box will automatically be set to the same question number as box 1. The same is true if you only enter a number in the second box.

If you enter a number in the second entry box which is smaller than the first entry box, the program will indicate an error and ask you to correct the entries.

When you have selected the questions to print, you may opt to have the answers printed, too. The answers will be printed right after each question and it's 4 answers.

Now select **[Print]**, and the questions will be printed out. If you need to print more, you can press the **[Clear Entries]** button and all numeric entries will be cleared.

NOTE: The unregistered shareware copy will not allow you to print. Once

you register your copy, this function and all others will be totally enabled.

. QUESTION REVIEW SCREEN

This is the screen where you will probably spend most of your time. The Question Review Screen is very versatile in the way that you can use it to learn the questions, especially coupled with the Option Screen which was discussed in the last section.

The Question Review Screen can be controlled by using the "hot" keys shown on the command buttons, by tabbing to the button and pressing **ENTER**, or by using a mouse.

The features of this screen are discussed in detail in the following sections.

. Displayed Information

The information which is displayed at the top of the Question Review Screen is discussed in the following sections.

. Question Code

Every question is assigned a code by the FCC Question Pool Committee. As each question is reviewed, the code assigned to each question is shown in this box.

. Card Number

The "card deck" has 645 cards in it, and TECH MANAGER numbers these cards 1 through 645. The card number for the question displayed is shown in the box. The card number will probably give you a better idea of where you are in the deck than the Question Code will.

. Cards in Deck

This number will be 645 when you run TECH MANAGER for the first time. It indicates how many cards are **left** in the deck. As you learn the questions, you can choose to pull cards from the deck, so that you only have questions remaining that you still need to work on. As cards are pulled from the deck, the number will decrease from 645, showing you how many questions you still have to work on. To find out how to pull cards from the deck, either automatically or manually, refer to the Option Screen, sections and .

. Pull Cards

One of TECH MANAGER's more attractive features is that if you answer a question correctly, it will automatically remove that question from the deck.. **if** you have that option selected, of course. Section describes how to turn this option on and off. The **Pull Cards** window on the Question Review Screen indicates whether or not the option to modify the deck when a question has been answered correctly is selected or not.

You can also change the Pull Cards option from the Question Review Screen by pressing **[Options],** accessing the Option Screen (section).

. Question Block

The first large block below the top information line is the Question Block. It is here that the questions will always be displayed.

. Answer Blocks

Typically there are four answer blocks displayed below the question block, and the answers shown in the blocks are labeled A, B, C, and D. These blocks are for display of the possible answers. To select an answer, you must use the Answer Buttons described in section .

In the cases where the questions have graphics associated with them such as block diagrams or schematic diagram components, one large answer box will replace the four smaller answer boxes, and the graphic will be displayed in the box, along with the four possible answers.

. Correct Answer Block

Whether or not the Correct Answer Block is displayed when the question is first displayed depends on how you have selected your options (section).

If you have selected the option to Display Answers **[Always]**, the Correct Answer Block will be visible at all times. The Answer buttons will also be disabled in this case.

On the other hand, if you have opted to have the answers displayed only after you attempt to answer the question, then the Answer Block will not be visible when the question is first displayed and the Answer buttons will be enabled. If you press any one of the Answer Buttons, the Answer block will pop up and show the correct answer, and a message of **YES!** or **SORRY.** will pop up over the answer buttons to indicate if your selected answer was the correct one or not.

. Controls

. Answer Buttons

The answer buttons are used to select an answer to the displayed questions, however, they are not always enabled. You can tell if the buttons are enabled by the color of the caption print on the buttons.

If you have selected the option to display the correct answer all the time (section), the answer buttons will be disabled. You can see in this case that the "A", "B", "C", and "D" on the buttons are not black, but are dimmed, and the correct answer block is visible, showing the answer to the displayed question.

If you have selected the option to display answers only after you attempt to answer the question (section), the answer buttons will be enabled and the "A", "B", "C", and "D" on the buttons will be black. Since you are going to try to answer the question, the answer block will not be visible until after you select one of the answer buttons.

. Next and Back Buttons

. Next Button

When you were at the Main Menu, you chose which question you wanted to begin with in your review. The **[Next]** button lets you move on from the displayed question to the next question even if you don't want to try to answer the question displayed.

If you have pulled cards from the deck, then the card that TECH MANAGER will retrieve next will be the next card in the deck. For example, if you are currently looking at question 50 and you have already pulled questions 51 and 52, when you select **[Next]**, question 53 will be displayed.

The **[Next]** button can also function differently. As long as the **[Back]** button is displayed beside the **[Next]** button, pressing **[Next]** will move sequentially through the deck as just described. However, if you don't want to review the questions in order, you can review them randomly (see section). In random mode, the **[Back]** button will not be shown on the screen, and the **[Next]** button will be the only control for moving to a different question. In this case, pressing **[Next]** will have TECH MANAGER pick a card randomly from those cards still in the deck. You can see, by watching the Card Number Block at the top of the screen, how you really are randomly jumping around in the deck!

If you are reviewing the questions sequentially, and you reach the last card in the deck, the **[Next]** button will be disabled. You can tell this by the **[Next]** on the button changing from black to gray. As soon as you go back to a different card, the button will become enabled once again. If you are reviewing the questions randomly, the **[Next]** key will disable

when there is only one card left in the deck.

. Back Button

When you are reviewing questions sequentially, the **[Next]** button will be visible beside the **[Next]** button. Pressing **[Back]** will bring up the first question found in the deck which is before the card that you're currently looking at. This means that if cards just in front of the current card have been pulled, TECH MANAGER will show you the first question (toward the front of the deck) that it finds that hasn't been pulled.

If there are no cards in front of the one you're looking at, for example, if you are looking at question 1, the **[Back]** button will be disabled. As soon as you go to a card that is not at the very front of the deck, the **[Back]** button will be enabled again.

Like the **[Next]** button, you can use the **[Back]** button to flip through the cards in reverse order without having to try to answer the questions.

. More on the Next/Back Buttons

Pressing the **[Next]** or **[Back]** button also causes TECH MANAGER to do some housekeeping. Specifically, if you have selected the option to Pull Cards when you correctly answer a question (you can tell by looking at the Status Line at the top of the screen), and you do correctly answer the question, the card will be pulled from the deck when you press the **[Next]** or **[Back]** button. So if you have answered a question correctly and decide that you don't want it pulled from the deck yet, before you press **[Next]** or **[Back]**, you can press the **[Option]** button (section) and change the **Pull Cards From Deck When Answered Correctly** option to **[No]** (section). When you return to the Question Review Screen, you can press **[Next]** or **[Back]**, and the card will not be pulled from the deck. (If you want the Pull Card option turned back on, go back to the option screen and change it back.)

. Random/Sequence Buttons

TECH MANAGER lets you decide how to study. If you want to progress through the questions in sequential order, you can do that. If you would like to go through them in random order, you can do that, too.

Below the **[Next]** and **[Back]** buttons, you will see a button labeled **[Rnd]**. Pressing this button will switch TECH MANAGER from sequential mode to random mode and the **[Back]** button will disappear. The **[Back]** button disappears because there is no forward or backward anymore, just the random selection of cards from the deck. If you want to go back to a previous question, you will need to exit to the Main Menu, reselect **Review Questions and Answers** and then select the question you want to look at. There is another way. Switch from random mode to sequential mode and then use **[Next]** or **[Back]** to get to the question that you want to see.

The only hangup here is that if the question is a long way off in the deck from where you are, it might take awhile!

The option to pull cards on correct answers still functions in random mode.

If you are in random mode and you want to get back to sequential mode, just press the **[Seq]** button, and the **[Back]** button will come back onto the screen, indicating that you're back in sequential mode.

. Calculator Button

Tab to, click on, or press **[Calc]**, and a calculator will pop up onto the lower right of the screen to help you with those questions where you need to use one, or even if you just need to balance your checkbook while you're studying questions!

The calculator, like the rest of TECH MANAGER, can be controlled by the mouse or the keyboard. If you use the keypad on your computer, make sure that your NUMLOCK is on. The ENTER key on your keypad can be used for " = " as well as by using the " = " itself.

When you are finished with the calculator, use the **[Exit]** button to close the calculator and go back to the Question Review Screen.

. Reference Button

TECH MANAGER is a tool to help you prepare for the Technician Class FCC License. However, it currently provides no explanations as to why a particular answer is right and the rest are wrong. Gordon West has done an excellent job of that in his book New No-Code Technician Class FCC License Preparation. This book is available at most Radio Shacks.

As you use TECH MANAGER, if you aren't sure why a particular answer is the right one, press the **[Ref]**erence button, and the button itself will show you what page to look on in the book to find the explanation for that question.

The **[Ref]** button will change back to say **[Ref]** either by pressing the button while the number is showing, or simply by pressing another button.

. Options Button

If you want to change your options while you are reviewing questions, select **[Option].** You will be taken to the main Option Screen, where you can make changes as described in section .

When you're done on the Option Screen, press **[Done]** and you will be returned to the Question Review Screen, with the appropriate functions modified in accordance with the options you selected.

. Main Menu Button

When you are ready to exit the Question Review Screen, press **[Main Menu]**. TECH MANAGER will remember which question you are looking at when you leave the Question Review Screen and even save it to disk when you completely exit TECH MANAGER. When you restart TECH MANAGER, the question number that will pop into the screen will be the first question in the deck following the one that you left off with. Even if you decide to take a test, when you want to come back to the Question Review Screen, TECH MANAGER will remember your place!

. EXAMINATION SCREEN

The Examination Screen is very similar to the Question Review Screen, but one of the main differences is that TECH MANAGER will not allow access to the Option Screen during a test. The Option button which you find on the Question Review Screen is not even on the Examination Screen. The reason is that TECH MANAGER sets the options for a genuine test environment. (TECH MANAGER will let you review the questions any way you want to, but when it comes to trying out a test, you have to follow the rules!)

The options that are set when you take a test are as follows:

1. The option to pull cards from the deck during a test is disabled.

2. The answers will only be shown to you after you try to correctly answer the questions.

You do have the option just before taking a practice test to select whether or not the questions and the answers are randomized. For more information, refer to section .

The obvious changes which were made to the Question Review Screen to create the Examination Screen are:

1. The "card" number is no longer displayed.

2. The **Pull Card** status window is no longer shown.

3. The **Random/Sequence** button is removed.

4. The **Option** button has been removed.

5. The **REF** button has been removed.

Other changes will be discussed in detail when the Examination Screen is explained in the following sections.

NOTE: If you are using an unregistered shareware version of TECH MANAGER, you will only be able to advance through the first three

questions on practice exams. This is to let you see how the program works and decide if it will help you practice for the Technician Class Examination. Because you aren't allowed to answer all the questions on a practice test, you cannot see the Test Results Screen that is discussed in section . As soon as you register your copy of TECH MANAGER, your registration number will completely unlock all the features in the program for you.

. Displayed Information

. Question Code

The Question Code block is the same as the Question Review Screen; it shows the code for the question that is displayed on the screen.

. Question Number

The examination on Element 2 has 30 questions, and the Element 3A test has 25 questions. The Question Number box shows you the question number as it would appear on a test. It has no reference to the "card number" in the deck, or to the Question Code. For a test on Element 2, the first question shown will be question 1, and the last one will be 30.

. Score So Far

This is where you find out how you're doing as you take the test. It calculates your score as you go, based on the number of questions that you have correctly answered so far. For instance, if you correctly answer 4 of the first 5 questions correctly, your Score So Far would be 80(%). If you go on to answer all of the remaining questions correctly, that means that you answered 29 out of 30 correctly, and your score would be 97. (Actually 96.66.)

When you answer the last question, the score block will say **FINAL SCORE:**, showing how well you did.

. Question Block

The Question Block is the same as discussed for the Question Review Screen. You will see the test questions displayed here.

. Answer Blocks

The answer blocks are the same as on the Question Review Screen. Most questions will have four blocks, with one multiple choice answer displayed in each one. However, for those questions that have graphics included with them, there will only be one block to display the answer; the graphic will be shown, and the multiple choices for that graphic will be a part of the graphic as well. The multiple choice answers cannot be shuffled for these graphic questions.

. Correct Answer Block

This block which shows the correct answer is identical to that found on the Question Review Screen. The only difference is that while you are taking a test, you don't have the option of displaying the answer all the time. The answer is only shown to you after you answer the question.

In connection with the correct answer, after you answer a question by selecting one of the answer buttons, "A", "B", "C", or "D", a box will pop up over the answer buttons saying either **YES!** if you answered correctly, or **SORRY!** if you answered incorrectly.

. Controls

There aren't as many controls available to you while your taking the test because, well, **you're taking a test!** As discussed before, you can either press/select the controls (buttons) by either tabbing to them, and then pressing **ENTER**, by using the "hot" keys, or by using a mouse. The controls that you have available during an examination are discussed below.

. Answer Buttons

The answer buttons are used to select the answer for each question. The characters, "A", "B", "C", and "D", will be black (enabled) on questions that you have not yet answered. When you press an answer button, TECH MANAGER's response is to cover the buttons with a message telling you if you answered the question correctly or not. When you proceed to the next question, the characters will again be enabled. **But** if you back up to the question that you just answered, you will find that the characters are now gray, indicating that the answer buttons are disabled. Sorry, you're only allowed one attempt to answer each question. You are allowed to browse backward and forward through the test, but once you answer a question, either right or wrong, TECH MANAGER won't allow you to answer the question again.

If you do browse forward and backward through the questions (and you can answer the questions in any order that you prefer), the condition of the answer buttons (enabled or disabled/black or gray) is your indication of whether or not you have answered that question; if the buttons are black, that's a question that you still haven't answered. After you answer the last question, you will know it because your score will be indicated as a **FINAL SCORE**.

. Next Button

After you answer a question, press **[Next]** to go to the next one. You can use **[Next]** to skip a question if you want to; but you will have to come back to it before you will get a final score. The **[Next]** button is disabled on the last question of the test.

. Back Button

You can go back and look at questions you have either answered or skipped by pressing the **[Back]** button. You will have to answer all the questions before you get a final score. Remember, if the answer buttons are black, that's a question that you still haven't answered. The **[Back]** button will be disabled anytime you are on question 1.

. Calculator Button

You are probably going to need the calculator during the test, and you're allowed to use one when you actually take your test. Press the **[Calc]** button at any time, and the calculator will pop up onto the screen just like on the Question Review Screen. For more details on using the calculator, refer to section .

. Main Menu Button

When you are finished with the test, or if you just want to exit the Examination Screen, press the **[Main Menu]** button, and you will be returned to the Main Menu.

If you exit the Examination Screen, you can come back to the same test, but you'll have to start over.

. TEST RESULTS

After you answer the last question on a practice test, not only is your score shown as the **Final Score**, but a control button appears just to the right of the score box, labeled **[Test Info]**. Press this button to get the results of your test.

A window will pop-up on the screen that tells you the number of questions you missed and whether you passed or failed the test. It will also show you each subelement in which you missed each question, along with the question numbers that you need to study for each subelement. If you want to print this information out, just press the **[Print]** button.

Once the test is completed, you can go back through the questions, and the correct answers will be shown to you.

. FILES ON TECH MANAGER DISTRIBUTION DISKS

The TECH MANAGER disks contain 47 files which are listed here to ensure that you have all the files needed for proper operation of the program.

README.1ST	CUSTOM3.DAT	PIC260.BMP	PIC333.BMP
AVEXTRA.TXT	TEST.DAT	PIC264.BMP	PIC334.BMP
TECHMGR2.DOC	TEST1.TST	PIC265.BMP	PIC571.BMP
TECHMGR2.WPF	TEST2.TST	PIC266.BMP	PIC572.BMP

TECHMGR2.EXE	MYFILE.TST	PIC267.BMP	PIC573.BMP
TECHMGR2.DAT	PIC253.BMP	PIC268.BMP	PIC574.BMP
*VBRUN200.DLL	PIC254.BMP	PIC269.BMP	PIC575.BMP
THREED.VBX	PIC255.BMP	PIC280.BMP	PIC587.BMP
REG.FRM	PIC256.BMP	PIC281.BMP	PIC588.BMP
XREF2.TXT	PIC257.BMP	PIC282.BMP	PIC589.BMP
XREF3A.TXT	PIC258.BMP	PIC331.BMP	PIC590.BMP
CUSTOM2.DAT	PIC259.BMP	PIC332.BMP	

*Not included in HAMT-23W.ZIP since many people already have this file. It is frequently available on bulletin boards. Those who don't have it may download it from the PRACTICAL-ly Software BBS at 301-916-9298.

README.1ST - Information on how to get started.

AVEXTRA.TXT - ANSI character file that is attached to the ZIP file which contains information on TECH MANAGER. This file can be viewed again from DOS by typing "TYPE AVEXTRA.TXT".

TECHMGR2.DOC - This documentation file in ASCII format.

TECHMGR2.WPF - This documentation file in Word Perfect 5.1 format.

TECHMGR2.EXE - The main TECH MANAGER program.

TECHMGR2.DAT - is a random access file that contains the question pool and all the information related to each question that TECH MANAGER needs.

VBRUN200.DLL - is a dynamically-linked library, written by Microsoft for Visual Basic created .EXE files, which enables TECH MANAGER to link to Windows. It has to be in the same directory as the TECH MANAGER program files or in the WINDOWS\SYSTEM subdirectory. See section , Acknowledgements for restrictions on the distribution of this file.

THREED.VBX - enables three dimensional controls and labels, etc. in the program. This can either be placed in the subdirectory with the TECH MANAGER files or in the WINDOWS\SYSTEM subdirectory. The file was developed by Sheridan Software Systems, Inc. of Melville, NY. and is distributed with the Microsoft Visual Basic Professional Development Software. This file should not be distributed by itself. It should be distributed only with the HAMT-20W.ZIP file zipped by PRACTICAL-ly Software.

REG.FRM - is an ASCII text file which TECH MANAGER reads to print out the registration form. It may also be printed by typing "PRINT REG.FRM", but doing so will also print the quotes (") which delimit each line. It is a read-only file.

XREF2.TXT - is an ASCII file which relates the Official Question Codes to TECH MANAGER's question numbering system for Element 2. TECH MANAGER will print this form from within the program on the **Print From Question Pool**

Screen. This file can be printed from DOS by typing "PRINT XREF2.TXT". It is a read-only file.

XREF3A.TXT - is the same as XREF2.TXT, except that it is for Element 3A. It is a read-only file.

CUSTOM2.DAT - is an ASCII file which contains data necessary for TECH MANAGER to relate Question Codes to TECH MANAGER's question numbering system on the Test Editor screen for Element 2. It is a read-only file.

CUSTOM3.DAT - is the same as CUSTOM2.DAT, except that it is for Element 3A. It is a read-only file.

TEST.DAT is a sequential file which contains numbers representing the question structure for Elements 2 and 3A. TECH MANAGER reads this file each time it generates a test. It is a read-only file.

PICxxx.BMP are bitmap files which TECH MANAGER reads for graphic questions. If card 253 is chosen to be displayed, either on the Question Review Screen or on the Examination Screen, TECH MANAGER will read PIC253.BMP and place that graphic on the display screen.

. FILES THAT TECH MANAGER CREATES

After TECH MANAGER has been run once and then exited, TECH MANAGER creates three files: DEFAULTS.DAT, DECK.DAT, and CROSDECK.DAT. These files together keep track of all the parameters necessary to let you pick up where you left off when you restart TECH MANAGER each time. TECH MANAGER loads them into the program when the Title Screen comes up.

DEFAULTS.DAT: Stores the values of Option Screen variables.

DECK.DAT: This is a sequential file which lists the questions that are in the deck. Do not attempt to modify this file. It is synchronized with the data in the CROSDECK.DAT file, and changing it will certainly cause TECH MANAGER to malfunction sooner or later (probably sooner!).

CROSDECK.DAT: This sequential file holds the contents of two arrays in TECH MANAGER which it uses to cross reference the deck.

. WHAT DO YOU GET BY REGISTERING?

When you register, you provide to PRACTICAL-ly Software the name under which you want to register the program. PRACTICAL-ly Software will then issue to you a registration number which will completely unlock your program. So you get a great program for a very reasonable price!
With this release of TECH MANAGER, graphics have been incorporated, but are not printed when printing tests. When you register, you will be sent a printed copy of the Technician Class graphics which are needed when taking printed tests.

You get free technical support (between 6:00 and 10:00 p.m. EST).

You get free limited upgrades. As PRACTICAL-ly Software makes improvements to TECH MANAGER, the upgraded programs will be maintained on the PRACTICAL-ly Software BBS. This version of TECH MANAGER is 2.3. Any bug fixes and minor improvements will be designated as versions 2.x. Your registration number will "turn on" these new versions of TECH MANAGER, too. Major program revisions will be available to registered users at a reduced cost.

. HOW TO REGISTER!!

You have no doubt noticed that the unregistered shareware version of TECH MANAGER is limited in its functionality. The reason is that TECH MANAGER is the product of over a year of serious programming effort, and it is not free. Shareware only works when those who try the software and then use it pay for the program. Unfortunately, not everyone in the world is honest. As a result, TECH MANAGER is distributed in a form that lets prospective users look at the program and determine if it fits their needs. If it does, they can register their copy and receive a registration number which will totally unlock every feature in the program. Program registration is also very reasonable. The cost is kept low to encourage people to register their copies. Once you look at TECH MANAGER, there can be no doubt that the program is worth the cost... if it fills your needs.

There are three ways to register:

1. By mailing a check or money order along with the registration form. Go into the **Main Menu** in TECH MANAGER and click onto **Program Info** on the menu bar, and then select **[Print Registration Form]**.

    If you register by mail, your registration number will be sent to you by mail, or if you specify on the registration form, we'll send it by fax.

2. By faxing the registration form to PRACTICAL-ly Software with the appropriate credit card information filled out. As soon as we can process your order, we will send your registration number back to you by fax, or by mail if you prefer. You specify which.

3. By logging onto the PRACTICAL-ly Software Bulletin Board Service (BBS) with your computer and using the credit card registration door. Follow the directions in the registration door. After your order is processed, PRACTICAL-ly Software will either leave your registration number in a private message to you on the BBS, fax it to you, or mail it to you. Your choice.

. TROUBLESHOOTING

This manual has made numerous references to the fact that TECH MANAGER saves various kinds of data to the disk to allow the program to "pick up where it left off". This is a very handy feature to have in this sort of program, but if those files should become corrupted in some way, TECH MANAGER will likely malfunction in some way or another.

This can easily be corrected in one of two ways.

1.   First and easiest is to enter the Option Menu as soon as you start the program and press the **[Put All Questions Back In Deck]** button. This will reinitialize all the arrays which reference and cross-reference the question card deck.

or

2.   Go into DOS into the subdirectory that you have TECH MANAGER in. Delete DEFAULT.DAT, DECK.DAT, and CROSDECK.DAT. When you start TECH MANAGER now, the program will reinitialize all of its archival files when it sees that they aren't on the disk.

Windows applications can sometimes malfunction when accessing disk files if the buttons are clicked too fast. For instance, if you click the **[Next]** button very fast in the Question Review Screen, the program may lose synchronization between its internal arrays. If a problem occurs, first try restarting the program. This may fix the problem. If you still have problems, put all the questions back into the deck as was just described above.

. ACKNOWLEDGEMENTS

TECH MANAGER was written with Microsoft's Visual Basic 2.0 Professional.

The VBRUN200.DLL file, a dynamically-linked library which is included with the TECH MANAGER package, is a product of Microsoft which allows TECHMGR.EXE to run under Windows without Visual Basic. Microsoft requires no license or payment for the use of this run-time file. However, Microsoft specifies that VBRUN200.DLL can only be distributed with Visual Basic .EXE files; it cannot be distributed by itself.

The THREED.VBX file enables three-dimensional objects in Visual Basic Professional applications. This program is written by Sheridan Software Systems, Inc., of Melville, NY. This file requires no payment or license, but should only be distributed with TECH MANAGER software as distributed by PRACTICAL-ly Software.