

**APPENDIX A**

**COS-310 CHARACTER SET**

In both source and data files, characters (alphanumeric and numeric) are stored two characters per word in six-bit binary. Negative numbers are stored with the high-order bit of the low-order digit set to 1. For example, the number 1234- is stored as two words in the following form:

|         |         |        |
|---------|---------|--------|
| 22<br>1 | 23<br>2 | WORD 1 |
| 24<br>3 | 65<br>4 |        |

This number is recognized as 123T. This means that any program in which the numeric-to-alphanumeric conversion is not made might produce negative numbers with letters. Refer to Table A-1 for a list of characters representing negative numbers.

**Table A-1**  
**Characters Representing Negative Numbers**

| Negative Number | Equivalent Character | Decimal Code | Octal Code |
|-----------------|----------------------|--------------|------------|
| -0              | P                    | 49           | 61         |
| -1              | Q                    | 50           | 62         |
| -2              | R                    | 51           | 63         |
| -3              | S                    | 52           | 64         |
| -4              | T                    | 53           | 65         |
| -5              | U                    | 54           | 66         |
| -6              | V                    | 55           | 67         |
| -7              | W                    | 56           | 70         |
| -8              | X                    | 57           | 71         |
| -9              | Y                    | 58           | 72         |

Table A-2  
COS-310 Character Set

| Decimal Code | Octal Code | Character | Decimal Code | Octal Code | Character |
|--------------|------------|-----------|--------------|------------|-----------|
| 00           | 00         | Null      | 32           | 40         | ?         |
| 01           | 01         | Space     | 33           | 41         | @         |
| 02           | 02         | !         | 34           | 42         | A         |
| 03           | 03         | "         | 35           | 43         | B         |
| 04           | 04         | #         | 36           | 44         | C         |
| 05           | 05         | \$        | 37           | 45         | D         |
| 06           | 06         | %         | 38           | 46         | E         |
| 07           | 07         | &         | 39           | 47         | F         |
| 08           | 10         | '         | 40           | 50         | G         |
| 09           | 11         | (         | 41           | 51         | H         |
| 10           | 12         | )         | 42           | 52         | I         |
| 11           | 13         | *         | 43           | 53         | J         |
| 12           | 14         | +         | 44           | 54         | K         |
| 13           | 15         | ,         | 45           | 55         | L         |
| 14           | 16         | -         | 46           | 56         | M         |
| 15           | 17         | .         | 47           | 57         | N         |
| 16           | 20         | /         | 48           | 60         | O         |
| 17           | 21         | 0         | 49           | 61         | P         |
| 18           | 22         | 1         | 50           | 62         | Q         |
| 19           | 23         | 2         | 51           | 63         | R         |
| 20           | 24         | 3         | 52           | 64         | S         |
| 21           | 25         | 4         | 53           | 65         | T         |
| 22           | 26         | 5         | 54           | 66         | U         |
| 23           | 27         | 6         | 55           | 67         | V         |
| 24           | 30         | 7         | 56           | 70         | W         |
| 25           | 31         | 8         | 57           | 71         | X         |
| 26           | 32         | 9         | 58           | 72         | Y         |
| 27           | 33         | :         | 59           | 73         | Z         |
| 28           | 34         | ;         | 60           | 74         | [         |
| 29           | 35         | <         | 61           | 75         | Tab       |
| 30           | 36         | =         | 62           | 76         | ]         |
| 31           | 37         | >         | 63           | 77         | ↑         |

**APPENDIX B**  
**COS-310 FILES**

There are four types of files in the COS-310 system: source, binary, data, and system. Source, binary, and data files have similar structure. System files use standard OS/8 SAVE format.

**B.1 COS-310 SOURCE FILES**

Each line in a source command file or DIBOL source file must be input with a line number. This makes all source files look the same and makes them compatible with COS-310. Each input line has the following format:

|                   |                |   |
|-------------------|----------------|---|
| word<br>count (n) | line<br>number | n-1 words, two COS-310<br>characters per word |
|-------------------|----------------|---|

The first word contains the word count for that line. It is computed with the following expression.

$$n = ((\text{number of characters on line} + 1) / 2) + 1$$

The second word is the statement line number, 0000-7777 octal (0000-4095 decimal).

The third and successive words contain the text of the line packed two COS-310 characters per word. The total characters of data per line does not include the two-character (1 word) word count number.

**B.2 COS-310 DATA FILES**

Every block in a data file is completely devoted to the storage of data. Each logical unit holds only one data file. Labels on data files are associated with logical units by the Monitor in conjunction with DIBOL or system programs.

The format of a line in a data file is similar to the format for a line in a source file except there is no line number on a data file.

A line of text in a data file has the following format:

|                   |                                     |
|-------------------|-------------------------------------|
| word<br>count (n) | n words, two characters<br>per word |
|-------------------|-------------------------------------|

The first word contains the word count for that line. It is computed with the following expression:

$$n = (\text{number of characters in record} + 1) / 2$$

The second and successive words contain the text of the line, two COS-310 characters per word.

### B.3 COS-310 BINARY FILES

Although the contents of a binary file are interpreted differently than the contents of a data file, externally the two files are structured exactly alike. That is, the binary code for each line of a DIBOL source program is stored as a word count followed by the interpretive code to be used by the run-time system.

### B.4 COS-310 SYSTEM FILES

All system files are stored in OS/8 SAVE format. The first block of the file is a memory control block indicating where in memory the rest of the blocks of the file are to be loaded. Each successive block is a 256-word memory image. See the OS/8 Software Support Manual for details.

### B.5 SYSTEM DEVICE FORMAT

COS-310 puts a label on all devices. This label occupies the first 256 words of each device; four words are the actual label, one word is the date, and the other words may be a bootstrap.

Figure B-1 illustrates the layout of the Monitor portion of the system device. As noted in the figure, COMP should be the first file in the file area. The location of COMP is particularly important when the binary scratch area is to be expanded.

## B-2 COS-310 FILES

|                           | BLOCK No.<br>(Octal) |
|---------------------------|----------------------|
| Bootstrap                 | 0                    |
| Directory                 | 1                    |
| Monitor                   | 10                   |
| Editor Overlay            | 14                   |
| Editor                    | 20                   |
| Run-Time System<br>Loader | 34                   |
| Edit Buffer               | 40                   |
| Run-Time System           | 60                   |
| Compiler Overlays         | 70                   |
| Binary Scratch Area       | 100                  |
| Files                     | 140                  |
|                           | END OF MEDIA         |

**Figure B-1 Monitor Organization**