

5 May 1982

To : PDP11 Programmers  
From : R. Payne *R. Payne*  
SUBJECT : PDP11 UPDATE PROCEDURE

This memo defines an update procedure for the PDP11's. It applies to all software written for MAPPER,GRIDER, SORTER and DISPLY. It particular it applies to software written for the "Pipeline system". This memo is effective as of May 5, 1982. Separate memos will outline the requirements for documentation and programming standards.

Most source code and certainly all of the Library source code will be maintained on MAPPER and distributed to the other machines. Machine specific source code may however reside only on the appropriate machine.

#### The Libraries

The system libraries will be stored in the [210,10] area.  
The following libraries are included:

- VLAMAC.MLB - macro library
- VLAMAC.OLB - assembly language routines
- VLAFTN.OLB - Fortran callable routines
- VLAFFPS.OLB - our own FPS routines
- FPSWNB.OLB - Wim Brouw's modified FPS library
- MATHLIB.OLB - FPS math library

In addition the [210,10] area contains sharable commons and global DCL files such as CATREC.DCL, MIX.DCL etc.

Source files for VLAMAC,VLAFTN and VLAFFPS libraries will reside in the [210,20] area. Also in this area will be a selected set of smaller system utility programs.

Command files for building the libraries and the complete system will also reside in the [210,20] area.

#### Program Areas

Each major program will be given its own [210,xx] area. FITS for example is in [210,21]. A user wishing to work on FITS simply copies the files from that area into his own area and works on the program in his area. The command files for compilation and task building will all reference the system common libraries and should execute properly in the user's area. Program specific DCL's and commons will also reside in the program area.

The [210,xx] areas correspond to the SYSTEM area on the DEC10.

Hopefully these routines have been debugged and can be considered reliable. Modifications to these routines will first go in the NEW areas [220,xx]. Routines will stay in this area until they are considered reliable enough to go into the SYSTEM area.

Under the MAPCON system tasks will be installed from the SYSTEM and NEW areas with different names. Modification to the system startup command which installs these tasks and any modification of source code in the [210,xx] or [220,xx] areas is reserved to the person responsible for maintaining the update procedure.

There is also provision for an EXPERIMENTAL area. Any programmer may install his own version of programs under the name reserved for experimental tasks.

The DEC10 procedure for signing out programs will also be used. The log book in Ina's office will contain a section for PDP 11 routines. This should avoid the problem of two programmers modifying the same program. It should also avoid conflicts in the use of the experimental area. Ina and Sandy will look after system change forms and updating the documentation book.

#### OLD save task images

In case of some serious failure in the update procedure the task modules from before the update can be installed with an @OLD command. This should be done only after consultation with the responsible programmer or system scientist.

It is possible to recover the OLD version of a specific routine from the OLD area, however, there is no automatic provision for doing this. Users should not attempt to install programs from the OLD area unless instructed to do so by the responsible programmer.

#### Documentation

A separate memo is being prepared to more fully define the requirements for program documentation.

Both USER level documentation and STAFF documentation must exist for all system programs. The DEC10 procedure will be followed here with system change forms and documentation updates submitted for each program change.

#### Preprocessors

Since there is no provision on the 11's for a directory search list a Preprocessor may be used to insure that programs load common DCL files from the system areas. The \$INCLUDE statement will be interpreted by the Preprocessor to search first the user area then the new area and finally the system area for included files.

#### Standard file names

Each program will have set of associated files for compiling, taskbuilding

and installing the task. These files will begin with the six character task name followed by the following standard extensions:

1. 'name' .FTM     input to the PRE preprocessor program
2. 'name' .FTN     input to the Fortran compiler
3. 'name' .MAC     input to the Macro compiler
4. 'name' .COM     this file should compile the routine  
                  including PRE if necessary and the compiler
5. 'name' .TKB     should task build the program
6. 'name' .TKI     actual input to taskbuilder
7. 'name' .ODL     overlay descriptor file
8. 'name' .INS     command for installing task
9. 'name' .GET     moves all source and command files to  
                  current user area
10. 'name' .MAK    compiles and taskbuilds routine
11. 'name' .APS    for FPS source code input to APAL

Look in [210,22] for examples of these files if the format is not clear.

#### Organization of UICs on MAPPER

The master copy of this file may be found in MAPPER::[210,10]

Application programs are located in the UIC [x,y] as follows:

[217,y]	The OLD area
[210,y]	The SYS area
[220,y]	The NEW area
[x,10]	Library area VLAMAC
[x,20]	Library source files
[x,21]	FITS
[x,22]	MAPSEL
[x,23]	MAPSRT
[x,24]	MAPGRD
[x,25]	MAPFFT
[x,26]	CLEAN
[x,27]	MAPDFT
[x,30]	MAPCON, NQTASK, MAPDSP, CONLIB
[x,31]	SELFAL
[x,32]	AP code
[x,33]	CATLST tasks
[x,34]	PROBE, PRB
[x,35]	ACTPLT etc
[x,36]	CONCON, SPACE, MAPCHK
[x,40]	GRIDER

The suggested update procedure has provision for a NEW and a SYS area. [210,xx] corresponds to the SYS area and [220,xx] corresponds to a NEW area. Routines which are run under the control of MAPCON will be installed with names reflecting whether they are from SYS or NEW or EXPERIMENTAL. The system startup command will load routines from SYS and NEW. It is the responsibility of the programmer to load a program with the EXPERIMENTAL name.

Programs which are not controlled by MAPCON will have to be tested by some other procedure. MAPCON itself for example could only be tested during software development time and either installed or not depending on the judgment of the responsible programmer.

#### Program Modification

A programmer needing to modify a program should do the following:

1. Sign out program in log book.
2. Copy source files into his own area from SYS or NEW.  
Use the .GET file if it exists.
3. Make the appropriate changes to the source code.
4. Test and debug the routine using the EXPERIMENTAL option in MAPCON or scheduled software development time.  
To instal an experimental version of MAPSEL the following command might be used: `INS MAPSEL/TASK=EMPSEL.`
5. Update or create the appropriate documentation for the program.
6. Update the GET and MAK command files. The GET file should be able to copy all needed source and command files into a new area simply by executing it. The MAK command should compile and taskbuild the program.  
Since some routines may not be properly documented or in the format suggested by this memo, the programmer should also make any changes necessary to standarized the command files associated with the program.
7. Submit a system change form to INA. Make note of any changes to INS commands.

The procedure for moving a program into NEW:

1. Set the uic to the appropriate NEW area.
2. Copy the GET file from the programmers area.
3. Execute the GET file.
4. Execute the MAK file.
5. If problems consult with the responsible programmer else execute the INS command.

6. Run DOC on the program and update the documents book.

The procedure for moving programs into SYS:

1. Set uic to [210,17] and execute OLD command to save current system task images in [210,17] area.
2. Set the uic to the appropriate [210,xx] area and copy the GET file from the [220,xx] area.
3. Execute the GET file.
4. Change the system install command if necessary.
5. For changes to the system libraries or global DCL files it is necessary to rebuild the entire system with the SYSBLD command. It currently takes several hours to build.
6. Mount the system save tape and execute the TAPE.BAK command for saving the updated [210,\*] areas on tape.