# Professional Tool Kit BASIC-PLUS-2
## Installation Guide and Release Notes

Order No. AA-P104B-TK

**May 1983**

This document describes how to install Tool Kit BASIC-PLUS-2 on RSX-11M/M-PLUS and VMS operating systems and how to confirm installation using the Installation Verification Process. It also provides information specific to this release of Tool Kit BASIC-PLUS-2

OPERATING SYSTEM AND VERSION: VAX/VMS V3.2 or later
RSX-11M V4.1 or later
RSX-11M-PLUS V2.1 or later

SOFTWARE VERSION: Professional Developer's Tool Kit V1.5
Professional Tool Kit BASIC-PLUS-2 V2.1

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PREFACE

## Manual Contents and Intended Audience

This manual describes the current release of Professional Tool Kit BASIC-PLUS-2, its installation and known problems.

Chapter 1 describes the installation of Professional Tool Kit BASIC-PLUS-2 on RSX-11M/M-PLUS host systems.

Chapter 2 describes the installation of Professional Tool Kit BASIC-PLUS-2 on VAX/VMS host systems.

Chapter 3 describes the Installation Verification Process (IVP).

These chapters are intended for system managers.

The last chapter provides release notes for Professional Tool Kit BASIC-PLUS-2. It is intended for applications developers.

## Documentation Conventions

Bold letters are used in this manual to indicate what user input, a distinguished from computer display. For example:

> Device containing the distribution kit? [S]: **MMØ:**

## Overview of the Installation Process

Follow these steps to begin using Tool Kit BASIC-PLUS-2 on your system:

1. Install the Tool Kit software on your host. Use the instructions in the Tool Kit Installation Guide and Release Notes.

2. If your system includes a Professional, install the Professional software and hardware. Use the Professional 300 Series Installation Instructions and the Professional 300 Series User's Guide: Hard Disk System.

   Then install the applications provided with the Tool Kit: Fast Install and the Application Diskette Builder. Use the instructions in the Tool Kit Installation Guide and Release Notes

3. Install Tool Kit BASIC-PLUS-2 on the host. Follow th instructions in Chapter 1 or 2 of this manual.

4

Then perform the Installation Verification Process (IVP) to confirm the installation of the Tool Kit on the host. Follow the instructions in Chapter 3 of this manual.

4. If your system includes other Tool Kit layered products (supported languages), install these at the host and confirm their installation with the appropriate IVP. Follow the instructions in the related installation guides.

5. Read the Tool Kit Documentation Directory.


Related Documentation

For information on programming in Tool Kit BASIC-PLUS-2, see the Tool Kit BASIC-PLUS-2 Documentation Supplement and your BASIC documentation: BASIC on RSX-11M/M-PLUS Systems, the BASIC Reference Manual, and the BASIC User's Guide.

The Tool Kit Documentation Directory describes the manuals that make up the Tool Kit documentation set. It also provides information on related documentation: end user, host system, and Tool Kit supported languages. If you have any questions about documentation for the Tool Kit, check the Tool Kit Documentation Directory first.

For further information on the Professional Tool Kit, see the manuals the Tool Kit Documentation Directory describes.

# CHAPTER 1

## INSTALLING TOOL KIT BASIC-PLUS-2 ON RSX-11M/M-PLUS

## 1.1  PREPARING FOR INSTALLATION

### 1.1.1  Minimum Requirements

Professional Tool Kit BASIC-PLUS-2 requires approximately 3000 blocks free disk space. Of that space, the following disk space must be contiguous:

- 945 blocks for each compiler

- 190 blocks for the BASIC Resequencer

These values are approximate.

To install Professional Tool Kit BASIC-PLUS-2, you must have already installed the Peripheral Interchange Program (PIP) to manipulate distribution files. In addition, if you plan to install from magtape, you must have the File Exchange Program (FLX) to transfer files from magtape to disk.

The Professional Tool Kit BASIC-PLUS-2 distribution volume is available on:

- 800 bpi (nine-track) DOS magtape, volume label PRO TK BP2 V2.1 RSX 8MT9

- 1600 bpi (nine-track) DOS magtape, volume label PRO TK BP2 V2.1 RSX 16MT9

- RL02 disk, volume label PRO TK BP2 V2.1 RSX RL2

- RK07 disk, volume label PRO TK BP2 V2.1 RSX RK7

You must have access to a drive on which to mount the distribution volume.

You can install Professional Tool Kit BASIC-PLUS-2 on a public or private disk. You should install Tool Kit BASIC-PLUS-2 and the Professional Tool Kit on the same disk. If you intend to install Tool Kit BASIC-PLUS-2 on a public disk, you must use a privileged login user identification code (UIC). If you do not have one, contact your system manager before beginning the installation.

- If you intend to install Tool Kit BASIC-PLUS-2 on a private disk, proceed to Section 1.2.

- If you intend to install Tool Kit BASIC-PLUS-2 on a public disk from disk, proceed to Section 1.3.

- If you intend to install Tool Kit BASIC-PLUS-2 on a public disk from magtape, proceed to Section 1.4.

## 1.2  INSTALLING ON A PRIVATE DISK

Follow these steps to install Tool Kit BASIC-PLUS-2 on a private disk:

1.  Log in to your RSX-11M/M-PLUS system.

2.  If you are using a DCL terminal, type:

        $ SET TERM MCR

3.  Allocate a drive for your disk.  For example, if you are using an RL02 disk in drive 0, type:

        > ALL DL0:

4.  Mount your disk.

        > MOU DL0:TOOLKIT

    The volume label "TOOLKIT" is not required;  it can be any valid name.

5.  Assign the logical name LB:  to your disk:

        > ASN DL0:=LB:


                              NOTE

        You will have to make the same assignment every  time  you
        use Tool Kit BASIC-PLUS-2.


6.  If you intend to install Tool Kit BASIC-PLUS-2 from disk,  proceed to Section 1.3, step 3.

7.  If you intend to install Tool Kit BASIC-PLUS-2 from magtape, proceed to Section 1.4, step 3.

## 1.3  INSTALLING ON A PUBLIC DISK FROM DISK

NOTE

If you intend to install Tool Kit BASIC-PLUS-2 on a public disk, you must use a privileged login user identification code (UIC). If you do not have one, contact your system manager before beginning the installation.


1.  Log in to your RSX-11M/M-PLUS system.

2.  If you are using a DCL terminal, type:

    $ SET TERM MCR

3.  Load the distribution volume into a drive, making sure that it's write-locked.

4.  Allocate the drive. For example, type:

    > ALL DL1:

5.  Mount the distribution volume. For example, type:

    > MOU DL1:MTK10A

    The volume label "MTK10A" is required.

6.  It is recommended that you now back up the distribution volume. Use any of the standard RSX-11M/M-PLUS backup utilities.

7.  Copy the installation command file (TKIP.CMD) from the distribution volume to your default directory:

    > PIP /NV = DL1:[1,5]TKIP.CMD

8.  Turn to Section 1.4, step 7, and proceed.

## 1.4  INSTALLING ON A PUBLIC DISK FROM A MAGTAPE

NOTE

If you intend to install Tool Kit
BASIC-PLUS-2 on a public disk, you must
use a privileged login user
identification code (UIC). If you do
not have one, contact your system
manager before beginning the
installation.

1.  Log in to your RSX-11M/M-PLUS system.

2.  If you are using a DCL terminal, type:

        $ SET TERM MCR

3.  Load the Tool Kit BASIC-PLUS-2 distribution volume into a drive,
    making sure that it's write-locked. (Make sure the the plastic
    ring has been removed before loading the tape.)

4.  Mount the Tool Kit distribution volume. For example, type:

        > MOU MMØ:/FOR

5.  It is recommended that you now back up the distribution volume.
    Use any of the standard RSX-11M/M-PLUS backup utilities.

6.  Copy the installation command file (TKIP.CMD) from the
    distribution volume to your default directory. If you are copying
    from an 800 bpi magtape, use the command:

        > FLX /RS=MMØ:[1,5]TKIP.CMD/DO

    If you are copying from 1600 bpi magtape, use the command:

        > FLX /RS=MMØ:[1,5]TKIP.CMD/DO/DNS:1600

7.  Execute the installation command file:

        > @TKIP

8.  The following will display on your screen. When the system
    prompts you, type in the name of the device on which the
    distribution volume in loaded. (If your host system does not have
    parent-offspring tasking, additional command lines will display.)

```
>;---------------------------------------------------------------;
>;                                                                ;
>;           P R O F E S S I O N A L    T O O L    K I T          ;
>;                                                                ;
>; B A S I C - P L U S - 2   V 2 . 1   I n s t a l l a t i o n    ;
>;                                                                ;
>;          F o r   R S X - 1 1 M / M - P L U S                   ;
>;                                                                ;
>;---------------------------------------------------------------;
>;
>;
>* Device containing the distribution kit? [S]: DL1:
>;
>;        Copying the Tool Kit files
>;
>;        This will take about 5 to 10 minutes.
>;
```

9.  When the files have been copied, you will be asked to select which
    version(s) of Tool Kit BASIC-PLUS-2 will be installed:

    >;Does the target system(s) have EIS, FPU, or Both?

    Tool Kit BASIC-PLUS-2 can be built with the  Extended  Instruction
    Set  (EIS)  compiler,  the  Floating Point Unit (FPU) compiler, or
    both.  Floating point hardware is optional with the  Professional.
    Your  choice  at  this  point  should reflect the hardware of your
    target system.  For example, if the  applications  developed  with
    this  compiler  will  run on Professional systems without floating
    point hardware, type EIS.

    When you have entered your response, you will see  the  unselected
    version  of BASIC-PLUS-2 and the installation files being deleted,
    followed by the message that the installation process is complete:

```
>;
>;          Deleting the FPU version of BASIC-PLUS-2
>;
>PIP LB:[g,m]PBF.TSK;/DE/NM
        (where [g,m] is the system UIC on your system)
>PIP LB:[1,5]PBFOTS.OLB;/DE/NM
>PIP LB:[1,5]PBFSML.TSK;/DE/NM
>PIP LB:[1,5]PBFSML.STB;/DE/NM
>PIP LB:[1,5]PBFIC0.ODL;/DE/NM
>PIP LB:[1,5]PBFIC1.ODL;/DE/NM
>PIP LB:[1,5]PBFIC2.ODL;/DE/NM
>PIP LB:[1,5]PBFIC3.ODL;/DE/NM
>PIP LB:[1,5]PBFIC4.ODL;/DE/NM
>PIP LB:[1,5]PBFIC5.ODL;/DE/NM
>PIP LB:[1,5]PBFIC6.ODL;/DE/NM
>PIP LB:[1,5]PBFIC7.ODL;/DE/NM
>;
>;        Deleting the installation files
```

```
    >;
    >PIP     PIPFILIDX.CMD;/DE/NM
    >PIP     FILIDX.CMD;/DE/NM
    >PIP     DELFILIDX.CMD;/DE/NM
    >;
    >;        Tool Kit installation is now complete.
    >;
    >@ <EOF>
```

10.  Dismount the Tool Kit BASIC-PLUS-2 distribution volume:

> DMO DL1:

11.  Unload  the  Tool  Kit  BASIC-PLUS-2  distribution  volume,  and
     deallocate the drive if you allocated one earlier.

12.  Store the Tool Kit BASIC-PLUS-2 distribution  volume  in  a  safe
     place.

If you have a Professional, turn to  chapter  3  of  this  manual  and
follow instructions for the Installation Verification Process.  If you
do not have a Professional, the installation of Professional Tool  Kit
BASIC-PLUS-2 is now complete.

Refer to Chapter 4 of this manual for  information  specific  to  this
release.

## 1.5  **IF THERE IS AN ERROR**

The message "Tool Kit installation is now complete." does not necessarily mean that the installation was successful.  Any appearance of system errors indicates a bad installation.

If an error occurs while the installation is in progress,  all  files copied from the distribution volume will be deleted.  For example:

```
>;-----------------------------------------------------------;
>;                                                           ;
>;        P R O F E S S I O N A L    T O O L    K I T        ;
>;                                                           ;
>; B A S I C - P L U S - 2   V 2 . 1   I n s t a l l a t i o n  ;
>;                                                           ;
>;        F o r   R S X - 1 1 M / M - P L U S               ;
>;                                                           ;
>;-----------------------------------------------------------;
>;
>;
>* Device containing the distribution kit? [S]: MM0:
>;
>;        Copying the Tool Kit files
>;
>;        This will take about 5 to 10 minutes.
>;
FLX -- I/O error
MT0:[1,5]PBF.TSK -- I/O Error Code -13.
>;
>;        Installation Aborted - Cleanup in progress - Stand by
>;
>;        Please check the file LB:[g,m]PBF.TSK
>;        If it was copied during this installation, please delete it.
>;
>;        Deleting the installation files
>;
>PIP     FLXFILIDX.CMD;/DE/NM
>PIP     FILIDX.CMD;/DE/NM
>PIP     DELFILIDX.CMD;/DE/NM
>;
>;        Tool Kit installation is now complete.
>;
>@ <EOF>
```

NOTE

In the above message, [g,m] is  the system UIC on  your system.

Correct the error condition, then return to Section 1.4,  step  7,  of this manual and proceed with installation again.

## 1.6   TOOL KIT BASIC-PLUS-2 FILE NAMES - RSX-11M/M-PLUS

The distribution volume for  Professional  Tool  Kit  BASIC-PLUS-2  on
RSX-11M/M-PLUS contains the following files:

                              NOTE

                In the  following  file  specifications,
                [g,m]  is   the   system UIC  on your
                system.


- **EIS Compiler**

  LB:[g,m]PBE.TSK


- **FPU Compiler**

  LB:[g,m]PBF.TSK


- **Resequencer**

  LB:[g,m]PROB2RESQ.TSK



- **EIS Overlay Descriptor Language (ODL)**

  LB:[1,5]PBEIC0.ODL
  LB:[1,5]PBEIC1.ODL
  LB:[1,5]PBEIC2.ODL
  LB:[1,5]PBEIC3.ODL
  LB:[1,5]PBEIC4.ODL
  LB:[1,5]PBEIC5.ODL
  LB:[1,5]PBEIC6.ODL
  LB:[1,5]PBEIC7.ODL


- **FPU Overlay Descriptor Language (ODL)**

  LB:[1,5]PBFIC0.ODL
  LB:[1,5]PBFIC1.ODL
  LB:[1,5]PBFIC2.ODL
  LB:[1,5]PBFIC3.ODL
  LB:[1,5]PBFIC4.ODL
  LB:[1,5]PBFIC5.ODL
  LB:[1,5]PBFIC6.ODL
  LB:[1,5]PBFIC7.ODL

- Error File

  LB:[1,2]BASIC2.ERR


- Help

  LB:[1,2]BP2.HLP
  LB:[1,2]BP2RFA.HLP


- EIS Resident Library

  LB:[1,5]PBESML.STB
  LB:[1,5]PBESML.TSK


- EIS OTS Library

  LB:[1,5]PBEOTS.OLB


- FPU Resident Library

  LB:[1,5]PBFSML.STB
  LB:[1,5]PBFSML.TSK


- FPU OTS Library

  LB:[1,5]PBFOTS.OLB


- Installation Verification Program

  LB:[1,5]ELEMENTED.B2S
  LB:[1,5]ELEMENTED.INS
  LB:[1,5]EDEIS.CMD
  LB:[1,5]EDEIS.ODL
  LB:[1,5]EDFPU.CMD
  LB:[1,5]EDFPU.ODL
  LB:[1,5]MAP.B2S
  LB:[1,5]GEO.B2S
  LB:[1,5]MAPEIS.CMD
  LB:[1,5]MAPEIS.ODL
  LB:[1,5]MAPFPU.CMD
  LB:[1,5]MAPFPU.ODL
  LB:[1,5]MAP.OBJ
  LB:[1,5]GEO.OBJ

# CHAPTER 2

## INSTALLING TOOL KIT BASIC-PLUS-2 ON VAX/VMS

### 2.1  PREPARING FOR INSTALLATION

### 2.1.1  Minimum Requirements

Professional Tool Kit BASIC-PLUS-2 requires approximately 3000 blocks free disk.

The Professional Tool Kit BASIC-PLUS-2 distribution volume consists of one distribution medium:

- 1600 bpi (nine-track) DOS magtape, volume label  PRO  TK  BP2 V2.1 VMS 16MT9

- RL02 disk, volume label PRO TK BP2 V2.1 VMS RL2

- RK07 disk, volume label PRO TK BP2 V2.1 VMS RK7

Plus one console medium:

- RX01 diskette for VAX-11/780 systems, volume label PRO TK BP2 V2.1 VMS RX1

- TU58 cartridge for VAX-11/750 systems, volume  label  PRO  TK BP2 V2.1 VMS TU58

You must have access to the console drive and to a drive on  which  to mount the distribution volume.

You must install Tool Kit BASIC-PLUS-2 on a public disk.

### NOTE

To install Tool Kit  BASIC-PLUS-2  on  a public  disk  pack, you must have access to  the  privileged  system  manager's account.  If you do not have it, contact your system manager.

## 2.2 INSTALLING ON A PUBLIC DISK

Proceed as follows at the console terminal:

1.  Log in under the privileged system manager's account.

2.  Load the Tool Kit BASIC-PLUS-2 distribution medium, making sure that it's write-locked.

3.  Type these commands in the order shown:

        $ SET UIC [1,4]

        $ SET DEFAULT SYS$SYSROOT:[SYSUPD]

        $ @VMSUPDATE

4.  The VMSUPDATE identification message is followed by the following dialogue:

        Dismount the current console medium.

    Remove the VMS console medium. If there is no console medium, ignore the device-not-mounted message.

        Please place the first volume in the console drive

    Load the Tool Kit BASIC-PLUS-2 console medium in the console drive.

        Are you ready to continue?:  YES

5.  The following will display at the terminal. When the system prompts you, type in the name of the device on which the distribution medium is loaded.

    ```
    +--------------------------------------------------------------+
    |                                                              |
    |         P R O F E S S I O N A L   T O O L   K I T            |
    |                                                              |
    |   B A S I C - P L U S - 2   V 2 . 1   I n s t a l l a t i o n |
    |                                                              |
    |         P r o c e d u r e   F o r   V A X / V M S            |
    |                                                              |
    +--------------------------------------------------------------+
    ```

    To abort the installation procedure, type <CTRL/Y> at any time. The procedure will delete any files already copied.

    Please load the distribution medium on a free drive.
    Make sure that the distribution medium is write locked.
    Do not MOUNT the device.

    On what device is the distribution medium loaded? MTA0:

6.  You will see a message confirming that the device you named has been mounted.

    Tool Kit installation requires the directories LB:[1,2] and LB:[1,5]. If either directory already exists, message(s) will now display alerting you to possible changes in their contents. For example, if directory LB:[1,5] exists, you will see:

    ATTENTION: the PRO Toolkit software library must reside in directory LB:[1,5]. Your system already has this directory. There is a possibility that PRO Toolkit Installation will create new versions of files that already exist on your system in directory LB:[1,5].

    Do you wish to continue?   **YES**

    If either library does not exist on your system, the Tool Kit installation procedure will create them.

7.  You will then see the related files being copied. When copying is complete, you will be asked to select which version(s) of Tool Kit BASIC-PLUS-2 will be installed:

        What version(s) would you like installed? (EIS, FPU, or BOTH)

    Tool Kit BASIC-PLUS-2 can be built with the Extended Instruction Set (EIS) compiler, the Floating Point Unit (FPU) compiler, or both. Floating point hardware is optional with the Professional. Your choice at this point should reflect the hardware of your target system. For example, if the applications developed with this compiler will run on Professional systems without floating point hardware, type **EIS**.

8.  When the installation is completed, you will see this message:

            The Professional Tool Kit has been installed.
            Please unload and store all media.

            End of Installation Procedure.

            Are there more kits to process?: **NO**

            Please place the system console medium in the console drive.

9.  Remove the Tool Kit BASIC-PLUS-2 console medium.

10.  Reload the VMS console medium (if you removed one before).

         Are you ready to continue?: **YES**

         Requested update sequence is complete.

11.  Unload the Tool Kit BASIC-PLUS-2 distribution medium and store it
     in a safe place.

If you have a Professional, turn to Chapter 3 of this manual and
follow instructions for the Installation Verification Process.  If you
do not have a Professional, the installation of Professional Tool  Kit
BASIC-PLUS-2 is now complete.

Refer to Chapter 4 of this manual for  information  specific  to  this
release.

## 2.3  IF THERE IS AN ERROR

If an error occurs while the installation is in progress, the files
copied from the distribution volume will be automatically deleted.
For example:

```
+-------------------------------------------------------------------+
|                                                                   |
|           P R O F E S S I O N A L    T O O L    K I T             |
|                                                                   |
|    B A S I C - P L U S - 2   V 2 . 1   I n s t a l l a t i o n    |
|                                                                   |
|         P r o c e d u r e   F o r   V A X / V M S                 |
|                                                                   |
+-------------------------------------------------------------------+
```

To abort the installation procedure, type <CTRL/Y> at any time.
The procedure will delete any files already copied.

Please load the distribution medium on a free drive.
Make sure that the distribution medium is write-locked.
Do not mount the device.

On what device is the distribution medium loaded? DBA2

%MOUNT, no such device available
Installation Aborted - Cleanup in progress - Stand by

Cleanup complete - Procedure Aborted - Correct condition and re-try
-------------------------------------------------------------------------


A VMSUPDATE message will display. Exit VMSUPDATE and
correct the error condition. Then go to Section 2.2, step 3 of this
manual and follow the instructions again.



## 2.4  TOOL KIT BASIC-PLUS-2 FILE NAMES - VAX/VMS

The distribution volume for Professional  Tool  Kit  BASIC-PLUS-2  on
VAX/VMS contains the following files:

- **EIS Compiler**

  SYS$SYSTEM:PBE.EXE


- **FPU Compiler**

  SYS$SYSTEM:PBF.EXE

- Resequencer

  SYS$SYSTEM:PROB2RESQ.EXE


- EIS Overlay Descriptor Language (ODL)

  LB:[1,5]PBEIC0.ODL
  LB:[1,5]PBEIC1.ODL
  LB:[1,5]PBEIC2.ODL
  LB:[1,5]PBEIC3.ODL
  LB:[1,5]PBEIC4.ODL
  LB:[1,5]PBEIC5.ODL
  LB:[1,5]PBEIC6.ODL
  LB:[1,5]PBEIC7.ODL


- FPU Overlay Descriptor Language (ODL)

  LB:[1,5]PBFIC0.ODL
  LB:[1,5]PBFIC1.ODL
  LB:[1,5]PBFIC2.ODL
  LB:[1,5]PBFIC3.ODL
  LB:[1,5]PBFIC4.ODL
  LB:[1,5]PBFIC5.ODL
  LB:[1,5]PBFIC6.ODL
  LB:[1,5]PBFIC7.ODL


- Error File

  LB:[1,2]BASIC2.ERR


- Help

  LB:[1,2]BP2.HLP
  LB:[1,2]BP2RFA.HLP


- EIS Resident Library

  LB:[1,5]PBESML.STB
  LB:[1,5]PBESML.TSK


- EIS OTS Library

  LB:[1,5]PBEOTS.OLB

- **FPU Resident Library**

  LB:[1,5]PBFSML.STB
  LB:[1,5]PBFSML.TSK


- **FPU OTS Library**

  LB:[1,5]PBFOTS.OLB


- **Installation Verification Program**

  LB:[1,5]ELEMENTED.B2S
  LB:[1,5]ELEMENTED.INS
  LB:[1,5]EDEIS.CMD
  LB:[1,5]EDEIS.ODL
  LB:[1,5]EDFPU.CMD
  LB:[1,5]EDFPU.ODL
  LB:[1,5]MAP.B2S
  LB:[1,5]GEO.B2S
  LB:[1,5]MAPEIS.CMD
  LB:[1,5]MAPEIS.ODL
  LB:[1,5]MAPFPU.CMD
  LB:[1,5]MAPFPU.ODL
  LB:[1,5]MAP.OBJ
  LB:[1,5]GEO.OBJ

CHAPTER 3


INSTALLATION VERIFICATION PROCESS (IVP)



The Installation Verification Process (IVP) confirms the successful
installation of the Tool Kit on a VAX/VMS or RSX-11M/M-PLUS host
system.

The verification process assumes that the Tool Kit and Tool Kit
BASIC-PLUS-2 have been installed on the host, and that the
PRO/Communications application and the Fast Install program have been
installed on the Professional.

The IVP verifies the successful installation of the Tool Kit through
the step-by-step development of a sample BASIC-PLUS-2 application.
The sample application is an Elementary Education Application
(ElementEd). ElementEd is a partially-developed P/OS application; it
is only intended to exercise specific features of the Tool Kit.

The application files for ElementEd are provided with the Tool Kit for
use in the IVP. The following are automatically copied to LB:[1,5]
when you install Tool Kit BASIC-PLUS-2 on your host system:


         ELEMENTED.B2S      source code
         GEO.B2S            source code
         GEO.OBJ            object module
         EDEIS.CMD          task builder command file
                            from the EIS compiler
         EDEIS.ODL          task builder overlay descriptor file
                            from the EIS compiler
         EDFPU.CMD          task builder command file
                            from the FPU compiler
         EDFPU.ODL          task builder overlay descriptor file
                            from the FPU compiler
         ELEMENTED.INS      installation file
         MAP.B2S            source code
         MAP.OBJ            object module
         MAPEIS.CMD         task builder command file from the EIS compiler
         MAPEIS.ODL         task builder overlay descriptor file from the
                            EIS compiler
         MAPFPU.CMD         task builder command file from the FPU compiler
         MAPFPU.ODL         task builder overlay descriptor file from the
                            FPU compiler

The remaining three files are supplied on the RX50 diskette (volume
label PRO/ APP DSKT BLDR V1.5 RX50) with the Tool Kit:

         ELEMENTED.MSG      message file
         ELEMENTED.MNU      menu file
         ELEMENTED.HLP      help file

INSTALLATION VERIFICATION PROCESS (IVP)

The same diskette also contains Fast Install and the ADB.

There are six steps in the verification process:

STEP 1     Compile application source code with the BASIC-PLUS-2 compiler.

STEP 2     Task build the application and graphics with PAB.

STEP 3     Transfer the application files to the Professional with the PRO/Communications application.

STEP 4     Copy the user interface files to the Professional.

STEP 5     Install the application on P/OS.

STEP 6     Run the application.

INSTALLATION VERIFICATION PROCESS (IVP)

## 3.1 STEP 1 -- COMPILE APPLICATION SOURCE CODE

Follow these steps to compile the application source code:

1. Log onto the host system and set your default as follows:

   - On a VAX/VMS system, log into a priviledged account and set your default to LB:[1,5].

   - On an RSX-11 system, if you are using a public disk, log into a priviledged account and set your default to LB:[1,5].

   - On an RSX-11 system, if you are using a private disk, you can log into any account. You should then allocate and mount the drive and assign the disk to be your library (LB:) device, as described in Section 1.2.

2. Invoke either the FPU or EIS Tool Kit BASIC-PLUS-2 compiler.

   When Tool Kit BASIC-PLUS-2 was installed on the host, the installer installed the EIS compiler, the FPU compiler, or both. Your choice now should reflect the version of Tool Kit BASIC-PLUS-2 installed on your host. To invoke the EIS compiler on RSX-11M/M-PLUS, type:

       >RUN $PBE

   To invoke the FPU compiler, type:

       >RUN $PBF

   To invoke the EIS compiler on VAX/VMS, use the command:

       $ RUN SYS$SYSTEM:PBE

   To invoke the FPU compiler, use the command:

       $ RUN SYS$SYSTEM:PBF

3. Compile the application source code, ELEMENTED.B2S, using the BASIC-PLUS-2 commands:

       OLD ELEMENTED
       COMPILE
       EXIT

   The file ELEMENTED.OBJ is produced by the compiler.

INSTALLATION VERIFICATION PROCESS (IVP)

## 3.2  STEP 2 -- TASK BUILD THE APPLICATION AND GRAPHICS WITH PAB

Enter the task builder commands.

The task builder commands require you to enter the names of the command files.  When Tool Kit BASIC-PLUS-2 was installed on the host, the installer installed the EIS compiler, the FPU compiler, or both. If the EIS compiler was chosen, supply the following command file names in the task build command lines:

        EDEIS
        MAPEIS

If the FPU compiler was chosen, supply the following command file names in the task build command lines:

        EDFPU
        MAPFPU

If both the EIS and FPU compiler were chosen, you can supply either set of command file names in the following task builder commands.

### 3.2.1  On an RSX-11M/M-PLUS host

On an RSX-11M/M-PLUS host, if PAB is installed, type:

        > PAB @EDEIS
        > PAB @MAPEIS

Or:

        > PAB @EDFPU
        > PAB @MAPFPU

If PAB is not installed, type:

        > RUN $PROTKB
        PAB> @EDEIS
        PAB> @MAPEIS

Or:

        > RUN $PROTKB
        PAB> @EDFPU
        PAB> @MAPFPU

The files ELEMENTED.TSK and MAP.TSK are produced by PAB.

INSTALLATION VERIFICATION PROCESS (IVP)

## 3.2.2  On a **VAX/VMS** host

On a VAX/VMS host, if a logical name was assigned  to  PAB,  type  the
following command lines:

```
$ PAB
PAB> @EDEIS
PAB> @MAPEIS
```

Or:

```
$ PAB
PAB> @EDFPU
PAB> @MAPFPU
```

If a logical name was not assigned to PAB, type:

```
$ RUN SYS$SYSTEM:PROTKB
PAB> @EDEIS
PAB> @MAPEIS
```

Or:

```
$ RUN SYS$SYSTEM:PROTKB
PAB> @EDFPU
PAB> @MAPFPU
```

The files ELEMENTED.TSK and MAP.TSK are produced by PAB.

## 3.3  STEP 3 -- TRANSFER THE APPLICATION FILES TO THE PROFESSIONAL

The application files will be transferred to a special directory on the disk.  Before you can transfer the files, you have to create the directory.

Follow these steps to create the new directory on the Professional disk:

1.  Use the down arrow key to position the pointer at **Disk Services** on the P/OS Main Menu.  Press DO.

2.  The Disk/Diskette Services menu will appear.  Select **Create directory**.  Press DO.

3.  A form will appear requesting the new directory name.  It also states the name of the volume you are currently in.  If the volume is not BIGVOLUME, change the volume name:

    ●  Press ADDTNL OPTIONS.  The Additional Options Menu will appear.

    ●  Select **Create a directory on a different volume**.  Press DO.

    ●  The Volume Selection Menu will appear.  Select **BIGVOLUME**. Press DO.  The Create directory form will reappear;  the volume name displayed will now be BIGVOLUME.

    If the volume name is BIGVOLUME, type:

        **ElementEd**

    Press DO.


4.  P/OS then creates the directory ElementEd on the volume BIGVOLUME.  The Disk/Diskette Services menu reappears. Select **Specify new current directory** from the Disk/Diskette Services menu.  Press DO.

5.  A list of all available directories will appear.  Select **ElementEd**.  Press DO.

6.  ElementEd is now your default directory.  When the Disk/Diskette Services menu reappears,  press MAIN SCREEN. The P/OS Main Menu will be displayed.

INSTALLATION VERIFICATION PROCESS (IVP)

Now the application files can be transferred:

1.  Using instructions in the PRO/Communications  Manual
    on running File Transfer, transfer the following files to the
    Professional:

    ● ELEMENTED.TSK

    ● ELEMENTED.INS

    ● MAP.TSK

2.  Log off the host.

INSTALLATION VERIFICATION PROCESS (IVP)

3.4  STEP 4 -- COPY THE USER INTERFACE FILES TO THE PROFESSIONAL

The following user interface files for the sample application are provided on an RX50 diskette, supplied with the Tool Kit:

- Elemented.MSG

- Elemented.MNU

- Elemented.HLP

Follow these steps to copy the files from the diskette to the Professional:

1. Insert the diskette in a diskette drive slot.

2. The Main Menu will appear. Select **File Services**. Press DO.

3. The File Services menu will appear. Select **Copy File** and press DO.

4. Press ADDTNL OPTIONS.

5. The Additional Options menu will appear. Select **Choose a different directory/volume** and press DO.

6. The Directory Selection menu will appear. Select the directory **Elemented** from the volume **Toolkit** and press DO.

7. The File Selection menu will appear. Select the file from the list of files, for example, **Elemented.MSG**. Press DO.

8. The **Name a File Form** will appear. Press ADDTNL OPTIONS.

9. The Additional Options menu will reappear. Select **Choose a different directory/volume**. Press DO.

10. The Directory Selection menu will appear. Select the directory **Elemented** and press DO.

11. When the **Name A File Form** displays, type the file name, for example:

        Elemented

    Press DO.

12. When the file has been copied to the disk directory Elemented, the File Services menu will reappear.

13. To install another user interface file, repeat this procedure from step 3. To display the Main Menu, press MAIN SCREEN.

INSTALLATION VERIFICATION PROCESS (IVP)

## 3.5  STEP 5 -- INSTALL THE APPLICATION ON P/OS

To install the application on P/OS:

1. Select **Fast Install** from the P/OS menu on which it was installed. Press DO.

2. Fast Install prompts for the disk directory name in which the application resides. Enter:

   **Element Ed**

   Press DO.

3. The Application Group Menu is displayed. Position the pointer at **A Group** and press DO.

4. A form appears displaying the name of the application, ELEMENTED. Press DO.

5. The application is installed in A Group and the Disk/Diskette Services menu reappears. Press MAIN SCREEN. The Main Menu will reappear.

INSTALLATION VERIFICATION PROCESS (IVP)

## 3.6  STEP 6 -- RUN THE APPLICATION ON THE PROFESSIONAL

Follow these steps to run the application:

1.  Position the pointer at **Additional applications** on  the  Main
    Menu.  Press DO.

2.  Select **A Group** from the Application Group Menu.

3.  Select **ELEMENTED** on the A Group menu.

4.  The application starts.  The first menu displayed  is  titled
    **Elementary Education Application.**

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│  ┌──────────────ELEMENTARY EDUCATION APPLICATION──────────────┐  │
│  │    This application offers elementary education in seven    │  │
│  │    fields of study.  Select one of the courses listed here: │  │
│  │                                                             │  │
│  │            ->                                               │  │
│  │                    Biology                                  │  │
│  │                    Computer Science                         │  │
│  │                    Geography                                │  │
│  │                    Government                               │  │
│  │                    History                                  │  │
│  │                    Literature                               │  │
│  │                    Mathematics                              │  │
│  │                                                             │  │
│  │                                                             │  │
│  │                            Additional Options available     │  │
│  └─────────────────────────────────────────────────────────────┘  │
│                                                                   │
│  Make a selection and press the DO key:                           │
│                                                                   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```
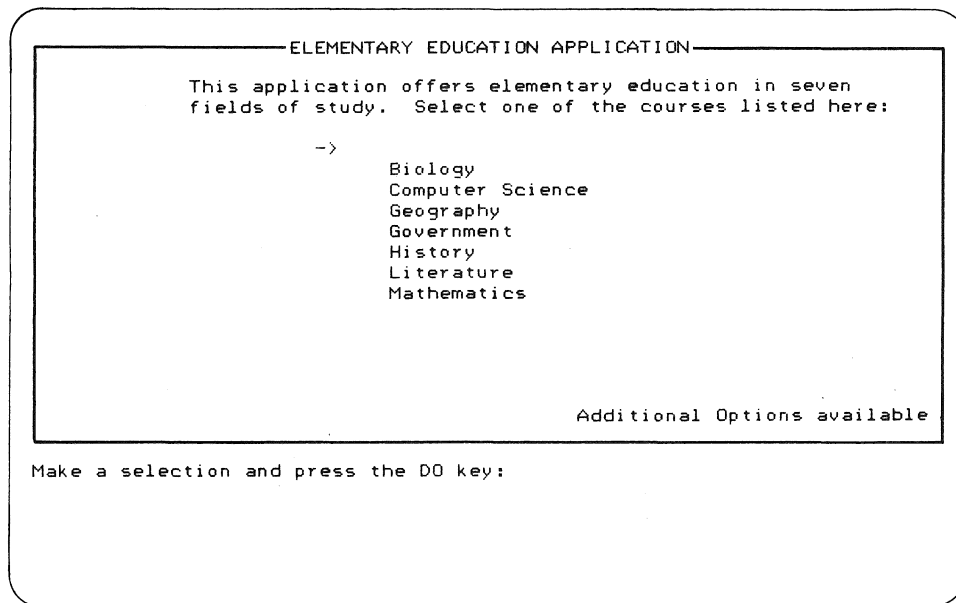
5.  Press HELP.  A  menu  titled  **Help**  on  Elementary  Education
    **Application is displayed.**

```
┌─────────────────────────────────────────────────────────────────────┐
│ ┌──────────────HELP ON ELEMENTARY EDUCATION APPLICATION───────────┐  │
│ │                                                                  │  │
│ │ You can display helpful information about the subjects listed below. │
│ │ Select an option then press the DO key.  Press the RESUME key to return │
│ │ to the Main Menu.                                                │  │
│ │                 ->                                               │  │
│ │                         COMPLETING TEST AND QUIZZES              │  │
│ │                         READING THE REPORT CARD                  │  │
│ │                         SELECTING COURSES                        │  │
│ │                         USING THE MAP                            │  │
│ │                                                                  │  │
│ │                                                                  │  │
│ │                                                                  │  │
│ │                                                                  │  │
│ │                                                                  │  │
│ └──────────────────────────────────────────────────────────────────┘ │
│                                                                       │
│   Make a selection and press the DO key:                              │
│                                                                       │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```
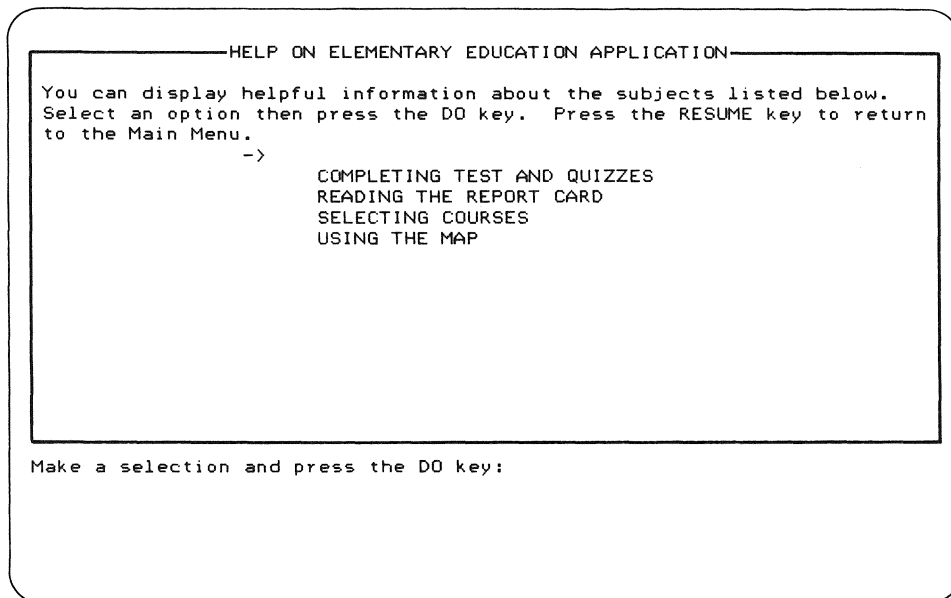
INSTALLATION VERIFICATION PROCESS (IVP)

6.  Position the pointer with the down arrow key to  Reading  the
    **Report Card.**  Press DO.

```
     ┌─────────────────────────────────────────────────────────────────┐
     │  ┌──────────────HELP ON ELEMENTARY EDUCATION APPLICATION──────────┐
     │  │                                                                │
     │  │ You can display helpful information about the subjects listed below.
     │  │ Select an option then press the DO key.  Press the RESUME key to return
     │  │ to the Main Menu.                                               │
     │  │                                                                │
     │  │                    COMPLETING TEST AND QUIZZES                 │
     │  │            ->      READING THE REPORT CARD                     │
     │  │                    SELECTING COURSES                          │
     │  │                    USING THE MAP                              │
     │  │                                                                │
     │  │                                                                │
     │  │                                                                │
     │  │                                                                │
     │  │                                                                │
     │  └────────────────────────────────────────────────────────────────┘
     │  Make a selection and press the DO key:                           │
     │                                                                   │
     │                                                                   │
     └─────────────────────────────────────────────────────────────────┘
```

7.  A help text frame titled **Help on Reading the Report Card** is
    displayed.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌─────────────────HELP ON ELEMENTARY EDUCATION APPLICATION──────────┐│
│  │You can display helpful information about the subjects listed below.││
│  │Select an option then press the DO key.  Press the RESUME key to return││
│  │to the Main Menu.                                                   ││
│  │                                                                    ││
│  │                    COMPLETING TEST AND QUIZZES                     ││
│  │            ->      READING THE REPORT CARD                         ││
│  │                    SELECTING COURSES                               ││
│  │                    USING THE MAP                                   ││
│  ├──────────────────────HELP ON READING THE REPORT CARD──────────────┤│
│  │                                                                    ││
│  │The Report Card presents an objective evaluation of your work in courses││
│  │offered by the Elementary Education Application.  The Report Card lists││
│  │all the courses you have taken.  For each course, it indicates the num-││
│  │ber of correct and incorrect answers given on tests and quizzes, the││
│  │number of times the course was taken, the date of the last quiz and test││
│  │taken, and, if the course was completed, the passing or failing grade.││
│  │                                                                    ││
│  └────────────────────────────────────────────────────────────────────┘│
│                                                                         │
└─────────────────────────────────────────────────────────────────────────┘
```

INSTALLATION VERIFICATION PROCESS (IVP)

8. Press RESUME. The first menu, titled **Elementary Education Application**, is displayed.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                 │
│   ┌───────────ELEMENTARY EDUCATION APPLICATION───────────────┐  │
│   │                                                          │  │
│   │   This application offers elementary education in seven  │  │
│   │   fields of study.  Select one of the courses listed here:│ │
│   │                                                          │  │
│   │           ->                                             │  │
│   │                   Biology                                │  │
│   │                   Computer Science                       │  │
│   │                   Geography                              │  │
│   │                   Government                             │  │
│   │                   History                                │  │
│   │                   Literature                             │  │
│   │                   Mathematics                            │  │
│   │                                                          │  │
│   │                                                          │  │
│   │                                                          │  │
│   │                                                          │  │
│   │                             Additional Options available │  │
│   └──────────────────────────────────────────────────────────┘  │
│                                                                 │
│       Make a selection and press the DO key:                    │
│                                                                 │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

9.  Position the pointer with the down arrow  key  to  Geography.
    Press DO.

```
 _____
/                                                                \
|   ┌─────────────ELEMENTARY EDUCATION APPLICATION────────────┐   |
|   │                                                         │   |
|   │   This application offers elementary education in seven │   |
|   │   fields of study.  Select one of the courses listed here: │   |
|   │                                                         │   |
|   │                                                         │   |
|   │                    Biology                              │   |
|   │                    Computer Science                     │   |
|   │           ->       Geography                            │   |
|   │                    Government                           │   |
|   │                    History                              │   |
|   │                    Literature                           │   |
|   │                    Mathematics                          │   |
|   │                                                         │   |
|   │                                                         │   |
|   │                                                         │   |
|   │                         Additional Options available    │   |
|   └─────────────────────────────────────────────────────────┘   |
|      Make a selection and press the DO key:                     |
|                                                                 |
\                                                                 /
 ─────────────────────────────────────────────────────────────────
```
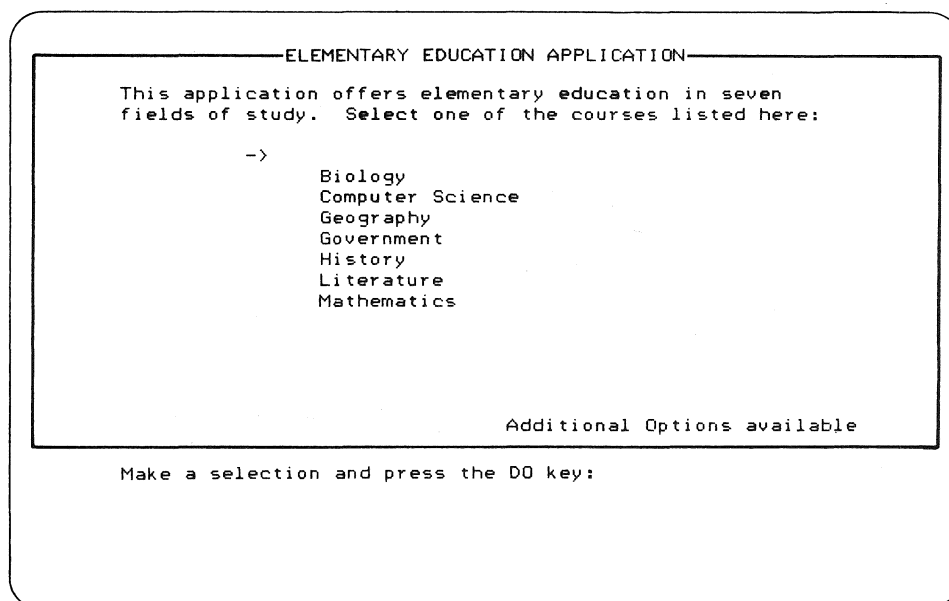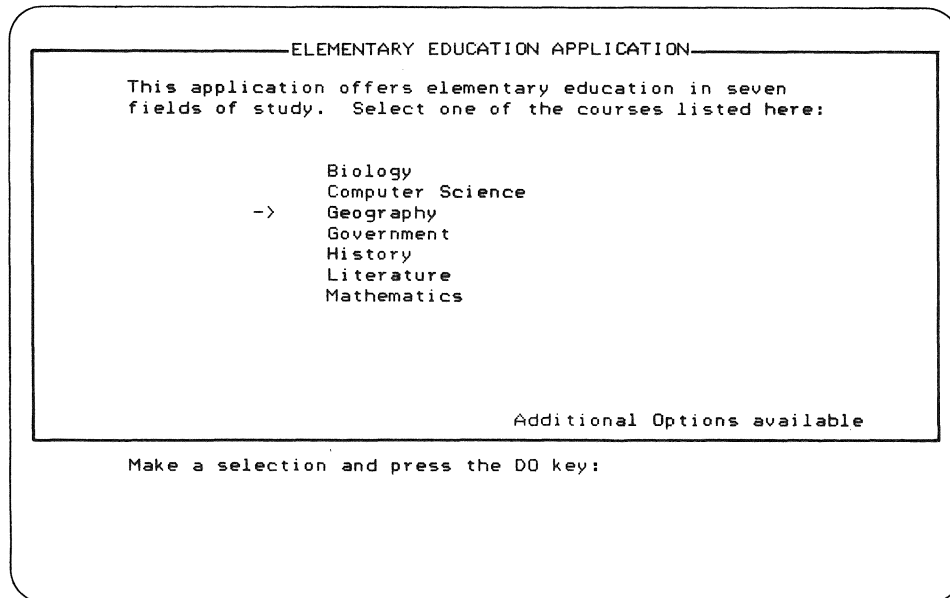
10. A multiple-choice menu titled **Course: Geography of North America** is displayed.

```
                        ┌──────COURSE:  GEOGRAPHY OF NORTH AMERICA─────────────┐
                        │This course covers rivers, lakes, and mountains.  The first topic is
                        │mountains.  The mountains listed below are located in different parts of
                        │the world.  Select all the mountains located in North America:
                        │                       ->
                        │                       MT. RUSHMORE
                        │                       MT. WASHINGTON
                        │                       MT. HOOD
                        │                       GRAND TETON
                        │                       MT. RAINIER
                        │                       MT. FUJI
                        │                       KILIMANJARO
                        │                       MT. ST. HELENS
                        │                       MT. MCKINLEY
                        │
                        │
                        │
                        └──────────────────────────────────────────────────────┘

     Choose one or more options with the SELECT key and press the DO key:

                                                       Select up to    9 items
                                                          (   0  chosen )
```

11. Position the pointer on the first item, Mt. Rushmore, and then press SELECT. Move the pointer to the next item, Mt. Washington, and mark the selection by pressing SELECT. In this manner, choose all the items selected in the following figure. (This exercise purposely includes wrong answers.)

    After making the selections, you should have pointers in front of the items Mt. Rushmore, Mt. Washington, Mt. Hood, Grand Teton, Mt. Rainier, Kilimanjaro, Mt. St. Helens, and Mt. McKinley. Make sure you have pointers only in front of these selections. If you mistakenly select an item that is not in this group, position the cursor on it again, and press SELECT. By using SELECT to choose it again, you unmark the choice.

```
┌──────────────────COURSE:  GEOGRAPHY OF NORTH AMERICA──────────────────┐
│This course covers rivers, lakes, and mountains.  The first topic is   │
│mountains.  The mountains listed below are located in different parts of│
│the world.  Select all the mountains located in North America:         │
│                    ->    MT. RUSHMORE                                  │
│                    ->    MT. WASHINGTON                                │
│                    ->    MT. HOOD                                      │
│                    ->    GRAND TETON                                   │
│                    ->    MT. RAINIER                                   │
│                          MT. FUJI                                      │
│                    ->    KILIMANJARO                                   │
│                    ->    MT. ST. HELENS                                │
│                    ->-> MT. MCKINLEY                                   │
│                                                                       │
│                                                                       │
└───────────────────────────────────────────────────────────────────────┘
 Choose one or more options with the SELECT key and press the DO key:

                                        Select up to    9 items
                                               (    8  chosen )
```
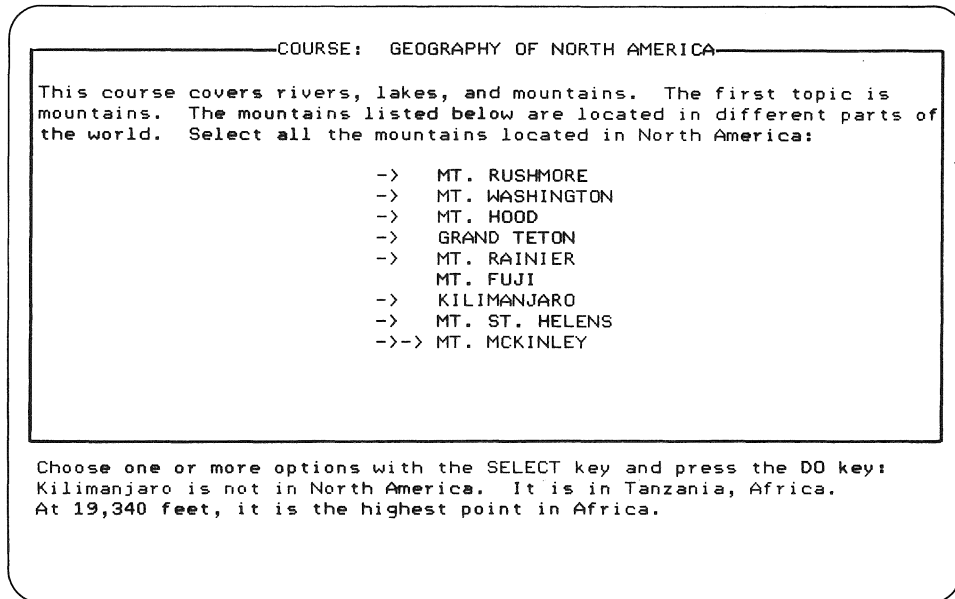
12.   Press DO.  A message frame is displayed at the bottom of  the
      screen.   The message indicates that a wrong answer was given
      to the question.

```
 _____
/                                                                \
|   _____COURSE:  GEOGRAPHY OF NORTH AMERICA_____ |
|  |                                                            | |
|  |This course covers rivers, lakes, and mountains.  The first topic is
|  |mountains.  The mountains listed below are located in different parts of
|  |the world.  Select all the mountains located in North America:
|  |                                                            | |
|  |                -)    MT. RUSHMORE                          | |
|  |                -)    MT. WASHINGTON                        | |
|  |                -)    MT. HOOD                              | |
|  |                -)    GRAND TETON                           | |
|  |                -)    MT. RAINIER                           | |
|  |                      MT. FUJI                              | |
|  |                -)    KILIMANJARO                           | |
|  |                -)    MT. ST. HELENS                        | |
|  |                -)-) MT. MCKINLEY                           | |
|  |                                                            | |
|  |_____| |
|                                                                |
|  Choose one or more options with the SELECT key and press the DO key:
|  Kilimanjaro is not in North America.  It is in Tanzania, Africa.
|  At 19,340 feet, it is the highest point in Africa.              |
|                                                                |
_____/
```

13.  The multiple-choice menu is redisplayed with no items
     selected.  Use the down arrow and SELECT to choose all the
     items selected in the following figure.  After making the
     selection, you should have pointers in front of the items Mt.
     Rushmore, Mt.  Washington, Mt.  Hood, Grand Teton, Mt.
     Rainier, Mt.  St.  Helens, and Mt.  McKinley.  Press DO.  A
     message indicating you have supplied the correct answer is
     displayed.

```
┌────────────────────────────────────────────────────────────────┐
│   ┌─────────────COURSE:  GEOGRAPHY OF NORTH AMERICA──────────┐   │
│   │This course covers rivers, lakes, and mountains.  The first topic is│
│   │mountains.  The mountains listed below are located in different parts of│
│   │the world.  Select all the mountains located in North America:│
│   │                                                          │   │
│   │                   ->    MT. RUSHMORE                      │   │
│   │                   ->    MT. WASHINGTON                    │   │
│   │                   ->    MT. HOOD                          │   │
│   │                   ->    GRAND TETON                       │   │
│   │                   ->    MT. RAINIER                       │   │
│   │                         MT. FUJI                          │   │
│   │                         KILIMANJARO                       │   │
│   │                   ->    MT. ST. HELENS                    │   │
│   │                   ->-> MT. MCKINLEY                       │   │
│   │                                                          │   │
│   └──────────────────────────────────────────────────────────┘   │
│                                                                  │
│   Choose one or more options with the SELECT key and press the DO key:│
│   Correct!  You pass the course.                                 │
│                                                                  │
└────────────────────────────────────────────────────────────────┘
```

14.  After a few seconds, this map will appear on your screen:
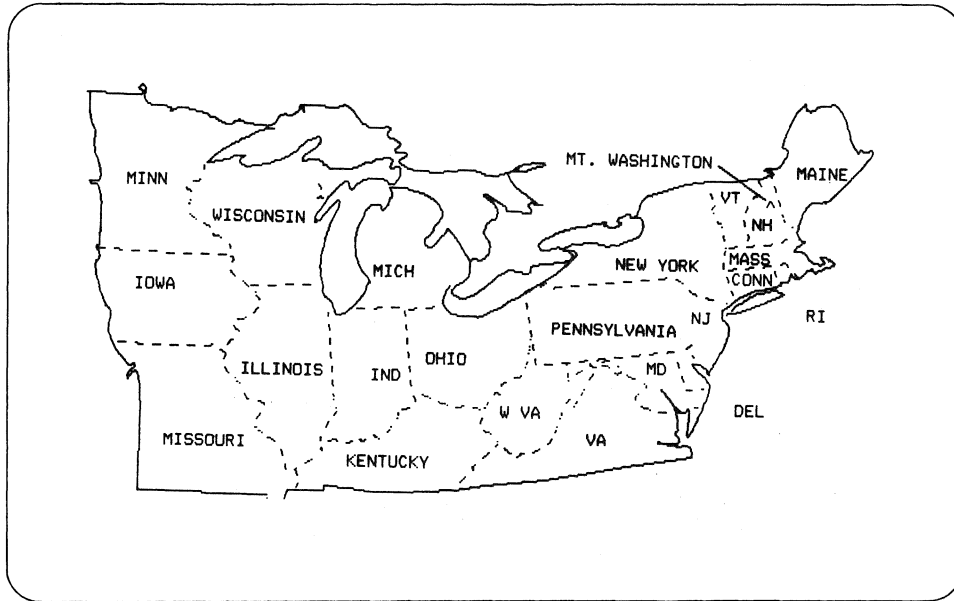


This completes the Installation Verification Process.  The  Tool
Kit has been successfully installed on your host system.

# CHAPTER 4

## TOOL KIT BASIC-PLUS-2 RELEASE NOTES

NOTE

References to "BASIC-PLUS-2" or to
"BASIC" apply equally to Tool Kit
BASIC-PLUS-2.

## 4.1  NEW FEATURES

This is a summary of new features added to Tool Kit  BASIC-PLUS-2  for
Version 2.1.

- BASIC now supports the clustering of memory-resident
  libraries.  The /CLUSTER qualifier to the BUILD command
  includes a line in the command file that clusters the default
  BASIC-PLUS-2, POSRES, and RMS-11 resident libraries and an
  optional fourth library.  The CLUSTER qualifier can also be
  used with the SET command.

- In Version 2.1, you can override the display of run-time
  error messages of a "warning" severity with the /WARNINGS
  qualifier to the COMPILE or SET command.  See Chapter 2 of
  the BASIC On RSX-11M/M-PLUS manual for more information.

- The command file output of the BUILD command now includes
  references to the P/OS service routines.  It is no longer
  necessary to edit the command file before linking your tasks.

## 4.2  KNOWN PROBLEMS

- You cannot perform a matrix inversion (MAT INV) on LONG
  arrays, BYTE arrays, or on any arrays received as parameters.

- You cannot perform matrix multiplication statement with the
  same array for both the source and destination.  For example:

      10     MAT A = A * B

This produces incorrect results, but does not cause a run-time error.

- If a PRINT USING format string contains a single-character zero-fill field with a trailing minus sign, the minus sign is treated as a literal. For example:

  10      PRINT USING "<0>-", A, B, C


- Under certain circumstances, PRINT USING truncates numerics, instead of rounding them. For example:

  10      PRINT USING "###", .5

In this case, 0 is printed, instead of 1.

- In a PRINT USING format string, an underscore preceding a formatting character indicates the underscore should not appear and the formatting character is to be interpreted as a literal. If the underscore does not directly precede a legal formatting character, the underscore has no special meaning and should itself be interpreted as a literal. However, BASIC-PLUS-2 ignores the underscore and no character is printed.

- If a PRINT USING format string contains an incomplete multi-character formatting symbol (such as "<%", rather than "<%>"), BASIC-PLUS-2 does interpret the incomplete symbol as a literal. Instead, BASIC-PLUS-2 attempts to interpret the symbol and the following characters as a single formatting character, producing unpredictable results.

- When using the LSET and RSET statements with virtual array strings as the destination variable, the length of the string changes to the maximum size of the virtual array element.

- Opening a file with the USEROPEN statement, when USEROPEN specifies a non-existent macro routine, results in the run-time error "Unresolved/undefined global <name>". However, run in the BASIC environment, the error message may display extra characters with the global symbol name.

- You generate an odd address trap with a program similar to:

  Main Program                    Subprogram

  50 CALL X(A$,A$)                90 SUB X(B$,C$)
                                     .
                                     .
                                     .
                                  95 C$ = B$

TOOL KIT BASIC-PLUS-2 RELEASE NOTES

## 4.3 INFORMATIONAL NOTES

This section describes how the compiler performs certain operations. This information is included to answer frequently asked questions about BASIC features and to clarify the compiler's capabilities. Knowing how these BASIC features work can help you avoid some common errors when writing program code.

- If line-by-line syntax checking is used, entering certain compiler directives from the BASIC environment results in an error.

- Although the compiler allows you to specify an argument of NONE to the ODLRMS command, you should not do this. If you access RMS files, you must use an RMS ODL file.

- In some circumstances, the MACRO assembler does not assemble the MACRO code resulting from a COMPILE/MACRO command. This occurs only if a MACRO reserved word is used as a user-defined global symbol, such as a MAP, external, or subprogram name.

- Creating cross-reference listings slows compilation considerably. Also, you cannot compile as big a program when the /CROSS qualifier is in effect.

- You cannot have more than 32767 characters associated with a single line number. Such a program causes the compiler to report "line too long" when you read it in with the OLD command.

- You cannot open a terminal format file specifying a MAP, if the MAP size is smaller than the default buffer size for the device.

- The debugger cannot examine anything declared in an EXTERNAL statement.

## 4.4 DOCUMENTATION NOTES AND OMISSIONS

- If the total storage preceding a numeric MAP or COMMON variable is an odd number of bytes, the compiler returns the compile-time warning "unaligned COMMON or MAP variable <var-name> in <map-name>". This error message and the associated user action are documented in Appendix A of BASIC On RSX-11M/M-PLUS Systems as "variable <name> not aligned in COMMON/MAP <name>".

- Attempting to assign a value to a function invocation returns the compile-time error "DEF invocation not allowed in assignment context". For example:

      DEF FNA(A) = A2
          .
          .
          .
      FNA(3) = 9

- In the BASIC environment, preceding a command with a space or tab results in the error "unknown command input".

- The GFLOAT and HFLOAT keywords in the format for the REAL function shown in the BASIC Reference Manual are VAX-11 BASIC only keywords.

- The BASIC Reference Manual does not show the /SCALE qualifier in Table 17. This qualifier is identical to the SCALE command and can be used only with the COMPILE command.

- You can use the ORGANIZATION UNDEFINED clause only in OPEN statements that specify FOR INPUT.

- The documentation of the MID$ function in the BASIC Reference Manual incorrectly states that the third argument is the position of the last character of the string being extracted. It should say the third argument specifies the length of the string being extracted, not the last position.

- The BASIC User's Guide incorrectly states that DEF functions cannot be invoked recursively in BASIC-PLUS-2. DEF functions can be recursively invoked in both VAX-11 BASIC and BASIC-PLUS-2.

- Variables of the RFA data type cannot be used in any arithmetic operation except an equal to (=) or not equal to (<>) comparison. Greater than or less than comparisons are invalid for RFA variables.

- The BASIC User's Guide incorrectly states that the ERN$ function returns the name of the program module or DEF where an error occured. ERN$ returns only module names, not DEF function names.

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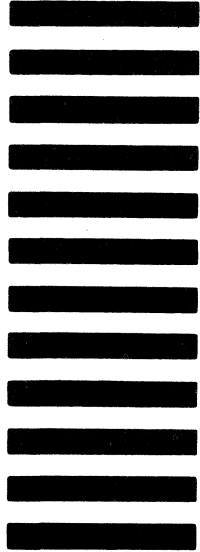
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