THE ENGINEERING COMPUTER TOOLBOX

Donald R. Craig
Damson Oil Corporation

Today in this environment of uncertain oil price and the drive to become more cost effective, a Petroleum Engineer must have all the help possible to work smarter and more efficiently. To this end, many excellent software packages devoted to such specific disciplines such Reservoir Engineering, Project Economics, sophisticated drafting programs, and varied programs to calculate everything from bottomhole pressure to pumping unit design have been created. However how does an engineer handle the much more mundane tasks that beset him everyday that these specific packages weren't designed for? In order to effectively and efficiently manage these varied tasks, a "Computer Toolbox" of off the shelf "generic" software needs to be utilized.

Just as in a toolbox, there are hammers, pliers and screwdrivers that form the backbone of any tool collection, so also there are three major pieces of software that go into our "Computer Toolbox". These basic components, (1) a spreadsheet, (2) a wordprocessor, and (3) a simple database program are the necessary tools to start a good tool kit.

Almost everyone should be familiar with some form of a spreadsheet since it lends itself so well to engineering applications. Spreadsheets are relatively simple to use and provide a tremendous amount of flexibility in handling and processing columnar data. Probably the best known and most widely used spreadsheet is "123" developed and marketed by Lotus Corp. There have been countless application programs written for this spreadsheet simply because at the time it was the best available. Today however, there are several excellent alternatives to Lotus 123. These provide not only the power of 123 but also some very excellent graphics and formatting capabilities. The only real problem with these newer and in some case more powerful spreadsheets is that 123 is so widely used that most companies find it hard to change.

Next, every engineer should have some form of a word processing package. This can range from a very simple program that allows you to type notes to a full blown word processor.
Today it seems an engineer spends much of his time on the phone or making notes on various projects that he is working on. If these are on scraps of paper, they tend to get lost or misplaced. A simple word processing package would provide the vehicle necessary to capture all of this information. The notes could be typed into the program and retrieved by date or some key word thus preventing them from getting lost. If an engineer is fairly proficient in typing, then a full blown word processor would probably be more appropriate. Using this, he could compose and correct his own recommendations, reports, and etc. This would eliminate the necessity of writing out the information, having his secretary type it out and then return it

to him for correction which would necessitate another round of typing.

Finally, a good functional database should be included. It always seems that there is certain information that needs to be available that you cannot retrieve from the main computer in a useable form. The only practical solution is to capture the data and store it in some form of a database program. Database programs on the market today range from very simple "card file" program to very sophisticated system that readily interface with databases running on a mainframe. The best program for the each individual toolbox should be based on the personal requirements and the amount of information needed to be captured and retrieved.

The nuts and bolts in a toolbox are the support programs that are available to make the computer and user function more effectively. These would include a Disk back-up program, a good "Dos" shell with accessories, and some sort of a disk repair program.

Every toolbox needs some sort of a backup program if a hard disk is being utilized. It always seems that hard disks tend to crash when the disk is full of information that is available no other place. To be a really safe, a hard disk should be backed up at least once every two weeks or more often if there exists a large volume of valuable information which changes often. A backup program needs to be not only dependable but as fast as possible. There is nothing worse than taking two hours to back up a hard disk. A good backup program when utilized properly will prove worth it weight in gold if a hard disk failure occurs.

A good "Dos" shell also improves the worth of a toolbox. First of all, a "Dos" shell is a program that allows you to perform all the functions of DOS without having to remember any of the DOS commands. A good shell includes such things as the ability to manipulate files, perform various disk operations, and view directories and file trees . The shell really removes the need to remember how various DOS commands work and allows the user to get on to more important projects.

Next a good disk "repair" program finishes out the nuts and bolts portion of a a toolbox. These type of programs allow you to get into any type of file or program and modify it providing you understand what you are doing. However the most important function of this type of program is recovering files that have been either accidentally or purposely erased. It never fails that as soon as a file is erased, it's needed. The best time to use this type of program is as soon as it's discovered that a file has been erased. If the area where the file was residing has not been overwritten by some other file, then these programs can usually recover the file.

Finally come those little luxury tools that really make the jobs go a lot smoother. These probably should include a good graphics

program, a simple drafting program and perhaps one of the newer types of programs called a "Personal Information Manager".

The ability to graph information is almost a necessity in the petroleum engineering environment today. This can be accomplished quite easily by using a good graphics program. Here again these types of programs come in all shapes, sizes and cost ranges. To be useful in a petroleum engineering application, the graphics package has to have the ability to draw different types of graphs such as linear, log - log and log - semilog. Also it needs to be able to retrieve information readily from other programs such as databases or spreadsheets. Lastly, the program needs to be fairly easy to use.

A simple drafting package is also a great addition as a luxury item in a tool box. This particular package doesn't have to be as sophisticated as a CAD program but should just provide some very basic drafting functions. Uses of the program might include drawing various types of maps, preparing lease sketches for regulatory agencies or even simple stick diagrams and wellbore diagrams. Most of these simpler drafting packages utilize a mouse for selecting commands and moving around the drawing. This makes the program very easy and as a consequence very time efficient.

The last luxury item could be one of the newer generation of programs called a "Personal Information Manager". This program has the ability to take random bits of information typed into the program and display it any format you choose. These "views" as they are called allow information to be examined from many different angles in many case revealing ideas that aren't readily apparent. Although these program are relatively new and in most case difficult to use, they really show great promise of becoming a very effective engineering tool. Only time will tell about this particular programming approach.

A good complete engineering "toolbox" can only improve the efficiency and effectiveness of a petroleum engineer in today's environment.