CHAPTER 6
PRIVILEGED OPERATIONS

6.1 INTRODUCTION

The system manager is responsible for installation of the system
and its daily operation. The following chapter contains all
commands, programs and documentation concerning privileged
operations which are performed on a regular basis.

Any job can be made privileged if bit 0 of the protection code of
the current account is set. This bit may be set by the system
manager when he creates the account. In addition to LOGging IN
to a privileged account, you must execute the PRIV command with
an argument of 4XXX to become a privileged user (see 6.2.1). A
privileged user can write on SYS and can also execute some
special commands in SCALE. Privilege is a potentially dangerous
feature of ETOS operations. The system manager should limit the
accounts that can be privileged to those that definitely require
it.   Account [00,03] is privilegable when the system is
delivered.

6.2 PRIVILEGED SCALE COMMANDS

The concept of SCALE and its operation is explained in the User's
Guide, Chapter 3. This chapter should be read before you attempt
to use SCALE commands. The SCALE commands presented in this
section may only be executed by privileged users. Since these
commands could be used to affect other users or corrupt the ETOS
software, they are not listed in the System User's Guide. It is
the system manager's responsibility to acquaint privileged users
with these commands and their inherent dangers.

6.2.1 The PRIVilege Command

PR[IV] [n]

where "n" can be set in accordance with Table 6-1.

Table 6-1
Privilege Word Format

Bits	Meaning
0	1=privileged 0=non-privileged
1-5	Unused
6-8	Run queue number (0 has higher priority than 7)
9-11	Index into LSLICE table

The PRIV command is utilized for three distinct functions.

The most common use of the command is that of privileging the user. If you want to perform any privileged operation described in this chapter, you must be logged into a privileged account and set bit 0 of the PRIV word. The PRIV command for privileging a user is of the following form.

!PRIV 40XY

X and Y are used for the other two functions of the PRIV command.

The second use of the PRIV command is controlled by the third octal digit of the PRIV word. ETOS has an internal priority structure which you cannot change. Terminal input/output has the highest priority and card reader input has the lowest. ETOS automatically adjusts these values, based on the job's current status. ETOS also has a priority queue which you can change. This queue has eight positions. 0 is the highest priority and 7 is the lowest priority. When you LOGIN, you are automatically assigned priority level 4. A job which has a lower priority

number than another job will get scheduled more often. Therefore, you can place your most critical jobs at priority level 0 and your jobs which are not time-critical at level 7.

The fourth octal digit of the PRIV word controls quantum length. The LSLICE table (see 3.13) is a table which contains quantum lengths. A quantum is the period of time which you run before another user is scheduled. If you have a large quantum, you will run a given job faster than a user with a smaller quantum. The reason for this decreased time is that you receive a greater percentage of the central processing unit resources. The LSLICE table has eight settings. A value of 0 for the last digit at the PRIV word corresponds to the first entry. A value of 7 corresponds to the last entry. When you LOGIN, this digit is set to 0. If you have not changed the LSLICE table from its distribution form, your quantum is 30 (base 8) or 24 (base 10) tenths of a second. You can increase your quantum if your job is time-critical.

Each time you LOGIN, your PRIV word is set to 0040. This value means that you are non-privileged, you are at priority level 4, and your quantum is equal to the first entry of the LSLICE table. If you have not changed the LSLICE table, the following command causes your non-privileged job to execute at the fastest possible rate.

!PRIV 0007

The following command causes your non-privileged job to execute at the slowest possible rate.

!PRIV 0070

If you execute the PRIV command with no argument, your current PRIV word is displayed. A sample of the PRIV command is

contained in Figure 6-1.

Figure 6-1
Sample Use of the PRIV Command

```
!PRIV 0023
!PRIV
0023
!
```

6.2.2 PEEK and POKE Commands

```
PE[EK] loc [n]
PO[KE] loc vl[v2[...]]
```

These commands are analogous to the EXAMINE and DEPOSIT commands (see 3.8, System User's Guide). However, EXAMINE and DEPOSIT deal with virtual memory, whereas PEEK and POKE deal with physical memory.

To examine physical memory, enter PEEK followed by the location whose contents you wish to examine (1-5 digits). If the location is five digits, the first digit is the instruction field. To examine a sequence of location, enter the starting address and the octal number of locations to be examined. When printing the contents, ETOS performs a carriage return, line feed after each location with a last digit of 7 (XXXX7). This assists the user in determining the contents of a variety of locations. The number of locations displayed must be less than 100 (base 8). A sample execution is shown in Figure 6-2.

Figure 6-2
Sample Use of the PEEK Command

```
!PEEK 10200
7777
!PEEK 10200 15
 7777   7602   0354   1264   7664   3452   4017   2000
 0000   0000   1027   7700   3315
```

To deposit in physical memory, enter <u>POKE</u>, followed by the address at which to start depositing (1-5 digits), and the string of octal values which will go into sequential locations. If the start address is five digits, the first digit is the instruction field. If the start address is less than five digits, field 0 is modified. Figure 6-3 contains a sample use of the POKE Command.

<div align="center">

Figure 6-3
<u>Sample Use of the POKE Command</u>

</div>

```
!PEEK 0204
 7777
!POKE 0204 2007 5204 3216 7215 7300 7402
!PEEK 0204 6
 2007 5204 3216 7215
 7300 7402
!
```

If you POKE data into a field which does not exist in the physical machine, the data is lost. If you PEEK from a field which does not exist, the data returned is always "0000".

The POKE command should be used with extreme caution. When you POKE into fields 0 and 1, you are changing data in the ETOS resident monitor. This could cause the machine to crash or data to become corrupted. If you POKE into fields 2-7, you are changing data in user programs. This is not usually desirable. As a general rule, you should not use the POKE command unless the arguments were supplied by QUODATA or you have the source to the ETOS monitor.

6.2.3 BROADCAST Command

<u>BRO[ADCAST] message</u>

This command sends a message to all initialized terminals, simultaneously. A terminal is initialized when any key is struck on it while ETOS is running. The message can be any text up to