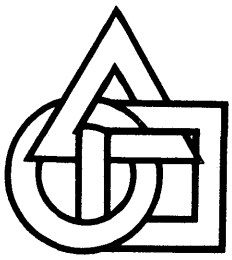
WYLBUR REFERENCE MANUAL

FEBRUARY 1978



Computer Center Branch
Division of Computer Research and Technology
National Institutes of Health
Bethesda, Maryland 20014

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I. Introduction to WYLBUR

WYLBUR is a computer program which functions as a text editor and remote job entry facility. It was developed by the Stanford University Computation Center and adapted for use at the NIH Computer Utility. WYLBUR is designed to give users at typewriter terminals a comprehensive text editing facility with prompt response, without interfering with other jobs being processed by the central computer. The text editing facility can be used to create, modify, store and retrieve text, such as a computer program or a letter (e.g., this manual was created using WYLBUR).

A person using WYLBUR can create and edit a computer program (written in any language) and its Job Control Language just as he would any other WYLBUR text. Using the remote job entry facility, he can then insert them into the computer's input stream for processing as a normal batch job.

The terminals which can be used to access WYLBUR include the Selectric terminals (such as IBM 2741s and communicating Mag cards); Teletypes and Teletype-compatible terminals (Models 33, 35, 37 and 38); and NIH5200 terminals and other CRTs (Cathode Ray Tube or television-screen terminals).

Selectric terminals operate at 15.9 characters per second. Teletypes can access WYLBUR at 10 or 30 characters per second, and CRT terminals can go up to 120 characters per second.

This manual is written for a user with an IBM 2741 terminal, but the differences in operation for other models are not overwhelming. Appendixes D and E describe these differences. The SET TERMINAL command, described in section VIII, has many options which allow adjustment for the features of particular terminals. Users with NIH5200 terminals should obtain a copy of the NIH5200 Terminal User's Guide.

This manual is designed to serve first as an introduction to WYLBUR and later as a reference text. Everyone who uses this manual should regularly read the applicable sections of INTERFACE, the Computer Center's series of technical notes. Another Computer Center publication, Extended Printing Facility, explains an extension to WYLBUR which allows the user to enter, revise, and list technical manuscripts containing superscripts, subscripts, Greek letters, etc. These listings are done on printers at the central facility. To order this and other Computer Center documentation, contact the Technical Information Office, Building 12A, Room 1017.

A. Registering to Use WYLBUR

Anyone who has a Computer Center account number, a registered set of initials, and an output box at the central facility may use WYLBUR without taking further action if he has access to a properly equipped and registered terminal.

For information on how to obtain a registered set of initials, a valid account, and an output box contact the Project Control Office, Building 12A, Room 3013, or see the Computer Center's Users Guide. Every user must have his own set of registered initials.

Mailing boxes are available for users in off-campus locations who wish to produce output at the central facility (e.g. using WYLBUR's LIST OFFLINE or RUN commands) and have it mailed to them. Users who accept this service must take on full responsibility for delays, damage or loss incurred in the mails and must limit the volume of output to be mailed to that which will fit in one 12 by 16 inch U.S. Mail Envelope.

Terminals may be registered by contacting Dedicated Equipment Services, Building 12A, Room 1033. They will furnish a terminal number and red identification sticker to be affixed to the right-hand side of the terminal.

The following telephone numbers will be useful as you register and begin to use the system.

Data Phone Repair	441-1440
Dedicated Equipment Services	496-2248
Information Media Library	496-6021
PAL Unit	496-5525
Project Control Office (Accounts)	496-6146
System Status	654-2771
Technical Information Office (Manuals)	496-5431
Terminal Repair	496-2248
Weekend and Holiday Schedule	496-4800

B. The Selectric Terminal

The IBM Selectric typewriter terminal is a device which looks and is operated much like an ordinary electric typewriter. It has only one additional key, ATTN (attention); on some terminals this key is marked INT (interrupt) and has the same functions. The terminal can be linked to the NIH central computer system using a standard telephone line. When the terminal is not connected to the computer, it can be used as a typewriter for normal office tasks. When it is connected to the computer and the WYLBUR system, several keys provide functions far beyond the ability of a normal typewriter. The following sections of this manual explain the use of these keys and the special "commands" which together invoke WYLBUR's many services.

The NIH standard Selectrics have the Typamatic feature which permits the user to repeat a hyphen, underline, backspace, or space by holding the proper key down with a steady pressure.

Experienced typists should note that in WYLBUR the digits 1 and 0 are not interchangeable with the letters L and O.

Terminals with several type styles which print either 10 or 12 characters to the inch are available. Terminals which print 10 characters per inch (10 pitch) are standard and are easy to use since their spacing matches that of the computer printers. 12 pitch terminals allow more characters to be printed on a line; see section VIII.A.2 "SET TERMINAL" for a command to permit this. For information on how to obtain help with Selectric terminal problems, consult section VIII.C. Terminal Repair. For further details on the specifications for these terminals and ordering information, see the Users Guide or contact Dedicated Equipment Services.

C. Using this Manual

The next two sections of this manual will describe the text editing functions of WYLBUR. Within the discussion of each command, the simple form will be discussed first, and the options will follow. After each paragraph describing an operation, there will be an illustration showing the way it will look when it is typed out. In these illustrations, the user's use of a non-typing key will be indicated by the abbreviation for that key enclosed in parentheses (e.g., (CR) for carriage return).

Although in these examples the user's commands are always capitalized, commands may be typed in any combination of upper and lower case letters. Also, as far as WYLBUR is concerned, blanks, equal signs and commas are equivalent; so they may be used interchangeably in commands.

D. WYLBUR Functions

WYLBUR can accumulate, edit, and process lines of text. The text collected and edited can be a letter, a list of statistical data, an article for a newsletter, or a computer program. The term DATA SET is used to describe any collection of such material. A data set is called an ACTIVE DATA SET while it is being held in the active part of the computer's memory so the user can work on it and is called a PERMANENT DATA SET when it is stored on a disk. The ACTIVE DATA SET exists only while the user's WYLBUR session is in progress; while PERMANENT DATA SETS are preserved between sessions. For information on migrated data sets, which are stored on tape, see section V. "Data Set Migration."

If a data set is a complete program, it can be submitted from the terminal to be executed by the computer, and the user can employ WYLBUR commands to check on the progress of the job and to obtain the results of his job at the terminal.

There are two modes of operation in WYLBUR, collect mode and command mode. Collect mode is used for accumulating lines of text, constructing a new data set, or adding lines of text to an existing data set. Command mode is used to perform any other tasks such as listing or editing. The user is in command mode whenever he is responding to a "?" prompt. The user is in collect mode whenever he is responding to a line number prompt (e.g.: 1. ?).

E. Sign-On Procedure

The procedure described below is for a Selectric terminal equipped with a standard Data-Phone. Users with other terminals should see Appendix D or E for the differences between the procedure given below and the one they are to use. Those using an acoustic coupler instead of a data phone should see Appendix F.

1. Place the COM-LCL switch located on the left side of the 2741 terminal in the COM position. This enables the terminal to communicate with the computer over the telephone line. (Users with portable Selectric terminals can omit this step).
2. Depress ON on the ON-OFF switch on the typewriter keyboard.
3. Depress the TALK button on the Data-Phone.
4. Dial the number of the computer.
5. Wait for a high-pitched tone (which should occur after one or two rings), then depress the DATA button. Replace the handset in its cradle.
6. Finally, type a comma and depress the RETURN key. This causes the computer to start up the sign-on procedure, during which it prompts the user for information so that the validity of the user and his account number can be checked.

The system will first type the name of the installation followed by the telephone line number, date and time, e.g.:

NIH/DCRT/CCB PORT 79 FRIDAY 05/11/77 10:35:53 A.M.

NIH/DCRT/CCB is our organization - National Institutes of Health/Division of Computer Research and Technology/Computer Center Branch. PORT 79 is the telephone line port being used during this session. The day of the week and current date are given next. The time is reported in hours, minutes, and seconds.

The system may follow this with lines giving messages of the day.

Then the system will type the prompt, "INITIALS?". The user should answer by typing his registered initials, account number, terminal identification number, and a carriage return (CR). They may be given in any order.

INITIALS? iii aaaa ttt (CR)

If the user neglects to include the account number or terminal number, it will be prompted for separately. A user is not permitted to have more than one terminal session in progress at the same time.

The user is then asked to supply a keyword in order to determine that he has a right to use the account number and initials which he has just given. If this is the first time the user has signed on with a newly assigned account, the system will ask him to supply a keyword.

```
PLEASE ASSIGN A KEYWORD FOR aaaa iii
KEYWORD? kkk
```

This keyword must then be given every time the user signs on; so it is important to remember it. For further information on keywords see section IV.A.3. "Using Keywords." As a protection feature, the terminal overprints the keyword with a series of miscellaneous characters. Keywords help to insure data set integrity and prevent unauthorized use of your account.

```
KEYWORD? kkk (CR)
```

Striking the attention key after the "INITIALS?" prompt will terminate the session; striking it after any later sign-on prompt will restart the sign-on procedure, and all information previously entered will be forgotten.

The sign-on procedure is complete at this point.

```
?
```

This prompt from the system indicates that the sign-on terminal is now ready to accept WYLBUR commands.

If an invalid response is given to any of the above prompts, the user will be given another chance to respond correctly.

F. Sign-Off Procedure

All the user needs to do at the end of a session is to issue a LOGOFF command. WYLBUR will reply with various statistics on the session and disconnect the telephone line.

```
? LOGOFF (CR)
EDITING TIME = 0.33 SECONDS
ELAPSED TIME = 0:25:03
CHARGE = $1.08
END OF SESSION  THURSDAY  06/23/77  4:09:45 P.M.
```

The editing time is the actual computer (CPU) time used during editing. Elapsed time, which is reported in hours, minutes and seconds, is the time the terminal has been connected to the computer. Billing is done in accordance with a formula which includes both of these factors. In addition, users are billed for the amount of online disk storage they use. See the Computer Center's Users Guide for current details on WYLBUR charges.

WYLBUR keeps track of activity at a terminal, and if nothing has been typed in at a logged-on terminal for a period of five minutes, WYLBUR will ask the user to take some action to show that he is still there.

```
? ***
ARE YOU STILL THERE?
?
```

If the user doesn't type a response in reply (a carriage return is sufficient), WYLBUR will give him another five minutes and then ask again.

```
? ***
RESPOND OR BE LOGGED OFF.
?
```

If no reply is made, WYLBUR will automatically logoff the terminal after another five minutes. Remember that the LOGOFF command includes an implicit CLEAR TEXT which erases the active data set. This means that unless he has saved the material he has been working on, it will be lost. If the user wishes to save the active data set, he must do so before logging off.

The LOGON command allows a second person to use a terminal after someone is finished without having to dial the computer again. It is equivalent to a LOGOFF command followed by dialing the computer. The active data set will be cleared, the accounting data will be typed, and the user will be prompted for his initials, account number, keyword, and terminal number as if he had just dialed into the machine.

LOGOUT and LOGIN may be used in place of LOGOFF and LOGON.

II. Creating a Data Set--The Collect Mode

A. Entering Collect Mode

The terminal is in collect mode when it is prepared to accumulate lines of text typed in at the terminal and store them in the active area of the computer's memory (the active data set). The only thing the user needs to do to enter the collect mode is to type COLLECT and a carriage return in answer to WYLBUR's prompt, "?"

```
? COLLECT (CR)
```

WYLBUR will then type a line number and allow the user to begin typing his information into the system. When the user finishes a line and hits the carriage return, WYLBUR will respond with another line number and allow him to continue inputting information. A single line can contain up to 133 characters.

```
? COLLECT (CR)
   1.   ? I am interested in creating (CR)
   2.   ? a WYLBUR data set. (CR)
   3.   ?
```

As a convenience, the COLLECT command can be given in one of three shortened forms. The first two, COL and C, are found with the other short forms in Appendix A.

```
? COL (CR)
   1.   ?
```

The third consists of merely striking the Attention Key.

```
? (ATTN)***
   1.   ?
```

It is possible to start collecting lines at a number other than one by specifying the number in the COLLECT command.

```
? COLLECT 10 (CR)
  10.   ?
```

If no line number is given in the COLLECT command, WYLBUR will, when possible, resume collecting at the place it left off when you were last in collect mode. If this is impossible because it would overwrite an already existing line, WYLBUR will abort the command and print out the message, LINE NO. ALREADY EXISTS.

Remember to leave collect mode before giving a command, or WYLBUR will think the command is part of the data set.

B. COLLECT UNNUMBERED

It is possible to collect lines without having WYLBUR prompt with a line number for each line; this is not recommended for beginners.

? COLLECT UNNUMBERED (CR)

WYLBUR will then prompt by nodding the type ball to indicate when it is ready to collect the next line. The lines in the active data set are still assigned line numbers so the following command is reasonable.

? COLLECT 10 UNNUMBERED (CR)

The UNNUMBERED option makes it possible to use the standard Selectric terminal which prints ten characters to the inch (a 10-pitch or pica machine) to collect lines up to 131 characters long without overstriking any characters. It also allows the user to collect onto special forms.

The UNNUMBERED option will remain in effect for subsequent COLLECT commands given during the session unless NUMBERED is specified.

? COLLECT NUMBERED (CR)

C. The Use of the Special-Purpose Keys in Collect Mode

The special-purpose keys are non-typing keys which have special WYLBUR functions that are different from the functions they serve on a regular typewriter. Users of other terminals should consult Appendixes D, E and F for further information.

1. Carriage Return (or Carrier Return)--this key returns the printing head to the left margin. In collect mode, it is the signal for WYLBUR to prompt with the next line number so the user can continue to enter text.

2. Backspace--this key moves the printing head one space to the left, and erases from the computer's memory whatever was in the space. A whole line of type can be erased from the computer's memory by backspacing over it, but the user cannot go back to lines he has already terminated with a carriage return (CR). In addition, he should be careful not to backspace into the line number that WYLBUR prompted because any characters subsequently typed in these spaces will be lost. For information on how to enter backspaces in the text (e.g. to permit underlining), see section VIII.A.1 "SET BACK."

3. Attention--this key has two functions during collect mode.

   a. If the user wants to erase the entire line he is working on, he can hit the attention key instead of using the backspace key. This will cause WYLBUR to prompt again with the same line number. When the attention key is hit, WYLBUR will respond with ***.

```
 22.    ? THIS LINE IS REALLY MESSED UP (ATTN)***
 22.    ?
```

   b. The user can also employ the attention key to leave the collect mode. To do this, he should hit the ATTN key as the first character in the line. WYLBUR will then forget that line number and ask the user for a new command.

```
  27.    ? NOW THAT I AM FINISHED, (CR)
  28.    ? I WANT TO LEAVE COLLECT MODE. (CR)
  29.    ? (ATTN)***
?
```

   Note that when this data set is listed (printed out on the typewriter console), there will be no line 29.

4. Shift-Lock--This key is used just as it is on a regular typewriter. However, unless the user gives the command SET UPLOW (set upper and lower case) before entering the collect mode, the data set will be stored and listed only in upper case.

```
? COL (CR)
   1.   ? This is a sample passage to show what (CR)
   2.   ? happens when you type in upper and lower (CR)
   3.   ? case without setting UPLOW and then get a listing. (CR)
   4.   ? ***(ATTN)
? LIST (CR)
   1.      THIS IS A SAMPLE PASSAGE TO SHOW WHAT
   2.      HAPPENS WHEN YOU TYPE IN UPPER AND LOWER
   3.      CASE WITHOUT SETTING UPLOW AND THEN GET A LISTING.
?
```

If UPLOW is in effect, the user may revert to the normal case with all alphabetic characters in upper case by giving the SET UPPER command. SET LOWER will cause all alphabetic characters to enter the system as lower case; this is useful for users of some Teletype-compatible terminals, (see Appendix D). The command SHOW CASE can be used to find out whether UPPER, LOWER, or UPLOW is currently in effect.

Note that computer programs and Job Control Language (JCL) must be in upper case.

5. TAB and SET-CLEAR--Setting tabs in WYLBUR involves a procedure designed to make certain that the physical tabs set at the terminal and the logical tabs known to the system are in the same place.

Follow these instructions carefully:

1. Clear the physical tab settings which already exist at the terminal by tabbing to the end of the line and then striking the attention key while holding down the CLEAR switch.

2. Give the command SET TABS. WYLBUR will help with a line of column numbers.

```
? SET TABS (CR)
         123456789112345678921234567893123456789412....
  TABS ?
```

3. Space over to each successive column in which you want to set a tab, press the SET toggle switch and then type a "1".

4. WYLBUR will then type two verification lines containing "1's". The first line indicates the position of each logical tab; the second indicates each physical tab. If they are not the same, you have made an error in setting tabs and must begin again with step one.

```
? SET TABS (CR)
         123456789112345678921234567893123456789412345...
  TABS  ?          1         1         1         1
                   1         1         1         1
                   1         1         1         1
```

The example above shows the successful setting of the tabs in columns 10, 20, 30, and 40.

The user can set a maximum of 15 tabs. If he knows the positions of the physical tabs, the user may append to the SET TABS command a list of numbers representing the column numbers for the tab settings. WYLBUR will verify as above.

If the "1's" are not directly under each other, use the long form of SET TABS to reset them in the proper positions.

```
?  SET TABS 10,20,30,40 (CR)
                   1         1         1         1
                   1         1         1         1
```

Alternatively, when the user knows the positions of the physical tabs, a starting column position, number of instances, and increment may be specified,

```
?  SET TABS 10+10*3(CR)
```

If the tabs have not been set and the tab key is used, WYLBUR will pay no attention to the line and will issue the error message, "USE OF UNSET TABS ILLEGAL". This also occurs if the tab key is pressed more times than there are tab stops. If the user is not sure how many tabs have been set, he can ask WYLBUR to SHOW TABS.

```
? SHOW TABS (CR)
10 - 20 - 30 - 40 - TABS
                   1         1         1         1
                   1         1         1         1
```

In order to clear the tab settings during a session, clear the physical tabs, and then CLEAR TABS. (SET NOTABS has the same meaning.)

Once tabs have been set, they will be used when possible to speed up listing by skipping long strings of blanks. Note, setting a tab in column 1 will speed up listings.

D. Lines and Line Numbers

1. Generating Line Numbers

Every WYLBUR data set is composed of lines numbered between 0.000 and 9999.999 and arranged in ascending order. When the user is entering lines in collect mode, the system generates line numbers automatically, adding the line number increment to the present line number.

The default line number increment (the amount WYLBUR adds to the present line number to produce the next one) is 1.000. The line number increment can be set to a value other than 1.000 in several ways.

The user may set it explicitly at the time he enters collect mode as illustrated below:

```
? COLLECT 90 BY 10 (CR)
  90.  ?
```

This command will start collecting lines 90, 100, 110, etc. The specified increment (10) will remain in effect until it is changed. The line number increment can be set implicitly with a command which specifies a line number with a fractional part. This is useful, for example, to do a collect which will insert lines between existing lines. If this is the text:

```
25.     to fully express our gratitude to
26.     Mr. Jones, Eileen Roberts and the rest of the
```

Material can be inserted between these lines by entering:

```
? COLLECT 25.1 (CR)
  25.1  ?
```

WYLBUR will now collect lines 25.1, 25.2, etc., adding one to the low-order fractional digit, but it will not collect 26.0 because that would write over an already-existing line. When leaving collect mode, WYLBUR "remembers" the next line number that would have been prompted and prompts with it when the user re-enters collect mode.

2. Line Length

A WYLBUR line can contain up to 133 characters. If more than 133 characters are entered, the excess will be lost. Notice, if you are using the SET BACK command (see section VIII.A.1. "SET BACK"), that the backspaces and over-typed characters both count toward this total.

The user can set the line length to any value between 1 and 133 characters. If the user does not set the LENGTH attribute, it automatically has the value 72.

```
? SET LENGTH = 30 (CR)
```

WYLBUR will accept lines which are longer than the current value of LENGTH, but a message will be typed out after each over-length line indicating that LENGTH has been exceeded.

```
  32.   ? THIS LINE IS LONGER THAN LENGTH, WHICH IS 30. (CR)
LINE 32. CONTAINS 45 CHARACTERS
  33.   ?
```

The command, SHOW LENGTH, can be used to find the current value for LENGTH.

3. Referencing Line Numbers

Individual lines and groups of lines can be referenced by their line numbers. For example:

```
    3,5,7.01
```
references three individual lines

```
    3/7.01
```
references all lines between 3.000 and 7.010, inclusive.

Special line numbers

FIRST is a special line number which can be used to reference the lowest-numbered line in a data set.

LAST references the highest-numbered line in the data set.

ALL is equal to FIRST/LAST.

END is a special line number which is equal to the integer next larger than LAST. The command, COLLECT END will prompt for the line after the highest numbered line in the data set.

4. Renumbering a Data Set

The user may have WYLBUR change the line numbers of the lines of text in his active data set by typing the NUMBER command.

```
? NUMBER (CR)
```

This causes the renumbering of all the lines of text in the data set, starting at 1.000. The user may specify another number at which the numbering is to begin by giving it in the command.

```
? NUMBER 2.065 (CR)
```

WYLBUR will then start at a value of 2.065 for the first new line number and will use a line number increment of .001 (a 1 in the low-order fractional digit). The user may choose to override the line number increment and ask WYLBUR to use another value.

```
? NUMBER 2.065 BY .01 (CR)
```

Remember, this command causes the renumbering of the entire data set, and the user cannot have just a specific range (section) of the data set renumbered.

Note: WYLBUR line numbers must be between 0.000 and 9999.999.

III. Editing a Data Set

Using the commands explained in this section, the user can have the computer help him revise his work by changing or deleting single characters, short groups of characters or words, entire lines or even groups of lines. Changes involving entire lines or groups of lines are made using the DELETE, INSERT, REPLACE, SUPPLANT, COPY, MOVE, ALIGN, JUSTIFY and CENTER commands. The MODIFY and CHANGE commands are used to make changes within lines.

A. The LIST Command

Frequently the user will want to see what he has written or the effects of his revisions. He can do this by commanding WYLBUR to LIST. The example is a form letter which shows what happens in response to a LIST command. Each line of text is printed with its associated line number. When all the lines in a data set have been listed, WYLBUR prompts the user for another command.

```
? LIST (CR)
   1.      We regret that because of the budget restrictions
   2.      and travel ceiling under which we are now
   3.      operating, we are unable to approve your
   4.      request for foreign travel.
   4.5
   5.      Please feel free to call on us at any time
   6.      for information about your grant.
   7.
   8.                        Sincerely yours,
   9.
  10.
  11.                        Michael Sneed
  12.                        Grant Specialist NBI
  13.      $
?
```

The user may want just a specific group of lines within the data set to be listed. To do this, he should give the line numbers of the first and last numbers to be listed separated by a slash.

```
? LIST 5/7 (CR)
   5.      Please feel free to call on us at any time
   6.      for information about your grant.
   7.
?
```

A list can be terminated at any time by striking the attention key. WYLBUR types 3 dots to indicate that the attention key was hit.

```
? LIST (CR)
   1.     We regret that because of budget restrictions
   2.     and travel(ATTN)...
?
```

The user may further wish that his listing not contain the line numbers of the lines of text.

```
? LIST UNNUMBERED (CR)
We regret that because of the budget restrictions
and travel ceiling under which we are now
operating, we are unable to approve your
request for foreign travel.

Please feel free to call on us at any time
for information about your grant.

                Sincerely yours,


                Michael Sneed
                Grant Specialist NBI
$
?
```

If a character is specified as a MARKER in the command, the listing will be temporarily suspended when it is encountered in the first column of a line in the range being listed. After suspension, the listing may be resumed by striking the carriage return key. Do not use the characters (), ' " or = as markers unless you enclose them in quotation marks. (e.g. LIST UNNUMBERED MARKER = "=").

```
? LIST MARKER = $ UNNUMBERED (CR)
We regret that because of the budget restrictions
and travel ceiling under which we are now
operating, we are unable to approve your
request for foreign travel.

Please feel free to call on us at any time
for information about your grant.

                Sincerely yours,


                Michael Sneed
                Grant Specialist NBI
(CR)
?
```

A line which contains a MARKER in column one is not printed. MARKER characters are recognized only when they occur in column one. If you insert a new sheet of paper just before striking the carriage return which begins the listing and remove it just before typing the final carriage return, the "?" prompt will not mar the listing of the letter.

If a document has more than one page, you can place a marker at the bottom of each page. The listing will pause when a marker is encountered and resume when you strike the carriage return.

A marker at the top of a letter can be useful in lining up the paper properly in the terminal.

Specifying DOUBLE or TRIPLE in the command will produce a listing that is double or triple spaced. This can also be accomplished by moving the line space lever on the terminal.

```
? LIST 1/4 DOUBLE (CR)

   1.      We regret that because of the budget restrictions

   2.      and travel ceiling under which we are now

   3.      operating, we are unable to approve your

   4.      request for foreign travel.
?
```

Text containing ASA carriage control characters in column one can be listed at the terminal.

```
? LIST CC (CR)
```

This causes a single space before each line which has a blank or plus sign in column one, a double space before each line with a zero in column one, a triple space before each line containing a hyphen in column one, and five spaces before each line containing a "1" in column one. For additional information on ASA carriage control, see section VII.A.

The user may move his listing a specified number of spaces to the right by using the INDENT option. This can also be done by moving the left margin slide.

```
? LIST INDENT = 10 (CR)
```

The example will produce a listing which is shifted ten positions to the right. The number of spaces specified must be between one and 70. Ten is particularly useful with an UNNUMBERED listing, since it compensates for the ten spaces occupied by the line numbers.

In order to be certain that no message from another user's terminal interrupts your listing, add the CLEAN option to the above command. This will not eliminate urgent messages sent by the computer operator.

```
? LIST CLEAN MARKER=$ (CR)
```

Though there would be no point in doing this to the form letter, the user can have just the line numbers listed.

```
? LIST 4/10 NOTEXT (CR)
   4.
   4.5
   5.
   6.
   7.
   8.
   9.
  10.
?
```

The NOTEXT option is particularly useful when the user wants to find the line numbers of all lines which contain a certain series of characters.

The user can choose to list only the lines containing a certain string of characters by specifying it in the command. All the above options (e.g. CLEAN, UNNUMBERED, CC, etc.) can be used to affect such a command.

```
? LIST 'your' IN 2/L (CR)
   3.      operating, we are unable to approve your
   6.      for information about your grant.
   8.                        Sincerely yours,
?
```

In the above example WYLBUR has found all lines containing the word "your" in the specified range (in this case 2/L) and printed their images for inspection.

Case is significant: asking for 'YOUR' would not retrieve these lines. Notice that unless you have SET UPLOW, you cannot reference a string that contains lower case characters.

The user can also ask WYLBUR to list lines which do not contain a specified string.

```
? LIST NOT 'your' IN 5/11 (CR)
   5.      Please feel free to call on us at any time
   7.
   9.
  10.
  11.                        Michael Sneed
?
```

For more information on the various ranges which can be specified, consult section II.D.3 "Referencing Line Numbers."

Since it is quite tedious to have long listings typed out at the terminal, they may be listed on high-speed printers. For further information, see section VII.A. "LIST OFFLINE."

B. The DELETE, INSERT, REPLACE, and SUPPLANT Commands

1. DELETE

The user may delete (erase) a series of lines from the active data set by giving the DELETE command and the numbers of the first and last lines of the range he wants erased.

```
? DELETE 5.03/6.08 (CR)
```

A single line can also be erased.

```
? DELETE 5 (CR)
```

Several individual lines can be erased at once.

```
? DELETE 5,15.2,20
```

He can also have all lines containing a specific character string eliminated. These lines are an associative range and the string must be enclosed in quotation marks. For further information, see section III.E. "Specifying Ranges".

```
? DELETE 'X = 3Y' IN ALL (CR)
```

This command will eliminate all lines containing this equation from the data set. Note, however, that if the specified character string is split between two lines, WYLBUR will not recognize it.

2. INSERT

Opposite to the DELETE command is the INSERT command.

```
? INSERT 13.02 (CR)
  13.02 ?
```

The user has specified that he wishes to insert a line numbered 13.02 and WYLBUR responds with that number and expects the user to fill in the contents of the line as would be done in collect mode.

It is also possible to insert a given line at multiple points in the active data set.

```
? LIST 1/6 (CR)
   2.     THIS IS AN OLD LINE
   4.     THIS IS AN OLD LINE
? INSERT 1,3,5 (CR)
   1.   ? I AM A NEW LINE (CR)
? LIST 1/6 (CR)
   1.     I AM A NEW LINE
   2.     THIS IS AN OLD LINE
   3.     I AM A NEW LINE
   4.     THIS IS AN OLD LINE
   5.     I AM A NEW LINE
?
```

If the user attempts to insert a line with the same number as an existing line, WYLBUR replies with an error message.

3. REPLACE

Frequently, the user will want to delete the contents of a line and enter new contents without changing the line number. He can do this in a single step by issuing the REPLACE command.

```
? REPLACE 13.06 (CR)
  13.06 ?
```

This causes WYLBUR to overwrite the old contents of the line specified with the new contents which the user types in.

The user may specify that a range of lines be replaced in which case WYLBUR will prompt successive line numbers from the specified range until the range is exhausted. As an example, suppose the data set has lines numbered 1.02, 1.03, 1.031, 1.032, 1.033, 1.04, and 1.05. Then commanding:

```
? REPLACE 1.03/1.05 (CR)
```

will cause WYLBUR to prompt for new contents of lines 1.03, 1.031, 1.032, 1.033, 1.04, and 1.05. A line will be replaced with a blank line if the carriage return is struck in response to a line number prompt.

The user can also REPLACE all the lines in an associative range.

```
? REPLACE '3*X*X*Y/3.14159' IN ALL (CR)
```

WYLBUR will then prompt with the number of each line containing the character string that is within the quotation marks. For further information on associative ranges, see section III.E. "Specifying Ranges."

The user cannot replace the contents of a line that does not exist in the data set--i.e., use the REPLACE command to insert. To do this, he must use the INSERT command.

If the user types just (ATTN) as the new contents of the line, the old contents of the line are not erased, and the REPLACE command is aborted.

There are two short forms for the DELETE, INSERT and REPLACE commands. The first is simply to type the first three characters of the command word. The second form is the same for all commands and consists of giving a line number followed by a single blank and the full line of text for the inserted or replaced line as a response to a "?" prompt from WYLBUR.

```
? 13.06 THE NEW CONTENTS OF THE LINE (CR)
```

This causes WYLBUR to put the new line image into the active data set in its appropriate place as is determined by its line number. If 13.06 already exists in the data set, then the old line will be replaced; if 13.06 doesn't already exist, the line will be inserted into the data set.

Be sure to terminate the line number with a single blank. Anything before the first blank will be used as the line number, and anything following it will become the contents of the new line.

If the user follows the line number with a Carriage Return, the specified line will be deleted. Beware!

4. SUPPLANT

The SUPPLANT command makes it possible to replace the present contents of a range of lines with a single command. When the command is given, the system will prompt with the first line number in the range. The entire contents of all lines in the range are replaced by what is typed in response to that prompt.

```
? SUPPLANT 'CLASSA' IN ALL (CR)
  10.   ? PRIMARY LEVEL -
```

Remember that the response to the line number prompt becomes the entire content of the lines in the range. To replace one string with another without losing the rest of the line, use the CHANGE command; see section III. G. "The CHANGE Command."

C. The COPY Command

The user may find it necessary to copy the contents of a range of lines into another section of the data set he is working on, and he may ask WYLBUR to do this for him. The data set below will be used to show the effect of various copy commands.

```
1.      THIS IS A DUMMY DATA SET WHICH WILL BE USED
2.      TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
3.      THIS
4.      SAMPLE
5.      IS A
6.      SHORT
7.      DATA SET
```

In the examples below, each command is followed by a listing of the resultant data set. It is assumed that each COPY command is given when the data set is in the form given above.

```
? COPY 3/5 TO 25 (CR)
27. - LAST LINE.
? LIST (CR)
   1.      THIS IS A DUMMY DATA SET WHICH WILL BE USED
   2.      TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.      THIS
   4.      SAMPLE
   5.      IS A
   6.      SHORT
   7.      DATA SET
  25.      THIS
  26.      SAMPLE
  27.      IS A
```

When the COPY has been made, WYLBUR prints a message giving the number of the last new line it created. Notice that only the first line of the location being copied into is given in the command.

When the line number given as the location to be copied into has a fractional part, the line number increment used in determining the line numbers for the copied range is a one in the low-order fractional digit of the location number.

```
? COPY 6/7 TO 1.1 (CR)
1.2   - LAST LINE.
? LIST (CR)
   1.      THIS IS A DUMMY DATA SET WHICH WILL BE USED
   1.1     SHORT
   1.2     DATA SET
   2.      TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.      THIS
   4.      SAMPLE
   5.      IS A
   6.      SHORT
   7.      DATA SET
```

Frequently the user will want to position the copied lines at the end of his data set. The special line number, END, which is the integer next higher than LAST, will allow him to do this.

The line number increment can be specified in the command.

```
? COPY 2/5 TO END BY .001
8.003 - LAST LINE.
? LIST (CR)
   1.     THIS IS A DUMMY DATA SET WHICH WILL BE USED
   2.     TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.     THIS
   4.     SAMPLE
   5.     IS A
   6.     SHORT
   7.     DATA SET
   8.     TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   8.001  THIS
   8.002  SAMPLE
   8.003  IS A
```

If the range to be copied overlaps the range being copied into, bizarre results may be produced.

```
? COPY 6/10 TO 8 BY .01 (CR)
10.02 -  LAST LINE.
? LIST (CR)
   1.     THIS IS A DUMMY DATA SET WHICH WILL BE USED
   2.     TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.     THIS
   4.     SAMPLE
   5.     IS A
   6.     SHORT
   7.     DATA SET
   8.     SHORT
   8.01   DATA SET
   8.02   SHORT
   8.03   DATA SET
   8.04   SHORT
   8.05   DATA SET
     .
     .
     .
```

And so it goes, until it gets to 10.02. This happens because WYLBUR copies one line at a time. It begins at 6.0 and copies that into 8.0, it next copies 7.0 into 8.01, then it copies 8.0 into 8.02, and it continues generating and copying until line 10 has been copied. Such situations are even more likely to occur when the user is asking WYLBUR to copy all the lines containing a specified string of characters (an associative range).

```
? COPY 'A DUMMY' IN ALL TO 5.5 (CR)
TERMINATED BY ATTEMPT TO REPLACE OR INTERLEAVE. 5.9 - LAST LINE.
? LIST (CR)
   1.     THIS IS A DUMMY DATA SET WHICH WILL BE USED
   2.     TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.     THIS
   4.     SAMPLE
   5.     IS A
   5.5    THIS IS A DUMMY DATA SET WHICH WILL BE USED
   5.6    THIS IS A DUMMY DATA SET WHICH WILL BE USED
   5.7    THIS IS A DUMMY DATA SET WHICH WILL BE USED
   5.8    THIS IS A DUMMY DATA SET WHICH WILL BE USED
   5.9    THIS IS A DUMMY DATA SET WHICH WILL BE USED
   6.     SHORT
   7.     DATA SET
```

Overlapping ranges can, of course, be used deliberately to obtain multiple copies of lines. For example, nine additional copies of the sample data set could be generated by giving the following command.

```
? COPY 1/63 TO 8 (CR)
70. - LAST LINE.
```

To make a certain number of additional copies of any data set, multiply the number of lines in the data set times the number of additional copies wanted. Use this number (which becomes the first line of the final copy) as the last number in the range to be copied. The first line to be copied into should be one higher than the number of lines in the original data set. The following example will produce 4 additional (5 total) copies of a 20 line data set.

```
? COPY 1/80 TO 21 (CR)
100. - LAST LINE.
```

These examples illustrate the importance of considering carefully the results of a COPY command before using it.

It is also possible to copy lines from a permanent data set. See section IV.C. "Copying Lines from a Saved Data Set" for a description of how to do this.

D. The MOVE Command

If the user wishes to copy a range of lines and then delete the old copy of the lines, he may do this with a single command--MOVE. This functions exactly as the COPY command with the following exceptions.

1. The old lines which were copied are deleted.
2. It is not possible to apply the MOVE command to a permanent data set, since the basic philosophy is that the user may take destructive action only upon the current active data set.

Following are some examples of the MOVE command as applied to the sample data set used in the explanation of the COPY command.

```
? MOVE 6/10 TO 3.1 BY .001 (CR)
   3.101 - LAST LINE.
? LIST (CR)
   1.      THIS IS A DUMMY DATA SET WHICH WILL BE USED
   2.      TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.      THIS
   3.1     SHORT
   3.101   DATA SET
   4.      SAMPLE
   5.      IS A
?
```

The following example illustrates the fact that unlike the COPY command, MOVE will not generate multiple copies of lines.

```
? MOVE 'DATA SET' IN 1/6 TO 4.1 (CR)
   4.1   - LAST LINE.
? LIST (CR)
   2.      TO SHOW THE EFFECT OF VARIOUS COPY COMMANDS.
   3.      THIS
   4.      SAMPLE
   4.1     THIS IS A DUMMY DATA SET WHICH WILL BE USED
   5.      IS A
   6.      SHORT
   7.      DATA SET
```

As in the COPY command, the TO phrase may specify the special line number END. END is the integer next larger than the current LAST of the active data set.

E. Specifying Ranges

The various commands above have been illustrated with examples that show many of the ways in which groups of lines can be specified. Below is a fuller explanation of the two types of ranges and their uses.

1. An EXPLICIT RANGE is a line or group of lines identified by its line numbers. For example, this type of range can be denoted in WYLBUR by giving the numbers of the first and last lines separated by a slash.

```
? LIST 1/10 (CR)
```

The range in the command above includes all lines with numbers equal to or greater than 1.000 and less than or equal to 10.000. A single line is referred to by its number alone.

```
? REPLACE 79.3 (CR)
```

Up to ten numbers may be specified in a single explicit range.

```
? DELETE 10.2,12.0,14.371,16/22,35 (CR)
```

FIRST and LAST can also be used to define a range, for example

```
FIRST/LAST
1.05/LAST
F/10.0
```

F and L are short forms for FIRST and LAST. The word ALL has the same meaning as FIRST/LAST.

END specifies a line number which is the integer just higher than the current LAST.

2. An ASSOCIATIVE RANGE specifies a line or group of lines each of which contains a certain series of characters. This type of range is specified by enclosing the character string within quotation marks and indicating which lines (by giving an explicit range) should be searched.

```
? COPY 'Charge' IN ALL TO END (CR)
```

In an associative range, case is significant. The above command would not copy lines containing either 'charge' or 'CHARGE'. Remember that unless SET UPLOW is in effect, it is impossible to search for strings containing lower case letters.

The range of lines not containing a specified string can be selected by using NOT before the string.

```
? DELETE NOT 'Cancer' IN ALL (CR)
```

The NOT facility can be used in any command which accepts an associative range. The word "NOT" can be abbreviated as "¬" on those terminals whose keyboards contain the not-sign.

A Selectric keyboard has two types of quote marks, a single quote (') and a double quote ("). Either of these may be used to enclose the character string, but consistency must be maintained. Thus, the following are valid associative ranges.

```
"VARIABLE" IN ALL
'X*(15 A * B**2)' IN 1/10
```

The following example, however, is not valid.

```
"VARIABLE' IN ALL
```

If a quote mark appears in the character string, the user must follow some additional rules. It is easiest to enclose the character string in quote marks of the opposite type from those appearing within the character string. If it is necessary to use the same type of quote marks to enclose the string, then type those quote marks that appear in the character string as two consecutive instances of the quote mark. For example:

```
"DON'T" IN ALL
      and
'DON''T' IN ALL
```

both designate the range of lines that contain the character string, DON'T.

Also take note that blanks are significant in an associative range specification, so that,

```
" BLANKS ARE PART OF THE STRING " IN 5/15

                and

"BLANKS ARE PART OF THE STRING" IN 5/15
```

are not equivalent range specifications.

The user may restrict an associative range by specifying the column positions within which the string must be contained in any given line.

```
? DELETE 'INTEGER' 10/30 IN ALL (CR)
```

The above command will delete all lines in which 'INTEGER' occurs within columns 10 to 30. Note that the string must begin and end within the specified column positions.

If only one column position is specified, the string is required to start in that column position.

? MOVE 'NIH' 15 IN 1/1000 TO 1001 (CR)

The user may wish to consider only certain instances of the lines which contain the specified string of characters.

? LIST 'INTEGER' (1,3,5/10) (CR)

is legal and will list the first, third, and fifth through tenth lines in which the character string INTEGER occurs. Only the first instance of the specified string in each line will be counted. Note if column restrictions and instances are combined in a single command, columns must come first.

Instances cannot be specified in combination with a disjoint explicit range (i.e., LIST 'INTEGER' (2,4,6) IN 2/10,20,25/100 would not work, but LIST 'INTEGER' (2,4,6) IN 2/100 would).

Blank lines are considered by WYLBUR to be lines with null content. Thus, the associative range '' or "" would retrieve all blank lines in the active data set. The range ' ' or " " would retrieve all lines having one blank and at least one non-blank character, i.e., not blank lines.

F. The MODIFY Command

The MODIFY command makes it possible to alter a line without retyping the whole line. The user can modify an explicit or associative range of lines, and WYLBUR will prompt with successive lines in the range until the range is exhausted. Using the MODIFY command causes WYLBUR to type out the line to be modified and request the user to enter his alterations. Fast typists might consider using the CHANGE or REPLACE commands even to make alterations in single lines.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TOOO BE MODIFID
 ALTERS ?
```

Several types of alterations may now be made to the line of text. After the alteration has been made, WYLBUR will type a copy of the altered line and then prompt for further alterations.

1. To delete characters from a line--D

The first thing that the user wants to do to this line is to remove the extra characters in TOOO. Deleting these characters is accomplished by typing a D underneath the characters to be removed.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TOOO BE MODIFID
 ALTERS ?               DD(CR)
  23.54   THIS LINE IS TO BE MODIFID
 ALTERS ?
```

Actually, the user need type a D only under the first and last character of the string which is to be deleted--everything between the two D's will also be deleted.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TO BE MODIFID
 ALTERS ?                      D  D(CR)
  23.54   THIS LINE IS TO BE MOD
 ALTERS ?
```

It is important not to leave spaces between the second D and the carriage return since they will be treated as D's (in fact, the second D is not needed).

2. To insert characters in a line--I

The user may also insert new characters into the line by first typing an I underneath the character before which the insertion is to be made and following this with the character string to be inserted. Any blanks typed between the I and the carriage return will be inserted in the line.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TO BE MOD
 ALTERS ?             I NOW(CR)
  23.54   THIS LINE IS NOW TO BE MOD
 ALTERS ?
```

3. To replace characters in a line--R

Finally, the user may replace a character string in the line contents by typing an R under the first character to be replaced and following this with a string of characters which are the replacements. As many characters are replaced, starting with the one over the R, as there are characters in the string.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS NOW TO BE MOD
 ALTERS ?                  RBEING MODIFIED(CR)
  23.54   THIS LINE IS NOW BEING MODIFIED
 ALTERS ?
```

Using the R indicator restricts the user to replacing a number of characters with the same number of characters. If the user wants to do a replacement with a different number of characters, he may use a combination of the D and I indicators.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS NOW BEING MODIFIED
ALTERS ?               D DIIN THE PROCESS OF(CR)
  23.54   THIS LINE IS IN THE PROCESS OF BEING MODIFIED
 ALTERS ?
```

The D D caused the word NOW to be deleted and the I under the blank following the word NOW caused the string following the I to be inserted before the blank. The user need not type the second D to indicate the range of the deletion since the occurrence of the I indicator will automatically cause the deletion range to be terminated in the character position just before the I occurs.

The user may also follow the D range with a replacement indicator and a string of replacement characters.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS IN THE PROCESS OF BEING MODIFIED
 ALTERS ?           D                 DRHAS BEEN(CR)
  23.54   THIS LINE HAS BEEN MODIFIED
 ALTERS ?
```

4. To complete the alteration process

The user signals that he has made all alterations to the line by typing nothing into the ALTERS line but a carriage return.

```
  23.54   THIS LINE HAS BEEN MODIFIED
 ALTERS ? (CR)
?
```

NOTE!! Using (ATTN) instead of (CR) will cause WYLBUR to revert to the original version of the line. (See below.)

5. To suspend listing--N

In all of the above examples, the modified image of the line was typed out after the user had specified the alteration. This listing may be suspended by typing an N before giving any alteration indicators.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TOOO BE MODIFID
 ALTERS ?       N       DD(CR)
 ALTERS ?
```

The position of the N is of no concern to WYLBUR as long as it appears before any other characters on the alteration line. On the other hand, the user may get a copy of the modified line, as it stands after correction, by typing a few blanks into the alteration line before hitting Return (remember that hitting Return alone causes the modification process to be terminated).

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TOOO BE MODIFID
 ALTERS ?    N          DD(CR)
 ALTERS ?     (CR)
  23.54   THIS LINE IS TO BE MODIFID
 ALTERS ?(CR)
?
```

6. Using the ATTN key during editing

The ATTN key is also used during the modification process to signal directions to WYLBUR. If ATTN is struck at the end of an alteration line, WYLBUR will ignore these changes and prompt for further alterations.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS TOOO BE MODIFID
 ALTERS ?              DD(ATTN)***
 ALTERS ?
```

If no characters are typed into the alteration line before the ATTN key is hit, WYLBUR will ignore all modifications which have been made to the line and suspend the modification process.

```
? MODIFY 'RENEGE' IN F/10 (CR)
   0.09   RENEGE ON MODIFICATIONS ALREADY MADE
 ALTERS ?              D       D(CR)
   0.09   RENEGE ON MODS ALREADY MADE
 ALTERS ? (ATTN)***
? LIST 0.09 (CR)
   0.09   RENEGE ON MODIFICATIONS ALREADY MADE
?
```

However, if the last character typed before striking ATTN is a dollar sign ($), the dollar sign will be ignored, but the rest of the line typed will be used to complete the modification of the current line. There will not be another ALTERS ? prompt for the line, and no lines remaining in the range will be modified.

```
? MODIFY 23.54/50 (CR)
  23.54   THIS LINE IS TO BE MODIFID
 ALTERS ?                          IE$(ATTN)***
  23.54   THIS LINE IS TO BE MODIFIED
?
```

If the last character typed before striking ATTN is a commercial 'at' sign (@), the 'at' sign will be ignored, and the rest of the line typed will be used to complete the modification of the current line as with the dollar sign, but any lines remaining in the range will still be prompted for alterations.

```
? MODIFY 23.54/50 (CR)
  23.54   THIS LINE IS TO BE MODIFID
 ALTERS ?                          IE@(ATTN)***
  23.54   THIS LINE IS TO BE MODIFIED
  23.60   CHANGES WILL CONTINUE
 ALTERS ?
```

The attention key can also be used to terminate the listing of a line after it has begun. This has no other effect.

```
? MODIFY 23.54 (CR)
  23.54   THIS LINE IS(ATTN)...
 ALTERS ?   D IE (CR)
  23.54   THE LINE IS TO BE MODIFIED
 ALTERS ?
```

Notice that only one alteration can be made per "ALTERS ?" prompt except that a deletion indicator can be followed by either an insertion or replacement indicator.

G. The CHANGE Command

The CHANGE command is the single most powerful command in WYLBUR. It is used to make changes within lines. It can be used, for example, to change the spelling of a word everywhere it occurs in a data set, to eliminate certain columns of material from a table, or to increase the number of spaces between two columns of tabular data.

Every CHANGE command has three sections: position, replacement, and range. The position identifies the location within the line which is to be changed. The replacement describes what change is to be made. The range specifies which lines are to be considered for changing. The command searches the lines specified in the range for instances of the position to be changed and, when it encounters one, makes the indicated replacement. As each line is changed, the resulting line is listed.

The general framework of the command is:

CHANGE position TO replacement IN range

There is also an alternate form which will be discussed last:

CHANGE position IN range USING replacement

The user can suppress the listing of each changed line by specifying NOLIST in the command. Remember that any attempt to interrupt the listing of the changed lines, when NOLIST is not given, will also halt the change process.

Whenever the CHANGE command creates any line which is longer than the current value of LENGTH, a warning message will be printed. Using the attention key to interrupt these messages will also halt the CHANGE command.

A sample data set will be used to show the effect of the commands. When each command is given, the data set will be:

```
1.    123456ABC
2.    123456ABC
3.    AAABBBCCC
4.    AAABBBCCC
5.    AAABBBCCC
```

1. Position in Line

There are three basic types of locations that can be specified in the position section of the command: string replacement, column replacement, and column insertion. The order used to illustrate this section of the command will be:

CHANGE position TO replacement IN range

a. String Replacement

The simplest version of the first form is:

```
CHANGE 'stringA' TO 'stringB' IN ALL
```

In the examples below a simple version of the later parts of the command (the replacement and range) will be used.

```
? CHANGE 'A' TO '*' IN ALL (CR)
   1.      123456*BC
   2.      123456*BC
   3.      ***BBBCCC
   4.      ***BBBCCC
   5.      ***BBBCCC
?
```

Each 'A' in the data set has been found and changed to an '*'.

The command can also specify that the string to be changed must occur within certain column positions. Notice that the string being replaced and its replacement can be of different lengths.

```
? CHANGE 'BC' 5/8 TO 'X' IN ALL (CR)
   3.      AAABBXCC
   4.      AAABBXCC
   5.      AAABBXCC
?
```

The 'BC' strings in lines 1 and 2 were not changed because they ended in column 9 and were, therefore, outside the columns specified.

It is also possible to mention just the column position in which the string must begin. Thus, CHANGE 'BC' 6 TO 'X' IN ALL would have had the same effect as the above example.

You can also choose to change just a certain instance of a string in each line. For example:

```
? CHANGE 'C' (2) TO '??' IN ALL (CR)
   3.      AAABBBC??C
   4.      AAABBBC??C
   5.      AAABBBC??C
?
```

This command will change only the second instance of the string 'C' within each line.

If column positions and an instance are combined, the columns must be given first.

A command using the most complex version of the position section might read in outline:

```
CHANGE 'stringA' column/column (instance) TO 'stringB' IN range
```

```
? CHANGE 'C' 8/50 (2) TO 'Y' IN ALL (CR)
   3.      AAABBBCCY
   4.      AAABBBCCY
   5.      AAABBBCCY
?
```

b. Column Replacement

The second form of the position section specifies column positions to be changed without regard to their contents.

CHANGE column/column TO 'stringB' IN range

```
? CHANGE 3/6 TO '00' IN ALL (CR)
   1.      1200ABC
   2.      1200ABC
   3.      AA00CCC
   4.      AA00CCC
   5.      AA00CCC
?
```

As the example shows, the replacement string can be of a different length than the material it replaces.

```
? CHANGE 1/3 TO '' IN ALL (CR)
   1.      456ABC
   2.      456ABC
   3.      BBBCCC
   4.      BBBCCC
   5.      BBBCCC
?
```

The above example illustrates the use of the null string ("" or '') to eliminate columns completely.

c. Column Insertion

The third form of the position section designates the column position before which an insertion is to be made.

CHANGE column TO 'stringC' IN range

```
? CHANGE 3 TO ' -' IN ALL (CR)
   1.      12 -3456ABC
   2.      12 -3456ABC
   3.      AA -ABBBCCC
   4.      AA -ABBBCCC
   5.      AA -ABBBCCC
?
```

Since 3 was the specified column position, the insertion was made in front of that position, and the rest of the line was moved to the right.

2. Search Range

The range section of the CHANGE command tells WYLBUR which lines of the data set to search for the location to change. This section can contain any valid ASSOCIATIVE RANGE or EXPLICIT RANGE.

CHANGE position TO replacement IN range

This section may simply specify that the entire data set should be searched.

```
? CHANGE 'A' TO '  ' IN ALL (CR)
   1.     123456  BC
   2.     123456  BC
   3.           BBBCCC
   4.           BBBCCC
   5.           BBBCCC
?
```

The range can specify that only certain lines are to be searched.

```
? CHANGE 'B' TO '' IN 1,3/5 (CR)
   1.     123456AC
   3.     AAACCC
   4.     AAACCC
   5.     AAACCC
?
```

The range can be further restricted to lines containing (or not containing) a given string which can be required to fall within certain column positions.

```
? CHANGE 2/4 TO '$$' IN NOT 'A' 1/5 IN 2/LAST (CR)
   2. 1$$56ABC
?
```

You can further restrict changes to certain instances of lines meeting the criteria. Notice that in the example, the third line containing "A" and "BB" is not changed.

```
? CHANGE 'A' TO 'Z' IN 'BB' (1,2) IN ALL (CR)
   3.     ZZZBBBCCC
   4.     ZZZBBBCCC
?
```

To simply list the lines containing any two strings, one of the strings can be changed to itself.

```
? CHANGE 'A' TO 'A' IN '23' IN ALL (CR)
   1.     123456ABC
   2.     123456ABC
?
```

The form of the command using the most complex version of the range section and showing the use of all three strings might read:

```
CHANGE 'stringA' TO 'stringB' IN 'stringC' column/column
(instances) IN line number, line number/line number
```

3. The Replacement

The third section of the command specifies the replacement string which is to be put in the positions being changed.

The replacement may be one of four types: a quoted string, an incremented integer, a change of case, or a transferred replacement range.

a. Quoted String.

```
CHANGE 'stringA' TO 'stringB' IN range
```

The simplest form of this section involves a direct replacement of the designated location with a single quoted string.

```
? CHANGE 'ABC' TO '%+%' IN ALL (CR)
   1.     123456%+%
   2.     123456%+%
?
```

b. Incremented Integer

The second form the replacement string can take is an integer which is incremented each time it is used. This can be used, for example, to generate page numbers or sequence numbers.

If a single integer is given, it is incremented by one each time it is used.

```
? CHANGE 'C' TO 1 IN ALL (CR)
   1.     123456AB1
   2.     123456AB2
   3.     AAABBB345
   4.     AAABBB678
   5.     AAABBB91011
?
```

Notice that the field is expanded if necessary. An increment other than 1 may be specified.

```
? CHANGE 12 TO 0+5 IN ALL (CR)
   1.     123456ABC  0
   2.     123456ABC  5
   3.     AAABBBCCC  10
   4      AAABBBCCC  15
   5.     AAABBBCCC  20
?
```

If leading zeroes are specified in the starting number, they will be preserved. If the increment is positive, the sign may be omitted.

```
? CHANGE  9/9 TO 005 60 IN 3/5 (CR)
   3.     AAABBBCC005
   4.     AAABBBCC065
   5.     AAABBBCC125
?
```

Leading blanks can be specified by enclosing the starting number in quotes. The incrementing number can be negative.

```
? CHANGE 9/9 TO ' 15'-5 IN ALL (CR)
   1.     123456AB 15
   2.     123456AB 10
   3.     AAABBBCC  5
   4.     AAABBBCC  0
   5.     AAABBBCC -5
?
```

Non-numeric characters may also be used if the number is enclosed in quotes. In general, a non-numeric character is changed to a blank if at least one blank follows it in the result. The characters +, -, $ and # are exceptions to this rule. Only one of these may occur in the number, and it will be placed adjacent to the left-most significant digit. Commas will be supressed unless there is at least one numeral to their left.

```
? CHANGE 10 TO '$   , 15' + 270 IN ALL (CR)
   1.     123456ABC    $15
   2.     123456ABC   $285
   3.     AAABBBCCC   $555
   4.     AAABBBCCC   $825
   5.     AAABBBCCC $1,095
?
```

The incrementing number can be negative; the starting number can also be negative. The field is expanded if necessary to hold minus signs.

```
? CHANGE 'C' TO -5+1 IN 3/5 (CR)
   3.     AAABBB-5-4-3
   4.     AAABBB-2-1 0
   5.     AAABBB 1 2 3
?
```

Normally the number is incremented for each occurrence of the string to be changed. It is possible to have it incremented only after each line is changed.

```
? CHANGE 'C' TO 15 IN ALL LINE (CR)
   1.     123456AB15
   2.     123456AB16
   3.     AAABBB171717
   4.     AAABBB181818
   5.     AAABBB191919
```

c. Case

The third form of the replacement permits the user to convert all alphabetic characters in the specified range to upper or lower case. It does not affect numerals, punctuation, or special symbols.

```
? CHANGE 2/7 TO LOWER IN ALL (CR)
   1.     123456aBC
   2.     123456aBC
   3.     AaabbbcCC
   4.     AaabbbcCC
   5.     AaabbbcCC
?
```

The command, CHANGE 2/7 TO UPPER IN ALL, would return the data set to its original state.

d. Transferred Replacement

The fourth form, transferred replacement, permits the contents of the replacement strings to be copied from another location in the data set. This is particularly useful when working with tabular data.

CHANGE position IN range USING replacement

For example,

```
? CHANGE 15 IN 1/2 USING 4/5 (CR)
   1.     123456ABC     AAABBBCCC
   2.     123456ABC     AAABBBCCC
?
```

Here, the entire contents of lines 4 and 5 have served as replacement strings. Notice that lines 4 and 5 have not been deleted from the data set. The replacement range is limited to one set of contiguous lines.

It is also possible to restrict the material being transferred to certain columns of the copied lines.

```
? CHANGE 15 IN 1/2 USING 4/5 COLUMNS 1/3 (CR)
   1.     123456ABC     AAA
   2.     123456ABC     AAA
?
```

Only the contents of columns 1 through 3 have been used as the replacements.

To transfer the contents of a single column from a group of lines:

```
? CHANGE 15 IN 1/2 USING 4/5 COLUMNS 3/3 (CR)
   1.     123456ABC     A
   2.     123456ABC     A
?
```

Specifying a single column position only once in the replacement range causes that column position and all to the right of it to be used.

```
? CHANGE 15 IN 1/2 USING 4/5 COLUMN 3 (CR)
   1.     123456ABC      ABBBCCC
   2.     123456ABC      ABBBCCC
COMMAND?
```

H. The ALIGN Command

This command is used to even up the LENGTH of lines in a data set. To do this, the user may set LENGTH equal to the longest line he wishes to allow and give the ALIGN command. WYLBUR will then arrange the lines so that they are as long as possible without exceeding the LENGTH specified. Splits in a line are always made at a blank.

An adjustment is made for backspaces, so underlined material is aligned properly; however, no line can be greater than 133 characters including backspaces and underlines.

Because the order of the underlines and backspaces is changed by the ALIGN command (so that each character is followed by a backspace and an underline), underlined text which has been aligned cannot easily be accessed with an associative range.

WYLBUR assumes that the last character in a line to be aligned should be followed by one space unless it is a question mark, period, colon, or exclamation point, when it assumes it should be followed by two spaces.

The following sample data set will be used to show the effects of various ALIGN and JUSTIFY commands. Notice that WYLBUR renumbers the entire data set, starting at 1.000 whenever one of these commands is given. Also, SET LENGTH=40 is in effect for all examples.

```
? SET LENGTH=40 (CR)
? LIST (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.      SHOW THE EFFECTS OF
   4.      POSING THE ALIGN
   5.      COMMAND TO WYLBUR.
   6.
   7.      BLANKS IN COLUMN ONE AND BLANK
   8.      LINES CAUSE THE
   9.      RESTARTING OF THE
  10.      ALIGNMENT PROCESS.
  11.      $
  12.              NOTICE THAT BLOCKS OF INDENTED
  13.          MATERIAL WILL NOT BE ALIGNED PROPERLY.
  14.          FOR SUCH MATERIAL
  15.          YOU MUST USE THE INDENT OPTION.
  15.1      A. THE MARKER OPTION RESTARTS ALIGNMENT
  15.2         WHEN THE MARKER CHARACTER APPEARS IN COLUMN ONE.
```

A blank in column one (as in indented material) causes the alignment process to be restarted at that line. Blank lines will be preserved.

```
? ALIGN ALL (CR)
? LIST (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.      SHOW THE EFFECTS OF POSING THE ALIGN
   4.      COMMAND TO WYLBUR.
   5.
   6.      BLANKS IN COLUMN ONE AND BLANK LINES
   7.      CAUSE THE RESTARTING OF THE ALIGNMENT
   8.      PROCESS.  $
   9.              NOTICE THAT BLOCKS OF INDENTED
  10.          MATERIAL WILL NOT BE ALIGNED
  11.      PROPERLY.
  12.          FOR SUCH MATERIAL
  13.          YOU MUST USE THE INDENT OPTION.
  14.       A. THE MARKER OPTION RESTARTS ALIGNMENT
  15.          WHEN THE MARKER CHARACTER APPEARS IN
  16.      COLUMN ONE.
```

Because a blank in column one causes the alignment process to be restarted, paragraph indentations are handled properly. As the sample above shows, this simple version of the command causes MARKER lines to be aligned like other text (original line 11) and mis-aligns blocks of indented material (lines 12-15.2).

Note that after the above ALIGN command, the user would not be able to LIST "SAMPLE DATA SET" without typing a backspace and underline after each letter.

Contrast the example above, where the MARKER is moved to the end of line 8, and the one below where it is retained at the beginning of line 9.

```
? ALIGN ALL MARKER=$ (CR)
? LIST (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.      SHOW THE EFFECTS OF POSING THE ALIGN
   4.      COMMAND TO WYLBUR.
   5.
   6.      BLANKS IN COLUMN ONE AND BLANK LINES
   7.      CAUSE THE RESTARTING OF THE ALIGNMENT
   8.      PROCESS.
   9.      $
  10.              NOTICE THAT BLOCKS OF INDENTED
  11.          MATERIAL WILL NOT BE ALIGNED
  12.      PROPERLY.
  13.          FOR SUCH MATERIAL
  14.          YOU MUST USE THE INDENT OPTION.
  15.       A. THE MARKER OPTION RESTARTS ALIGNMENT
  16.          WHEN THE MARKER CHARACTER APPEARS IN
  17.      COLUMN ONE.
```

If the MARKER option is used, text in the marker line will not be aligned, and alignment will be restarted with the following line. Thus, markers can be used to protect material from being aligned.

Sections of indented material must be aligned separately using the INDENT option. If a data set is to be aligned in sections, the fact that renumbering takes place during the command will mean that if the sections are aligned in order, starting with the first, a listing must be taken after each command, so the user can find the then-current line numbers for the following section. Only one listing is required if the NUMBER command is given and the listing taken and then the sections are aligned starting at the end and working backwards towards the beginning.

Multiple explicit ranges can be given in a single ALIGN command and they may be in any order (e.g. ALIGN 50/100, 25/90, 110/120 is a legal command); associative ranges are not permitted.

A temporary LENGTH, for use only during an execution of the ALIGN command, may be specified in the command.

In the sample below, the first command given causes a temporary length of 30 to be used and indents the entire block of material five spaces. Notice that the length of each line is counted from column one whether it is indented or not.

```
? ALIGN 12/15.2 INDENT=5 LENGTH=30 (CR)
? ALIGN 1/11 MARKER=$ (CR)
? LIST (CR)
   1.     SAMPLE
   2.         THIS IS A SAMPLE DATA SET USED TO
   3.     SHOW THE EFFECTS OF POSING THE ALIGN
   4.     COMMAND TO WYLBUR.
   5.
   6.     BLANKS IN COLUMN ONE AND BLANK LINES
   7.     CAUSE THE RESTARTING OF THE ALIGNMENT
   8.     PROCESS.
   9.     $
  10.          NOTICE THAT BLOCKS OF
  11.          INDENTED MATERIAL WILL
  12.          NOT BE ALIGNED PROPERLY.
  13.          FOR SUCH MATERIAL YOU
  14.          MUST USE THE INDENT
  15.          OPTION.
  16.          A. THE MARKER OPTION
  17.          RESTARTS ALIGNMENT WHEN
  18.          THE MARKER CHARACTER
  19.          APPEARS IN COLUMN ONE.
```

Further refinements are possible. A second level of indentation can be used to preserve paragraph indentations within blocks of material which are to be indented (e.g. line 12 in the original sample) When INDENT=n+m is given, n is the indentation used for the entire block of material, and m is the additional indentation to be used when a further indentation is encountered within the group of lines.

The second level of indentation may be negative. This permits labels to the left of the block of indented material (e.g. line 15.1 in the original sample) to be preserved. When INDENT=n-m is given, n is the indentation for the entire block of material, and m is the number of spaces allowed for the label.

```
? ALIGN 15.1/15.2 INDENT=5-3 (CR)
? ALIGN 12/15 INDENT=5+4 (CR)
? ALIGN 1/11 MARKER=$ (CR)
? LIST (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.      SHOW THE EFFECTS OF POSING THE ALIGN
   4.      COMMAND TO WYLBUR.
   5.
   6.      BLANKS IN COLUMN ONE AND BLANK LINES
   7.      CAUSE THE RESTARTING OF THE ALIGNMENT
   8.      PROCESS.
   9.      $
  10.              NOTICE THAT BLOCKS OF INDENTED
  11.           MATERIAL WILL NOT BE ALIGNED
  12.           PROPERLY.  FOR SUCH MATERIAL YOU
  13.           MUST USE THE INDENT OPTION.
  14.         A. THE MARKER OPTION RESTARTS
  15.           ALIGNMENT WHEN THE MARKER CHARACTER
  16.           APPEARS IN COLUMN ONE.
```

The EVEN option can be useful if you have material with an irregular or unindented left-hand margin and wish to indent to a second level after blank lines. EVEN causes WYLBUR to ignore the present position of the left-hand margin when the INDENT option is used.

```
? ALIGN 7/15.2 MARKER=$ INDENT=7+4 EVEN (CR)
? ALIGN 1/6 (CR)
? LIST (CR)
   1.     SAMPLE
   2.         THIS IS A SAMPLE DATA SET USED TO
   3.     SHOW THE EFFECTS OF POSING THE ALIGN
   4.     COMMAND TO WYLBUR.
   5.
   6.             BLANKS IN COLUMN ONE AND
   7.         BLANK LINES CAUSE THE RESTARTING
   8.         OF THE ALIGNMENT PROCESS.
   9.     $
  10.             NOTICE THAT BLOCKS OF
  11.         INDENTED MATERIAL WILL NOT BE
  12.         ALIGNED PROPERLY.  FOR SUCH
  13.         MATERIAL YOU MUST USE THE INDENT
  14.         OPTION.  A. THE MARKER OPTION
  15.         RESTARTS ALIGNMENT WHEN THE
  16.         MARKER CHARACTER APPEARS IN
  17.         COLUMN ONE.
```

The IGNORE option causes WYLBUR to ignore any specified character when determining where to split the line. Lines containing ignored characters may, therefore, be longer than LENGTH. This option is fully described in the Extended Printing Facility manual.

The BACKSPACE option allows the user to specify any character of his choice as a backspace character with the assurance that ALIGN will handle it properly (e.g., ALIGN 1/100 BACKSPACE=@).

I. The JUSTIFY Command

The JUSTIFY command operates just like the ALIGN command except that after alignment has been completed, enough blanks are added between words to make the number of characters in each line exactly equal to LENGTH. All options which can be used with ALIGN can also be used with JUSTIFY. The sample below again uses the original sample data set used to illustrate the ALIGN commands.

```
? JUSTIFY 15.1/15.2 INDENT=5-3 (CR)
? JUSTIFY 12/15 INDENT=5+4 (CR)
? JUSTIFY 2/11 MARKER=$ (CR)
? LIST (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.      SHOW THE EFFECTS OF POSING THE ALIGN
   4.      COMMAND TO WYLBUR.
   5.
   6.      BLANKS IN COLUMN ONE AND BLANK LINES
   7.      CAUSE THE RESTARTING OF THE ALIGNMENT
   8.      PROCESS.
   9.      $
  10.              NOTICE THAT BLOCKS OF INDENTED
  11.           MATERIAL WILL NOT BE ALIGNED
  12.           PROPERLY. FOR SUCH MATERIAL YOU
  13.           MUST USE THE INDENT OPTION.
  14.        A. THE MARKER OPTION RESTARTS
  15.           ALIGNMENT WHEN THE MARKER CHARACTER
  16.           APPEARS IN COLUMN ONE.
?
```

If a passage is justified repeatedly, additional blanks are added to the line each time, and the data set may come to look like the sample below:

```
? LIST 1/10 (CR)
   1.      SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED
   3.      TO SHOW THE EFFECTS OF POSING THE
   4.      ALIGN COMMAND TO WYLBUR.
   5.
   6.      BLANKS IN COLUMN ONE AND
   7.      BLANK LINES CAUSE THE
   8.      RESTARTING OF THE ALIGNMENT
   9.      PROCESS.
  10.      $
?
```

The SPACE option, which can be used with either ALIGN or JUSTIFY, removes these extra spaces. A period, colon, question mark or exclamation point within a line will be followed by two blanks.

```
? JUSTIFY 1/9 SPACE (CR)
? LIST 1/9 (CR)
   1.     SAMPLE
   2.         THIS IS A SAMPLE DATA SET USED TO
   3.     SHOW THE EFFECTS OF POSING THE ALIGN
   4.     COMMAND TO WYLBUR.
   5.
   6.     BLANKS IN COLUMN ONE AND BLANK LINES
   7.     CAUSE THE RESTARTING OF THE ALIGNMENT
   8.     PROCESS.
   9.     $
?
```

J. The CENTER Command

The CENTER command causes the contents of each line in the specified range to be centered with respect to the current value for LENGTH. The sample uses the original sample data set used to illustrate the ALIGN and JUSTIFY commands. SET LENGTH=40 is still in effect.

```
? CENTER 1 (CR)
? JUSTIFY 2/10 (CR)
? LIST 1/9 (CR)
   1.                        SAMPLE
   2.          THIS IS A SAMPLE DATA SET USED TO
   3.       SHOW THE EFFECTS OF POSING THE ALIGN
   4.       COMMAND TO WYLBUR.
   5.
   6.       BLANKS IN COLUMN ONE AND BLANK LINES
   7.       CAUSE THE RESTARTING OF THE ALIGNMENT
   8.       PROCESS.
   9.       $
?
```

The LENGTH and INDENT options can also be used in a CENTER command. LENGTH=n overrides any set LENGTH, and INDENT=n allows lines to be centered with respect to a block of indented material. Associative and multiple explicit ranges may be used (e.g. CENTER 'CHAPTER' IN 1/200,350/700).

The CENTER command makes no allowance for backspaces within the text; so underlined material is not handled properly.

IV. Saving and Using Data Sets

Frequently, you will want to store a copy of what you are working on for use at a later time. Therefore, it is possible to give a command to WYLBUR to save the active data set (text) you have just created and to bring back a copy of one that you, or someone else saved earlier. Saved data sets are stored on disk packs at the Computer Center.

Because long term storage of inactive data sets on disk is not economical, the Computer Center migrates any data set which has not been used for 60 days. This means that the data set is taken off the disk and copied onto a tape which is stored at the Computer Center. The commands for finding and retrieving migrated data sets are described in section V. "Data Set Migration."

A. Saving and Scratching Data Sets

1. Saving a Data Set

To save an active data set that has just been created, leave collect mode and SAVE the data set by giving it a data set name (DSNAME) and specifying the volume on which it should be saved. Most WYLBUR data sets are stored on the FILE packs (FILE00 - FILE50). As usage increases, additional storage volumes may be made available, and announced through INTERFACE.

```
? SAVE MYTEXT (CR)
VOLUME? FILE02 (CR)
"MYTEXT" SAVED ON FILE02
?
```

The user can preempt the standard request for volume by giving it in the command.

```
? SAVE MYTEXT ON FILE02 (CR)
"MYTEXT" SAVED ON FILE02
?
```

Issuing a SAVE command causes WYLBUR to put a copy of the active data set on the specified disk pack. It does not erase the active data set.

This is the SAVE command in its simplest form. In addition there are many options the user can exercise if he wishes. The complete command with all possible parameters specified is:

SAVE dsname ON volume SCRATCH format (blocking) NUMBERED

The format, blocking, and NUMBERED and options are described in section IV.E. "Characteristics of WYLBUR Data Sets".

The SCRATCH option allows a user to eliminate an earlier version of a data set that was saved under the same name.

```
? SAVE MYTEXT ON FILE02 SCRATCH (CR)
"MYTEXT" REPLACED ON FILE02
?
```

If the user neglects to SCRATCH and he has previously saved another data set with the same name on that volume, WYLBUR will ask whether the old copy should be scratched (erased) so that the new one can be saved.

```
? SAVE MYTEXT ON FILE02 (CR)
"MYTEXT" ALREADY EXISTS ON FILE02
TO REPLACE, REPLY "YES"
REPLACE?
```

A "yes" answer causes the old version to be erased and the new one to be saved. Any other response causes WYLBUR to ask for another command and the user can, if he wishes, ask to save the data set under another name.

SCRATCH is also a command which can be used in response to a "?" prompt from WYLBUR. See IV.A.4., "Scratching a Saved Data SET" later in this section.

At times a disk pack may be filled, a message will be printed to indicate that the user should SAVE on another volume.

```
? SAVE MYTEXT ON FILE02 (CR)
"MYTEXT" CAN'T FIND SPACE ON FILE02
? SAVE MYTEXT ON FILE19 (CR)
"MYTEXT" SAVED ON FILE19
```

The data set &PUBLIC.SPACE (see section VI. "Public Information Data Sets") contains information on how much space is available on each volume. This information is updated nightly. For current information, use the PUBLIST procedure which is described in the Appendix B.

The TMP packs (TMP001-TMP005) are available for short-term storage. Data sets may be stored on these packs only for a day or two; then, unless they have been resaved, they will be scratched. For an exact scratching schedule, see the Users Guide.

2. Naming a Data Set

The name given to a data set can be any set of 36 or fewer alphanumeric characters. A data set name (dsname) can also contain underlines, periods, and asterisks, but it must not contain spaces. Therefore, TEXT427, HELP, and 514 are all acceptable WYLBUR dsnames.

If a WYLBUR data set is to be accessed by a program running in the batch job stream, its name must follow the IBM Operating System conventions. For further information consult the IBM publication OS/VS2 JCL.

The data set name will be saved with a prefix consisting of the user's account number and initials. That is, the command SAVE MYTEXT will result in the data set being saved as AAAAIII.MYTEXT, where AAAA and III are your account number and set of registered initials. This means that many users can safely choose to use the same name for their data sets.

It is possible for a user to save a data set under someone else's initials and an account different from the one he is signed on with if he knows the keyword. As the example below shows, he must precede the dsname of the data set he wishes to save with an ampersand followed by the account number, the initials under which he wishes to save it, and a decimal point.

```
? SAVE &AAAAIII.DSNAME (CR)
KEYWORD? kkk
```

If either the account or set of initials is the same as the one the user is signed on with, it may be omitted.

```
? SAVE &AAAA.MYTEXT
```

Private Data Sets

A data set with a dsname beginning with an '*' or an '@' is protected from unauthorized use. '@' is preferable since this notation is compatible with OS naming conventions.

```
? SAVE @DUMMY ON FILE02 (CR)
```

No other user may access the data set, even by specifying its full dsname, unless he knows the keyword. The full dsname will be AAAAIII.@DUMMY, where AAAA is the user's account number and III is the user's set of registered initials. For further information on data set names see section IV.D. "Using Data Sets Created by Other Users".

3. Using Keywords

The first time a user signs on with a new account, he will be asked to supply a keyword. Once the keyword is set, only users who know it can write over his data sets even if they know the account and initials under which they were saved. In addition, his account number and initials are protected from unauthorized use since the keyword must be supplied during the sign-on dialogue and a /*KEYWORD card must be included in every batch job submitted through a card reader. If a user has more than one account, keywords must be set for each.

It is possible to change your keyword at any time.

```
? SET KEYWORD (CR)

III AAAA
NEW KEYWORD? kkk (CR)
```

If you know the old keyword it is also possible to change the keyword for someone else's initials or an account other than the one you are signed on with by specifying them in the command.

```
? SET KEYWORD III AAAA (CR)
```

To set keywords for multiple initials and accounts, name them all in the command. WYLBUR will prompt for an old keyword.

```
? SET KEYWORD ii1,ii2,ii3,aaa1,aaa2 (CR)

ii1 aaa1
OLD KEYWORD? kkk (CR)
NEW KEYWORD? kkk (CR)

ii1 aaa2
OLD KEYWORD?
```

where ii1, ii2, and ii3 are the sets of initials and aaa1 and aaa2 are the accounts. Up to 17 sets of initials and 17 accounts can be specified in a single command. Each account will be paired with every set of initials, and WYLBUR will request the old and the new keyword for each pair. When accounts or initials are specified, yours are not used unless they are included in the list.

4. Scratching a Saved Data Set

There are several ways of scratching (erasing) a data set from the disk on which it is saved. Since there is a charge for disk space, it is wise to scratch any obsolete or unused information.

The SCRATCH command can be used in response to any "?" prompt by the system. The user must specify the data set name and volume.

```
? SCRATCH MYTEXT ON FILE02 (CR)
"MYTEXT" SCRATCHED FROM FILE02
```

As with the SAVE command, it is possible for a user to affect data sets with account numbers and initials other than his own if he can supply the keyword.

```
? SCRATCH &AAAAIII.HISTEXT ON FILE01 (CR)
KEYWORD? kkk
```

In addition, the user can specify the SCRATCH option with the SAVE and SHOW DSNAMES commands described elsewhere in this section.

5. CLEAR TEXT

If after the user has saved a copy of the active data set, he wishes to begin creating another data set, he must clear the active data set (i.e., return the active data set to its initial empty state) by commanding WYLBUR to clear the text.

? CLEAR TEXT (CR)

The user is cautioned against indiscriminate use of this command, since its effect is irreversible (unless, of course, a copy of the data set has been saved). CLEAR TEXT affects only the active data set.

6. SET VOLUME and SHOW VOLUME

A user can, if he wishes, set a default volume at any time during a session. WYLBUR will then cease to prompt for a volume in the commands which require one (e.g. USE, SAVE, SCRATCH, SHOW DSNAMES) and will use the one which has been set. If the user saves all of his data sets on one volume, he can set it at the start of the session and not worry about volumes from then on.

? SET VOLUME=FILE03 (CR)

If a volume is set and the user supplies one in a command, the volume specified in the command will be used. Alternatively, he can supply the volume with each command which requires it.

The SHOW VOLUME command is used to display the user's current default volume.

? SHOW VOLUME (CR)
FILE03 - VOLUME

A second form of the SET VOLUME command (with no volume specified) is used to cancel any user default volume.

? SET VOLUME (CR)

7. SHOW DSNAMES

The SHOW DSNAMES command can be used if the information in the FIND index (which is updated nightly) is not current enough to serve your needs; (see section V.A "Finding Data Sets.") SHOW DSNAMES checks the table of contents of a disk and lists the data sets found there.

```
? SHOW DSNAMES ON FILE01 (CR)
FILE01
  MANUAL
  CHAPT.1
  CHAPT2
?
```

The LIKE option lists the names of data sets beginning with a specified string of characters.

```
? SHOW DSNAMES LIKE CHAPT ON FILE01 (CR)
FILE01
  CHAPT.1
  CHAPT2
?
```

It is possible to obtain a list of the data sets saved by another user, if you know his account and registered initials.

```
? SHOW DSNAMES LIKE &AAAAIII. on FILE05 (CR)
```

where AAAA is the other user's account and III is his set of initials. If his account is the same as yours, it may be omitted.

The DATED option causes the date the data set was last saved to appear with the data set name.

```
? SHOW DSNAMES DATED ON FILE01 (CR)
FILE01
  11/27/76  MANUAL
  12/13/76  CHAPT.1
  11/15/76  CHAPT2
```

The SCRATCH option makes it convenient for a user to review his data sets and delete those he no longer needs. It causes a "SCRATCH?" prompt to be printed out. If the user replies, "YES," the named data set will be scratched. If any other response is made, no action will be taken on that data set.

```
? SHOW DSNAMES SCRATCH DATED ON FILE01 (CR)
FILE01
  11/27/76 MANUAL
  SCRATCH? YES (CR)
"MANUAL" SCRATCHED
  12/13/76 CHAPT.1
  SCRATCH?
```

The SPACE option causes the amount of disk space (in tracks) occupied by the data set to be printed next to the data set name. If the data set was saved from WYLBUR, the number of tracks reserved for it and the number actually used will be the same.

```
COMMAND?  SHOW DSNAMES SPACE ON FILE01 (CR)
FILE01
  MANUAL  9 TRACKS (9 USED)
  CHAPT.1  3 TRACKS (3 USED)
  CHAPT2  5 TRACKS (5 USED)
```

The FULL option lists many characteristics of the data set which may be useful to programmers.

```
COMMAND?  SHOW DSNAMES FULL ON FILE01 (CR)
FILE01

  11/27/76  MANUAL 9 TRACKS (9 USED)

      DSORG=PS  RECFM=U  LRECL=6233  BLKSIZE=6233  KEYLEN=0
      RKP=0  OPTCD=00  NO. OF EXTENTS=1  SECONDARY SPACE=2 BLOCKS
      EXPDT=01/17/78  NO PASSWORD

  12/13/76  CHAPT.1  3 TRACKS  (3 USED)
      DSORG=PS  RECFM=U  LRECL=6233  BLKSIZE=6233  KEYLEN=0
      RKP=0  OPTCD=00  NO. OF EXTENTS=1  SECONDARY SPACE=1 BLOCKS
      EXPDT=12/13/77  NO PASSWORD

  11/15/76  CHAPT2  5 TRACKS  (5 USED)

      DSORG=PS  RECFM=U  LRECL=6233  BLKSIZE=6233  KEYLEN=0
      RKP=0  OPTCD=00  NO. OF EXTENTS=1  SECONDARY SPACE=1 BLOCKS
      EXPDT=02/02/78  NO PASSWORD
```

B. Using a Saved Data Set

It is also possible to give a command to WYLBUR to have it bring back a copy of a previously saved data set. This could be a data set which the user constructed at an earlier session, one which has been created by another user, or a data set created by a batch job. For information on transferring card or tape data sets to WYLBUR's storage volumes, see Appendix B. For information on retrieving data sets which have been migrated, see section V.B. "Retrieving Migrated Data Sets."

Remember that only a copy of the permanent data set is made available to the user. If the user seriously damages the active data set by making disastrous changes, the original version of the text still exists.

In order to obtain a copy of a permanent data set, the user should issue a USE command.

```
? USE MYTEXT ON FILE01 (CR)
?
```

After receiving this information, WYLBUR will locate the data set and make a copy of it to use as the active data set.

The active data set must be empty before WYLBUR can carry out a USE command.

CLEAR can be appended to any USE command to cause the active data set to be erased before USE is executed.

```
? USE MYTEXT ON FILE01 CLEAR (CR)
?
```

If there is material in the active data set and a USE command is given without CLEAR, WYLBUR will ask if it should clear.

```
? USE MYTEXT ON FILE01 (CR)
IF IT'S OK TO CLEAR, REPLY "YES"
CLEAR?
```

Any response except "YES" will cause the request to be aborted.

The SKIP option makes it possible to USE a portion of a non-EDIT format data set that is too large to fit into a WYLBUR active data set. For further information, see IV.E.1 "FORMAT" and IV.E.4 "SKIP."

C. Copying Lines from a Saved Data Set

The FROM option of the COPY command makes it possible to copy lines from a permanent data set. As the example shows, this makes it possible to bring more than one data set into the active data set at the same time.

```
? USE CHAPT.1 ON FILE14 (CR)
? COPY ALL TO END FROM CHAPT2 ON FILE14 (CR)
 796.    - LAST LINE.
```

This would cause all lines in the permanent data set named CHAPT2 on FILE14 to be copied into the active data set starting at END (which is the next integer higher than the current LAST), and occupying succeeding lines whose line numbers are automatically determined with a line number increment of one. As with the collect mode, the user is prevented from overwriting or interleaving existing lines in the active data set. Consult section III.C "The COPY Command" for the possible variations of ranges to be copied and destination locations.

The line numbers, FIRST and LAST, and their short forms, F and L, cannot be used singly when copying lines from a permanent data set, but they may be used to define the limits of a range. For example, while

```
COPY F/10,25/L TO END FROM MYDATA
```

will work properly,

```
COPY F,L TO END FROM MYDATA
```

will not. This limitation is due to internal restrictions in WYLBUR. Note also that the range of lines to be copied from a permanent data set must be given in ascending order as in the following example.

```
? COPY 1/25,56,104/220 TO 95.1 FROM DATA5 ON FILE17 (CR)
 103.7 - LAST LINE
```

Any permanent data set which is specified must be in EDIT format, which is the normal format for a data set created with the SAVE command. For a description of the various formats, see section IV.E.1 "Format."

D. Using Data Sets Created by Other Users

A user may obtain a copy of a data set belonging to some other user by giving that data set's full data set name preceded by an ampersand (&).

```
? USE &AAAAIII.HISTEXT ON FILE15 (CR)
```

AAAA must be replaced with the account number of the user who constructed the data set named HISTEXT, and III must be replaced with his initials. If AAAA is the account number the user is logged on with, it can be omitted. If III is the user's set of registered initials, that can also be omitted.

The SET PREFIX command can be useful to someone who repeatedly needs to access data sets created under another user's initials and/or account number if he knows the keyword. The account and initials in the prefix serve as defaults for all dsnames that are not preceded by an &. To refer to a data set saved under your registered initials and account, without the prefix being used, use &.dsname.

```
? SET PREFIX = &AAAAIII. (CR)
KEYWORD? kkk
```

SET PREFIX can further be used to access efficiently a number of data sets whose dsnames begin with the same series of characters.

A group of users who share the same account number and have individual keywords set, may find it convenient to have a set of project or storage initials assigned. If a data set is saved with the dsname preceded by &PPP, where PPP is the set of project or storage initials, it can be used or saved by everyone in the group without divulging their individual keywords.

The commands are:

```
SAVE &PPP.OURTEXT ON FILE12
```

and

```
USE &PPP.OURTEXT ON FILE12
```

For information on registering for a set of project or storage initials, see section I.A. "Registering to Use WYLBUR." For further information, see the Users Guide.

E. Characteristics of WYLBUR Data Sets

The Computer Center's Users Guide gives the procedures for accessing WYLBUR data sets with batch jobs, putting cards into a WYLBUR data set, etc. To make use of these facilities, the user may need to be familiar with several additional features of the USE and SAVE commands.

1. Format

Data sets are automatically saved in EDIT format, the form in which they are created, but it is possible to choose CARD, PRINT, or LRECL=n formats.

The lines of a data set in EDIT format are stored as they were typed in, with their line numbers attached. In EDIT format, multiple blanks are compressed, and the maximum possible number of lines is put in each record. Therefore, it is typically two or three times as efficient in terms of computer time and storage space to use EDIT format as it is to use any of the others. The active data set is always in EDIT format.

Card decks transferred to WYLBUR data sets using the EDSCARDS procedure are in EDIT format. Also, programs running in the batch can access data sets in EDIT format by using the procedures set up for this purpose. The Users Guide describes these procedures. Certain specialized computer programs may require the data set to be saved in a format other than EDIT format.

CARD format consists of card images--80-character contents for the lines of text. If any line originally had a length greater than 80 characters, the 81st and greater characters will be lost. Line numbers are not stored with the line contents unless NUMBERED is specified (see below). To access such data, the user must specify CARD format in the USE command (e.g.: USE CHEM.DATA CARD ON FILE04.) The data set will be renumbered from 1.000 when it is used.

PRINT format is the same as CARD format, except that the length of the lines of text is 133 characters and line numbers cannot be saved with the text.

In addition to EDIT, CARD, and PRINT formats, the user may specify the exact number of characters in each record by using the LRECL format. WYLBUR cannot handle data sets with LRECL values greater than 133.

LRECL=80 is equivalent to CARD format.
LRECL=133 is equivalent to PRINT format.
LRECL=121 accesses records containing 121 characters.

LRECL=n stores lines as n byte records--n must lie in the range 1-133, and any records longer than the specified length will be truncated.

The DCB parameters of a data set saved through WYLBUR are:

Format	DCB Parameters
CARD	RECFM = FB LRECL = 80 BLKSIZE = 6160
PRINT	RECFM = FB LRECL = 133 BLKSIZE = 6118
LRECL=n	RECFM = FB LRECL = n BLKSIZE = as large as possible; not over 6233

A USE command can access data sets with the following DCB attributes:

RECFM	F, FA, FM, FB, FBA, FBM, U, UA, UM
LRECL	not greater than 133
BLKSIZE	not greater than 13,030

Note: The LRECL specified in the USE command overrides the one recorded in the data set label.

WYLBUR cannot access a data set with RECFM=V. Consult the IBM publication OS/VS2 MVS Data Management Services Guide for a complete explanation of DCB parameters.

2. Blocking

If the data set is being saved in CARD, PRINT, or LRECL format, a blocking factor may be specified, indicating how many lines of length LRECL should be placed into each physical record. The blocksize, which is the product of LRECL and the blocking factor, is most efficient if it is as large as possible without exceeding 6233; blocksizes up to 13,030 can be accommodated. The blocking factor may be specified as an integer enclosed in parentheses.

```
? SAVE DUMMY PRINT (10) ON FILE03 (CR)
```

The example would cause each block to contain ten 133 byte records.

The default blocking factors are 79 (blocksize 6160) for CARD format and 46 (blocksize 6118) for PRINT format. The default blocking factor for any LRECL format data set is the optimum size (that is, the largest possible value which when multiplied by the logical record length, will not exceed 6233.) For example, if LRECL=121, the default blocking factor is 51 (blocksize 6171). Since the default blocking factors are most efficient, only a very special application would require the use of this parameter to request a different blocking factor.

3. NUMBERED

NUMBERED is valid only when FORMAT is CARD or LRECL=80. It causes the line numbers to overwrite the contents of character positions 73 through 80.

? SAVE DUMMY ON FILE03 CARD NUMBERED (CR)

Unless the NUMBERED option is used, line numbers will not be retained even when a data set is saved in CARD or LRECL=80 format. Instead, the data set will be renumbered from 1.000 when it is used again. If the user has saved a data set with line numbers retained, he must explicitly tell WYLBUR this fact when he next uses the data set; otherwise, the line numbers remain in 73-80 and WYLBUR will renumber the data set.

? USE DUMMY ON FILE03 CARD NUMBERED (CR)

When NUMBERED is specified, the line numbers for the data set are taken as the contents of column positions 73-80 and these columns are replaced with blank characters. If the contents of character positions 73-80 are not numeric line numbers in ascending order, WYLBUR will issue an error message. If two lines appear with the same line number, WYLBUR will issue an error message.

4. SKIP

SKIP allows the user to skip over n records (lines) at the beginning of the data set being used. The n+1 line of the PERMANENT DATA SET will become the first line of the ACTIVE DATA SET.

? USE DUMMY LRECL=120 SKIP=9000 (CR)

This makes it possible to use, in sections, a data set which is too large to fit in the WYLBUR active data set. A USE issued to such a data set will fill the active data set starting with its first line. There is no easy way to predict accurately how many lines it will accept.

SKIP cannot be used if the PERMANENT DATA SET is in EDIT format. Remember, however, that the COPY command (section IV.C. "Copying Lines from a Saved Data Set") can be used to access just part of a data set that is in EDIT format.

V. Data Set Migration

Because long term storage of inactive data sets on disk is not economical, the Computer Center migrates any data set which has not been used for 60 days. Migration is the process of moving the data set from the disk to a tape which is stored at the Computer Center. A listing of the names of all his migrated data sets is sent to the user each time migration is done. Items which are no longer wanted may be dropped from this listing by using the FORGET option of the FIND command described below.

A. Finding Data Sets (FIND)

The FIND command can be used to list the names of data sets belonging to a user. The FIND command accesses an index which contains the names and locations of all data sets which are saved on the FILE, TMP or PDS disk packs and for data sets which have been migrated from the FILE packs. The index is updated nightly. The FIND command is more comprehensive than the SHOW DSNAMES command described in section IV.A.7.

```
? FIND DSNAMES (CR)
12/11/76 AT 00:56
  CHAPT.1 ON FILE01
  CHAPT2 ON FILE01
  LIST.FINAL ON TMP002
  MANUAL ON FILE01
  MASTER.FILE ON FILE15
09/07/76
  LETTERS MIGRATED FROM FILE04  (066/552)
05/11/76
  A.REPORT MIGRATED FROM FILE15  (047/611)
  DATA MIGRATED FROM FILE04  (046/206)
  DATA MIGRATED FROM FILE15  (046/1288)
  LETTERS MIGRATED FROM FILE04  (047/207)
  MASTER.FILE MIGRATED FROM FILE15  (047/1289)
  TOTALS MIGRATED FROM FILE04  (046/208)
```

Notice that next to each migrated data set there is a retrieval number within parentheses.

Since the list produced by a FIND command may be quite extensive, the COLLECT option may be used to copy it into the active data set. Then the user is free to list only what he wants to see.

```
? FIND DSNAMES COLLECT (CR)
? LIST 'DATA'
  DATA MIGRATED FROM FILE04  (046/206)
  DATA MIGRATED FROM FILE15  (046/1288)
```

The active data set must be empty before the new material can be brought in. Anything that is there can be deleted with the CLEAR option. If CLEAR is given, COLLECT will be assumed.

```
? FIND DSNAMES CLEAR (CR)
```

Only approximately 480 entries can be brought in at one time before the command is terminated. The options below offer ways to restrict the number of entries brought in either for convenience or to bypass this restriction.

It is possible to search for a given dsname.

```
? FIND DSNAME=MASTER.FILE (CR)
  MASTER.FILE ON FILE15 AS OF 00:56 ON 12/11/76
  MASTER.FILE MIGRATED FROM FILE04 ON 05/11/76  (047/1289)
```

The LIKE option makes it possible to list the names of data sets beginning with a specified string of characters.

```
? FIND DSNAMES LIKE=MA (CR)
12/11/76 AT 00:56
  MANUAL ON FILE01
  MASTER.FILE ON FILE15
05/11/76
  MASTER.FILE MIGRATED FROM FILE04  (047/1289)
```

You can obtain a listing of the names of data sets saved by another user if you know his account, registered initials, and keyword.

```
? FIND DSNAMES LIKE=&aaaaiii (CR)
KEYWORD? kkk
```

where aaaa is the other user's account, iii is his set of initials, and kkk is his keyword. If either the account or set of initials is the same as those you are signed on with, it may be omitted.

The listing can be restricted to a single volume,

```
? FIND DSNAMES ON FILE15 (CR)
12/11/76 AT 00:56
  MASTER.FILE ON FILE15
05/11/76
  A.REPORT MIGRATED FROM FILE15  (047/1287)
  DATA MIGRATED FROM FILE15  (046/1288)
  MASTER.FILE MIGRATED FROM FILE15  (047/1289)
```

or to a type of volume.

```
? FIND DSNAMES ON TMP (CR)
12/11/76 AT 00:56
  LIST.FINAL ON TMP002
```

Comparison on the volume name will be done using whatever portion is specified in the command.

The user can choose to list just the data sets which are currently on disk or just those which have been migrated.

```
? FIND DSNAMES CURRENT
```
lists those that were on disk the previous night.

```
? FIND DSNAMES PAST
```

lists only those which have been migrated.

The FORGET, REMEMBER and FORGOTTEN options permit the user to drop, reinstate, and review the entries pertaining to migrated data sets. Forgotten data sets will not appear in the output produced by subsequent FIND commands (unless specifically requested), or in the listing of migrated data sets that is distributed after the next migration. A data set whose migration index entry has been forgotten STILL RESIDES ON THE MIGRATION TAPE. Therefore, the data set can still be retrieved if necessary (provided that the account and initials that belonged to the data set when it was migrated are still valid at the time of retrieval). It would simply be necessary to retrieve the data set by retrieval number rather than data set name.

The user can examine all entries for data sets which have been migrated in order to delete (forget) those which are no longer useful.

The entries will be listed in reverse chronological order, from the most recent migration to the oldest. Each entry will be listed, followed by a prompt asking whether the entry should be forgotten. A reply of "yes" deletes the entry; any other response is ignored.

```
? FIND DSNAMES FORGET (CR)

09/07/76
LETTERS MIGRATED FROM FILE04  (066/552)
FORGET? yes(CR)
LETTERS FORGOTTEN
05/11/76
A.REPORT MIGRATED FROM FILE15  (047/611)
FORGET?
```

Entries that are forgotten (deleted) by mistake can be easily remembered (reinstated) by the following command:

```
? FIND DSNAMES REMEMBER
```

Each forgotten entry will be listed, followed by a prompt asking whether it should be reinstated (remembered). A reply of "yes" reinstates the entry; any other response is ignored.

To request a listing of all forgotten entries, use the command:

```
? FIND DSNAMES FORGOTTEN
```

To delete a specific data set name, use the following form of the FIND command:

```
? FIND DSNAME=data-set-name FORGET
```

If more than one version of the same data set name has been migrated, each migration index entry will be displayed separately, in reverse chronological order. For example:

```
? FIND DSNAME=LETTERS FORGET(CR)
LETTERS MIGRATED FROM FILE04 ON 09/07/76 (066/552)
FORGET? YES(CR)
LETTERS FORGOTTEN.
LETTERS MIGRATED FROM FILE04 ON 05/11/76 (047/207)
FORGET? NO (CR)
?
```

Similarly, the need may arise to reinstate a specific entry.

```
? FIND DSNAME=data-set-name REMEMBER
```

If more than one data set with the same name has been forgotten, the entry for each version will be displayed separately, in reverse chronological order. For example:

```
? FIND DSNAME=LETTERS REMEMBER (CR)
LETTERS MIGRATED FROM FILE04 ON 09/07/76 (066/552)
REMEMBER? YES (CR)
LETTERS REMEMBERED.
LETTERS MIGRATED FROM FILE04 ON 05/11/76 (047/207)
REMEMBER? NO (CR)
?
```

Not all other options of the FIND command are meaningful in combination with FORGET, REMEMBER and FORGOTTEN. The COLLECT, CLEAR, LIKE and ON options can all be combined with the FORGOTTEN option. For example,

```
? FIND DSNAMES LIKE LETTER ON FILE05 FORGOTTEN COLLECT CLEAR
```

This will cause a search for all migration index entries that
--have been deleted (i.e., forgotten)
--belonged to data set names beginning with "letter"
--belonged to data sets that were migrated from FILE05

Previous contents of the active data set will be erased, and the entries will be collected into the active data set.

The COLLECT and CLEAR options cannot be used with FORGET or REMEMBER. However, FORGET or REMEMBER can be combined with LIKE and ON. For example,

```
? FIND DSNAMES LIKE LETTER ON FILE06 FORGET
```

will cause all index entries for data set names beginning with "LETTER" that have been migrated from FILE06 to be displayed on the terminal, in order that the user may select which entries to delete.

Similarly, the command

```
? FIND DSNAMES LIKE LETTER ON FILE06 REMEMBER
```

will cause the entries that have been deleted (i.e, forgotten) for data sets migrated from FILE06 whose names began with "LETTER" to be displayed on the terminal, in order that the user may select which entries to reinstate.

B. Retrieving Migrated Data Sets (RETRIEVE)

The RETRIEVE command is used to bring back a data set which has been migrated and store it on a TMP or FILE disk pack. Before issuing a RETRIEVE command, the user should make sure the data set has been migrated by consulting the migration listing, which is placed in his output box on each migration day or by issuing a FIND command.

The RETRIEVE command submits a job to the system which mounts the migration tape containing the data set and copies the data set to one of the TMP or FILE packs. The user must designate an output box to receive the retrieval job output. For instructions on how to register for a box number, see section I.A. "Registering to Use WYLBUR."

More than one data set may be retrieved at the same time by a single job by using the /*RETRIEVE facility described in Appendix B.

1. Using Retrieval Numbers

The retrieval number listed with each migrated data set may be used to specify which data set is to be retrieved. If no pack is specified, the system will choose one of the TMP packs which has space. After the data set has been retrieved, the user can consult his job output to determine which TMP pack it was saved on.

```
? RETRIEVE 001/208 BOX=999 (CR)
106 IS YOUR JOB NUMBER
```

The user may specify which TMP or FILE pack he wants the data set to be placed on.

```
? RETRIEVE 001/208 ONTO FILE08 BOX=999
```

If the user requests a pack and there is insufficient room or if a data set with the same name already exists on the pack, retrieval will not be performed.

The data set may be renamed as it is retrieved.

```
? RETRIEVE 001/208 AS FIRST.TOTAL BOX=999
```

If the retrieval can be delayed until the discount period (6:00 p.m.-6:00 a.m. weekdays and all day on weekends), the DISCOUNT parameter can be used to obtain a 25% discount.

```
?  RETRIEVE 001/208 BOX=999 DISCOUNT
```

Adding the NOTIFY parameter to the command causes messages to be sent to the user when the job completes execution and when the output has been generated.

```
? RETRIEVE 001/208 BOX=999 NOTIFY
```

If the user is not signed on to WYLBUR or TSO, the message cannot be sent.

The REMOTE parameter allows the user to direct his output to a high-speed remote printer at his own location.

```
? RETRIEVE 001/208 REMOTE=n BOX=999
```

where "n" is the number of his remote.

HOLD causes the job output to be placed in the OUTPUT HOLD queue. The user can then cause it to be listed at his terminal after issuing a FETCH command (described in section VII.C.2).

```
? RETRIEVE 001/208 BOX=999 HOLD
```

The LEVEL parameter can be used to delay running of the job. For further explanation, see the SET LEVEL command in section VII.C.7.

By including QUICK in his command, a user who is working at his terminal during the discount period, can obtain faster turnaround for his retrieval.

```
?  RETRIEVE 001/208 BOX=999 LEVEL=n QUICK
```

By using the ACCOUNT and INITIALS parameters, the user can retrieve a data set assigned to another account and initials and charge them for the retrieval, providing he knows the keyword.

```
? RETRIEVE 001/208 ACCOUNT=aaaa INITIALS=iii BOX=999 (CR)
KEYWORD? kkk
```

where "iii" is the set of initials
"aaaa" is the account
"kkk" is the keyword

When the retrieval number is used, as in all the examples above, the account and initials used for the retrieval must match those used when the data set was originally saved.

If either the account or set of initials is the same as the one the user is signed on with, it may be omitted.

If several data sets are to be retrieved at one time, it is more economical to use the procedure described in Appendix B, item #7. Also, a single user is not permitted to have more than 20 jobs in the system at one time.

2. Using Data Set Names

The RETRIEVE command may specify the data set name instead of the retrieval key.

```
? RETRIEVE TOTALS BOX=999
```

The name alone may not uniquely identify the data set. For example, the same name may have been used on two different FILE packs, and would thus refer to two different data sets. If both of these data sets have been migrated, the VOLUME parameter can be used to specify the one to be retrieved.

```
? RETRIEVE DATA VOLUME=FILE04 BOX=999
```

If more than one data set with the same name has been migrated from the same FILE pack, the last one migrated will be retrieved. If more than one data set with the same name was migrated at the same time, the one from the lowest numbered FILE pack will be retrieved. Retrieval numbers can be used to specify precisely which data set is to be retrieved.

Specifying the data set name makes it possible to retrieve another user's data set while charging your own account.

```
? RETRIEVE &aaaaiii.HERDATA BOX=999(CR)
KEYWORD? kkk
```

where "iii" is the set of initials
"aaaa" is the account
"kkk" is the keyword

The keyword given must be correct for the account and initials specified or the job will fail; WYLBUR does not check for keyword correctness.

VI. Public Information Data Sets

The PUBLIC data sets are used to supply information that is too technical or too changeable to be included in the WYLBUR Reference Manual itself.

To transfer a copy of one of these data sets to the active data set, merely USE it. You do not need to supply the volume.

```
? USE &PUBLIC.SPACE (CR)
?
```

It can then be listed using the LIST or LIST OFFLINE (see section VII.A. "LIST OFFLINE") command.

A. &PUBLIC.NEWS

This file contains information which is necessary for users to know in between issues of INTERFACE. The messages of the day inform users when the file is updated.

B. &PUBLIC.SPACE

Contains a list of the space available on each of the FILE, TMP and PDS disk packs. The data set is updated nightly. Users creating large data sets on these storage volumes should consult this data set or use the PUBLIST procedure described in Appendix B.

C. &PUBLIC.TERMINALS

Contains articles telling how to use the various terminals and related equipment supported by WYLBUR. It also contains suggestions for determining the cause of difficulties encountered in using the terminal. Lines 1/100 contain a directory for the articles in the data set.

D. &PUBLIC.TESTBCD

Contains instructions on how to perform a comprehensive test of the operation of IBM 2741 and other Selectric terminals which are equipped with the NIH Standard EBCD (or PL/I) keyboard. This test will detect only terminal hardware problems.

E. &PUBLIC.PHONES

Contains a listing of useful Computer Center phone numbers.

F. &PUBLIC.CODES

Consists of 256 lines numbered 0-255. Each line contains one character (byte) which is the binary configuration of the specific line number.

G. &PUBLIC.BACKUPS

Lists the dates and times when the most recent backups were performed for each FILE and PDS pack.

H. &PUBLIC.SCHEDULE

Lists the standard operating schedule for Computer Center services.

VII. Using the Central Computer Facilities through WYLBUR

A. LIST OFFLINE

Having WYLBUR list all of a very large data set at the typewriter terminal is quite time consuming. Therefore, the user may have his listing done offline on a high-speed printer. Two general types of printers are used at the central facility: the laser printers, which are extremely fast but have certain limitations, and the slower impact printers. Most listings are automatically done with laser printers; exceptions will be noted in the discussion below.

```
? LIST OFFLINE (CR)
BOX? 999 (CR)
256 IS YOUR JOB NUMBER.
?
```

The output will be delivered to the output box which the user has specified. The user may pre-empt WYLBUR's standard request for a box number by supplying it in the command prefaced by BOX or B. For instructions on how to register for a box number, see section I.A. "Registering to Use WYLBUR."

```
? LIST OFFLINE BOX=bbb (CR)
```

OFFLINE may be omitted if BOX is supplied in the command.

```
? LIST BOX=bbb (CR)
```

All options except CLEAN which are available with the regular LIST command (see section III.A "The LIST Command"), are also usable with LIST OFFLINE. These include:

```
UNNUMBERED
NOTEXT
INDENT=n
DOUBLE
TRIPLE
MARKER=m
CC
```

UNNUMBERED makes it possible to list the text without line numbers.

NOTEXT allows the line numbers only to be listed.

INDENT=n allows the user to position his output on the paper by moving it "n" spaces to the right. "n" must be between one and 70.

DOUBLE or TRIPLE causes the listing to be double or triple spaced. SPACING=2 and SPACING=3 have the same meanings. The value for SPACING can be from 1-99. Blank lines added by DOUBLE, TRIPLE, or SPACING=n are counted in the page depth, the default page depth is 60 lines.

MARKER=m in an OFFLINE listing will cause a new page to be started every time the marker character is encountered in column one. The line containing the marker will not be printed.

CC in an OFFLINE list permits the user to list a data set which has standard ASA carriage control characters in column one. The line containing a carriage control character will be printed. The standard ASA carriage control characters are:

CODE	ACTION BEFORE WRITING RECORD
blank	advance carriage one line
0	advance carriage 2 lines
-	advance carriage 3 lines
+	do not advance the carriage
1	skip to head of forms (skip to channel 1)

The + indicator may be used to overprint or underline text listed at the printer.

If the following lines are entered:

```
10.      THIS EXAMPLE USES THE + CARRIAGE CONTROL CHARACTER.
11.     +      _______             CARRIAGE
```

and listed with the command:

```
LIST OFFLINE CC BOX=999 UNNUMBERED INDENT=10 IMPACT (CR)
```

the result will be:

```
          THIS EXAMPLE USES THE + CARRIAGE CONTROL CHARACTER.
```

IMPACT is needed because the laser printers cannot overprint with any character except underline.

MC notifies WYLBUR that the data set being listed was created using machine code carriage control characters rather than the standard ASA carriage control characters used by WYLBUR. For further information on machine carriage control, see the Users Guide.

```
? LIST OFFLINE MC BOX=999 (CR)
```

NOEJECT suppresses the feature which causes the printer to move to the top of the next page after 60 lines have been printed. This means that unless a marker or carriage control is used, the listing will print without breaks right across the page perforations. Any listing for which NOEJECT is requested will be done by a slower impact printer since the laser printer is not capable of printing more than 60 lines per page.

```
? LIST OFFLINE BOX=999 NOEJECT (CR)
```

PAGE=n allows the user to override the default page depth of 60 lines per page. n can be any value between 1 and 255. If the value requested is more than 60, the listing will be done on an impact printer.

```
? LIST OFFLINE BOX=999 PAGE=50 (CR)
```

If the value for spacing is increased (through SPACING=n, DOUBLE or TRIPLE), the skipped blank lines are counted in the lines per page. That is,

```
?  LIST OFFLINE BOX=999 PAGE=50 DOUBLE (CR)
```

will print 25 numbered lines of text per page.

ACCOUNT=aaaa and INITIALS=iii transfer the charges for the offline listing to the specified account. The initials and account specified must be a legal registered combination.

```
? LIST OFFLINE BOX=999 ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD? kkk
```

If the text to be listed contains uppercase backspaces, they will print as blanks unless BACK= followed by an upper case backspace is included. SET BACK must be in effect when the LIST OFFLINE command is given for WYLBUR to interpret the upper case backspace as part of the command.

```
?  SET BACK (CR)
?  LIST OFFLINE BOX=999 BACK=
```

IMPACT is used to cause the listing to be printed by a slower impact printer. This should be used whenever characters are to be overprinted with anything except an underline.

```
?  LIST OFFLINE IMPACT CC (CR)
```

It is possible for users at remote locations to have their listings printed on nearby RJE workstations, such as 3780's and 2922's, which have high-speed printers.

```
? LIST OFFLINE BOX=999 REMOTE=n (CR)
```

where "n" is the number of the RJE workstation. For further information on these workstations, consult the Users Guide.

It is also possible to request up to 999 copies of the offline listing.

```
? LIST OFFLINE BOX=999 COPIES=50 (CR)
```

If more than 50,000 lines are to be printed (e.g. if COPIES=50 is used with a 2000 line data set), a SPOUT tape will be created. WYLBUR supplies the necessary instructions to the system, and the only effect on the user is that his output may be delayed. Note, however, that WYLBUR assumes that the entire active data set is to be printed when deciding whether or not to use SPOUT.

Following is a summary of the conditions which require a listing to be done via SPOUT. All SPOUT listings are done on impact printers; for further information on SPOUT, see the Users Guide.

- More than 50,000 lines output
- Forms other than 620, 900, 999
- Train other than SN
- Non-standard carriage control loop
- BURST output
- PHOTO requests Mylar ribbon
- Lines are printed 8 or 16/inch

Unless a special print train is requested, the offline listing is printed using the SN character set. The SN print train contains the upper and lower case alphabets, the numerals, and some special characters.

The TRAIN parameter allows the user to specify that his listing be printed using a particular print train. For a listing of the characters available on each print train, see the Users Guide, or the Extended Printing Facility manual.

? LIST OFFLINE BOX=999 TRAIN=CN (CR)

The trains currently available are: SN, TN, MN, and CN.

The PHOTO parameter causes a Mylar ribbon to be used for this listing and asks that the operator take special care to adjust the printer to produce high quality output. The Mylar ribbon, which produces photo quality output, can be used only once. Because of the cost of the ribbon and the extra handling, there is a special charge added to the cost of a PHOTO listing. See the Users Guide for current prices. At the time of publication this is $17.

The FORMS= parameter allows the listing to be printed on forms other than the standard, lined computer output paper. All printing on special forms is done on impact printers.

Listings on 900 and 999 paper can be done without the delay and expense of SPOUT processing. To do this request the form by its number only, without quotes.

? LIST OFFLINE BOX=n FORMS=999(CR)

Requests for any forms except 620, 900 and 999 will be done via SPOUT.

? LIST OFFLINE BOX=999 FORMS=0590 (CR)

1. Types of Paper Available for Printing

Following is a list of the forms available at the central facility:

Form Number	Width x Length in inches	Parts	Max. Charac. per Line	Ruled Lines	Carriage Control Loop Needed
standard (620)	14 7/8 x 11	1	132	3/inch	Standard
620	14 7/8 x 11	2,4	132	3/inch	Standard
590	14 7/8 x 11	1,2,4	132	blank	Standard
350	9 7/8 x 11	1,2,4	90	blank	Standard
900	9 7/8 x 11	1	83	blank	Standard
999	9 7/8 x 11 3-hole punched	1	78	blank	Standard
1422	14 7/8 x 22	2	132	blank	1422
LTRHD	9 1/2 x 10 1/2 Letterhead on every page	1	79	blank	LTRHD Control character for head of form=2

Paper should be requested by its form number and the number of parts wanted. Two part paper includes the original and one carbon copy; four part has the original and three carbons.

Forms 900, 999, and LTRHD have perforated "easy-strip" margins; after stripping they have the following measurements:

900	8 1/2 x 11
999	8 1/2 x 11
LTRHD	8 x 10 1/2

If the forms message contains blanks or special characters, it must be enclosed in quotes.

To cause the active data set to be printed on 14 7/8 x 11 inch blank paper which has an original and one carbon, the command would be

```
? LIST OFFLINE BOX=999 FORMS='0590-2' (CR)
```

For a paper that requires other than the standard loop, the user must specify which loop is to be used in the forms message. To list the active data set on letterhead paper, which is 8 x 10 1/2 inches after stripping, use

```
? LIST OFFLINE BOX=999 FORMS='LTRHD AND LTRHD LOOP' (CR)
```

When using the LTRHD form, markers cannot be used to designate the end of a page unless enough blank lines are added to the top of each page to skip past the pre-printed NIH letterhead. A carriage control "2" may be used to skip past the preprinted letterhead.

Since the first page of output on forms less than 11 inches long is defaced by lines from the cover sheet, the first page should not include necessary information. (A marker or carriage control character can be used to cause a page eject at at top of the listing.)

2. Labels Available for Printing

All labels mentioned below are pre-gummed and are attached to sheets of waxed paper which contain the necessary pin-feed holes. The labels are arranged in from one to four rows across the sheets. Samples of the available labels may be seen at the Output Distribution Services counter.

Width x Length in inches	Number Across	Print Lines per Label	No. of Charac. per Line	Beginning Column per Label	Carriage Control Loop Needed	Control Character For Head of Form
2 3/4 x 7/16	1,4	2	26	1,29,58,87	716	1,2,3
2 3/4 x 15/16	1,4	5*	26	1,29,58,87	1516	1,2
2 3/4 x 1 7/16	1	8*	26	1	1716	1
3 1/2 x 7/16	1,3	2	34	1,37,73	716	1,2,3
3 1/2 x 15/16	1,3	5*	34	1,37,73	1516	1,2
3 1/2 x 1 7/16	1,3	8*	34	1,37,73	1716	1
4 x 7/16	1	2	38	1	716	1,2,3
4 x 15/16	1,3	5*	38	1,42,83	1516	1,2
4 x 1 7/16	1,3	8*	38	1,42,83	1716	1
5 x 7/16	1	2	49	1	716	1,2,3
5 x 15/16	1,2	5*	49	1,52	1516	1,2
5 x 1 7/16	1	8*	49	1	1716	1

* Forms message must include "Start on 1st print line" if the maximum number of lines or the maximum minus one is to be printed.

Labels must be requested in terms of their size. If the data set to be listed contains carriage control, a special carriage control loop must be supplied so the printer "knows" where the top of each label is.

When using standard loop 716, 3 separate carriage control characters must be used to skip to head of form. The character for the first label is 1, for the second is 2, the third is 3, the fourth is 1, etc. When using standard loop 1516 the characters 1 and 2 must be used alternately to skip to head of form, and for loop 1716 only 1's are used.

Employing one of the standard loops described above, the command to list a data set on a single column of 3 1/2 by 7/16 inch labels is:

```
LIST UNN BOX=999 CC FORMS='3 1/2 x 7/16-1 LABELS AND 716 LOOP'
```

Marker characters rather than carriage control can be used with any of the labels which require the 1716 carriage control loop. For example, the following command could be used to list a data set (perhaps an address list with a # marker after each address) on a single column of 5 x 1 7/16 inch labels.

```
LIST UNN BOX=999 MAR=# FORMS='5 x 1 7/16 LABELS AND 1716 LOOP'
```

Printing on Indicia Labels

Boxes of 1,000 self-adhesive pin-feed, pre-paid NIH mailing labels are available from the NIH Self-Service stores. The labels are designed so they can be put through the Computer Center's high-speed printers for addressing. For further details, see Appendix G "Printing on Indicia Labels."

BURST causes a message to be printed on the output indicating to Output Distribution Services that the pages should be separated. Jobs which are to be burst will be printed via SPOUT.

```
? LIST OFFLINE BOX=999 BURST
```

The NOTIFY option will send a message to the user when the job creating the SPOUT tape ends execution and when job output is generated. When no SPOUT tape is made, NOTIFY notifies you only when the output has been generated.

```
? LIST OFFLINE BOX=999 NOTIFY
```

If the user is not signed onto WYLBUR or TSO, the messages cannot be sent.

NOTIFY TO allows the messages to be sent to the user with initials "iii".

```
? LIST OFFLINE BOX=999 NOTIFY TO iii
```

The LEVEL parameter makes it possible to delay execution of any offline listing which is done via SPOUT.

```
? LIST OFFLINE BOX=999 LEVEL=n
```

"n" can have values 0-9; the higher the number, the sooner the listing will be done. If LEVEL=0 is given, the listing will not be done until its level is raised.

The HOLD parameter causes the job output (not SPOUT output) which would otherwise be printed, to be stored in the OUTPUT HOLD queue. This output can be accessed with the FETCH command. For further details, see section VII.C.2. "FETCH, PRINT, and PURGE."

DISCOUNT has no effect on a regular LIST OFFLINE. If a listing is done via SPOUT, the job to create the SPOUT tape will be delayed until the discount period and done for 25% less cost.

```
? LIST OFFLINE BOX=999 DISCOUNT
```

NODISCOUNT reverses the effect of a SET DISCOUNT command for this command.

If a user is working at his terminal during the discount period, he can speed up the scheduling of his job while still obtaining the discount rate by specifying QUICK in his command.

```
? LIST OFFLINE BOX=999 QUICK
```

NOQUICK reverses the effect of a SET QUICK command for this command.

The complete form of the LIST OFFLINE command is:

```
LIST range UNNUMBERED NOTEXT INDENT=n DOUBLE TRIPLE SPACING=n
    MARKER=m CC OFFLINE BOX=n MC NOEJECT PAGE=n IMPACT
    ACCOUNT=aaaa INITIALS=iii REMOTE=n COPIES=n TRAIN=t
    FORMS=form BURST NOTIFY LEVEL=n HOLD DISCOUNT NODISCOUNT
    QUICK NOQUICK PHOTO BACK=c UP=c DOWN=c ESCAPE=c DENSITY=n
    MERGE HALFLINE
```

Remember that the FORMS parameter must be enclosed in quotes if it contains special characters or embedded blanks.

The parameters: BACK=c, UP=c, DOWN=c, ESCAPE=c, DENSITY=n, MERGE, and HALFLINE are fully described in the Extended Printing Facility manual. Briefly, UP and DOWN allow superscripting and subscripting when used on a special printer which permits lines to be printed at a greater vertical DENSITY than the usual 6 lines/inch. ESCAPE allows the user to print Greek characters and special symbols which are not on his terminal keyboard. MERGE allows lines to overlap vertically, and HALFLINE selects a useful combination of defaults.

B. Punching Cards

The user may obtain a punched card deck of his active data set by giving WYLBUR a PUNCH command. The BOX option works exactly as in the LIST OFFLINE command.

? PUNCH UNNUMBERED BOX=999 FORMS='type of cards'

If UNNUMBERED is given in the command, no line numbers will be added. If NUMBERED is specified, the line numbers will be punched into columns 73-80, overwriting whatever was in those columns. If neither is specified, WYLBUR will insert the line number into any line which is blank in columns 73/80. Any non-blank character in 73/80 will cause WYLBUR to leave these columns alone.

/*NUMBERED and /*UNNUMBERED statements may be placed anywhere in the range to be punched; they have the effect of enabling or inhibiting line numbering until the end of the range or until the next /*NUMBERED or /*UNNUMBERED statement is encountered. The statements themselves are never punched.

Any job which punches more than 6000 cards will cause a SPOUT tape to be created; fewer than 6000 cards will be punched online. Note, however, that WYLBUR assumes, when deciding whether or not to go to SPOUT, that the entire active data set will be punched.

Cards other than the standard Manila variety may be requested by enclosing the request in quotes. Any job requesting special cards is punched via SPOUT.

Adding NOTIFY to the command causes messages to be sent to the user when the job completes execution and when the output has been generated.

? PUNCH NOTIFY

NOTIFY TO allows the messages to be sent to the user with initials "iii".

? LIST OFFLINE BOX=999 NOTIFY TO iii

If the punching is done via SPOUT, the user is notified when the SPOUT tape is created; the actual punching will be done later. If the user is not signed onto WYLBUR or TSO, the messages cannot be sent.

If DISCOUNT is given, the cost for the job will be reduced by 25% and it will be delayed until the discount period (6:00 p.m.-6:00 a.m. weekdays and all day on weekends). No discount is given for punching done via SPOUT.

? PUNCH DISCOUNT

NODISCOUNT suspends the effect of a SET DISCOUNT command for this command.

During the discount period, a user submitting a request from his terminal can have it done promptly while still obtaining the reduced rate if he includes QUICK in his command.

? PUNCH QUICK

NOQUICK reverses the effect of a SET QUICK command for this command.

Punched output may be directed to any RJE workstation (3780, 2922, etc.) which supports it.

? PUNCH BOX=999 REMOTE=n

where "n" is the number of the RJE workstation.

The ACCOUNT=aaaa and INITIALS=iii parameters may be used as in the LIST OFFLINE command to direct the charges for punching to someone else's set of initials or an account other than the one the user is signed on with.

? PUNCH BOX=999 ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD? kkk

The LEVEL=n and HOLD options function just as they do for the LIST OFFLINE command.

C. Processing Jobs Through WYLBUR

The following commands are used to submit a job through WYLBUR to be processed by the computer, obtain information about the status of that processing, and retrieve the output for inspection at the terminal.

1. RUN

The most important of these commands is the RUN command which directs WYLBUR to put all or a range from the user's active data set into the input stream.

```
? RUN
```

This is logically the same as submitting a deck of cards to the computer through a card reader. The active data set must be a complete job containing all of the necessary Job Control Language (JCL) statements. WYLBUR adds the keyword and routing information, puts the data set into the input stream, and informs the user of the job number which has been associated with it so that the user may monitor his job's progress. Many functions (e.g. sorting) are so commonly used that the Computer Center provides pre-written Job Control Language (called "catalogued procedures") which is easy to use. See Appendix B for information and examples of these procedures.

```
? RUN (CR)
256 IS YOUR JOB NUMBER.
?
```

If the account or initials specified in the JOB statement are different from those you have in effect, WYLBUR will prompt for a keyword.

If the active data set contains more than one JOB statement, any options given in the RUN command will apply only to the first job and a /*KEYWORD statement (explained in the Users Guide) must be supplied for each job after the first.

When the RUN command is given, WYLBUR automatically changes the active data set from EDIT to CARD format and passes it to the system so that it can be processed as a batch job. (The user should be careful not to run a program containing lower case letters.)

Adding the NOTIFY option to the command causes messages to be sent to the user when the job completes execution and when output is generated.

```
?  RUN NOTIFY
```

If the user is not signed onto WYLBUR or TSO, the messages cannot be sent.

Another user may be notified in place of the user whose initials and account are on the JOB statement.

```
? RUN NOTIFY TO iii
```

It is possible for users at remote locations to have their job output directed to nearby RJE (Remote Job Entry) workstations such as 3780's, 2780's, and 2922's. These workstations have high-speed printers and may be equipped with card punches. For further information on these workstations, consult the Users Guide.

The following command will cause all job output (except for SPOUT) to be produced at the specified RJE workstation.

```
? RUN REMOTE=n
```

where "n" is the number of the RJE workstation.

The following command will direct only punched output from the job to the RJE workstation; other output will be produced at the central facility.

```
? RUN PUNCH=n
```

where "n" is the number of the RJE workstation.

Similarly, the following command will direct only printed output to the RJE workstation.

```
? RUN PRINT=n
```

If UNNUMBERED is given in the command, no line numbers will be added. If NUMBERED is specified, the line numbers will be placed in columns 73-80, overwriting whatever was in those columns. If neither is specified, WYLBUR will insert the line number into any line which is blank in columns 73/80. Any non-blank character in 73/80 will cause WYLBUR to leave these columns untouched.

/*NUMBERED and /*UNNUMBERED statements may be placed anywhere in the range to be run; they have the effect of enabling or inhibiting line numbering until the end of the range or until the next /*NUMBERED or /*UNNUMBERED card is encountered. The cards themselves are never submitted for processing.

If the user's program requires a special resource (currently 7TRACK, 9T800 or 9T6250), he can specify its use in the command:

? RUN XEQ=resource

If DISCOUNT is given in the command, the job will be delayed until the discount period (6:00 p.m.-6:00 a.m. weekdays and all day on weekends), and will cost 25% less than if it is run during peak hours:

? RUN DISCOUNT

NODISCOUNT cancels the effect of a SET DISCOUNT command for this job.

A user who submits his job during the discount period can obtain faster turnaround while still receiving the discount rate.

? RUN QUICK

NOQUICK cancels the effect of a SET QUICK command for this job.

The user can delay the running of his job by using the LEVEL parameter. The higher the level, the sooner the job will run within a given class.

? RUN LEVEL=8

Class	Maximum Level
A	9
B	8
C	7
H	7

Levels are meaningful only within a job class. LEVEL=0 has a special meaning. A job of level zero will not run until its level is raised. This may be useful to delay the printing of a long job at an RJE workstation.

To change the level of a job that has been submitted, use the SET LEVEL command. See section VII.C.7. "SET LEVEL."

A programmer who is submitting a series of jobs to the system may wish to control the order in which they are executed. A number of parameters have been designed to help him do this.

```
       RUN AFTER=jobname
or     RUN BEFORE=jobname
```

causes the current job to be run after or before another job with the specified jobname. Jobs must be submitted in the order they are to be executed to insure the desired result. (For information on jobnames, see Appendix B.)

```
      RUN CONTROL=controlname
and   RUN CONTROL=controlname EXCLUSIVE
```

are used to permit control over a group of jobs which read or update a masterfile. For further information on the use of controlnames, see the Users Guide.

A user who wants the output intended for online printing and punching from his job held on disk and not printed, can specify the HOLD option of the RUN command. This option is useful when used in conjunction with the FETCH command described next.

```
? RUN HOLD
```

2. FETCH, PRINT and PURGE

The user can have "held" printed output "fetched" into the active data set by using the FETCH command.

```
? FETCH jjj (CR)
```

This will bring a copy of the printed output produced by job number jjj into the active data set. Once a job has been "fetched" from OUTPUT HOLD it will be "held" only 4 hours before being purged or printed. A job can also be "fetched" if it is awaiting print or being printed. If a job is printing when it is FETCHed, and the job is finished printing before the FETCH is complete, the user may get HASP185 OUTPUT INCOMPLETE messages in the FETCHed output. The printed output will be complete and will not contain this message.

```
? FETCH 1370 ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD? kkk
```

The account number and initials must be given if the ones used on the JOB statement are different from your registered initials and account number unless they agree with a prefix which is in effect. If you supply an account or initials in the command, WYLBUR will prompt for the keyword.

```
? FETCH 3110 SKIP=n
```

The SKIP option is the same as the SKIP in USE and causes as many records as possible beginning with n+1 record to be brought into the active data set. (See section IV.E.4. "SKIP").

As with USE, you may specify that the active data set is to be cleared first.

```
? FETCH 4256 CLEAR
```

At the completion of the FETCH command, the print file is available as the user's active data set. This output will contain ASA carriage control characters (see VII.A "LIST OFFLINE") in column one.

Listing the entire contents of a fetched print file at the terminal is quite time consuming. Hints on how to search this output efficiently and an example are found in Appendix C "FETCH Command."

Held output can be printed on the system printers by issuing the PRINT command; this is more efficient than using a LIST OFFLINE.

? PRINT jjj

jjj is the job number (1-9999) assigned when the run was submitted. After printing, the output will be eliminated from the system.

? PRINT jjj ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD? kkk

The account number and initials are needed if those on the JOB statement are different from the account number you are using and your registered initials unless they agree with a prefix which has been set.

The PURGE command is used to remove "held" output from the system without printing it or to delete a job before it runs.

? PURGE jjj

jjj is the job number the system assigned to the job when it was submitted.

? PURGE jjj ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD? kkk

The account number and initials are necessary when they differ from your registered initials and the account you are signed on with unless they agree with a prefix which has been set.

If an attempt is made to purge a job which is currently being executed, the purge will not take place. If a job is printing and the PURGE command is given, the print is deleted shortly after the command is issued.

Jobs that are "held" will be automatically purged after they have been in output hold for 24 hours (4 hours if output is FETCHED) unless NOPURGE has been set for the job (see section VII.C.10). It is recommended that you either PRINT or PURGE "held" output as soon as possible.

3. ROUTE

The ROUTE command allows the destination of output from a job to be changed after the job has been submitted.

```
? ROUTE jjj REMOTE=n (CR)
JOB jjj HAS BEEN ROUTED
```

jjj is the job number assigned when the run was submitted. This command directs all output to be produced at the indicated location. n is the number assigned to a remote workstation (e.g. 3780, 2780, 2922). ROUTE jjj OUTPUT=n has the same effect.

PRINT=n causes printed output to be directed to remote n.

PUNCH=n causes punched output to be directed to remote n. If punched output is routed to an RJE workstation which does not have a card punch (most do not), the punching will be held until the user or an operator realizes the problem and causes it to be punched at the central facility.

```
ROUTE jjj PUNCH=n
ROUTE jjj PRINT=n
```

By specifying CENTRAL in place of RJE workstation number, the user can direct his output to the printers and/or punches at the central utility.

```
ROUTE jjj CENTRAL
ROUTE jjj PRINT=CENTRAL
ROUTE jjj PUNCH=CENTRAL
```

The ROUTE command can also be used to place a job in output hold after it has been submitted or to remove it from output hold.

```
? ROUTE jjj HOLD (CR)
JOB jjj HAS BEEN ROUTED
```

where jjj is the job number assigned when the run was submitted. This command causes all output from job jjj to be held on a disk until it is fetched, printed or purged. This command can be given anytime before the job is printed.

```
? ROUTE jjj GO (CR)
JOB jjj HAS BEEN ROUTED
```

causes job jjj to be removed from output hold. This is the only form of the ROUTE command that will remove a job from output hold.

It is possible to route a job which was run under an account and/or initials other than those you signed on with if you know the keyword.

```
? ROUTE jjj GO ACCOUNT=aaaa INITIALS=iii (CR)
KEYWORD ? kkk (CR)
JOB jjj HAS BEEN ROUTED
```

where iii is the set of initials specified in the JOB statement, and aaaa is the account number given in the JOB statement. These must be specified unless they agree with a prefix which has been set.

If SYSOUT data sets have been routed individually, they will be rerouted to the single location specified in the ROUTE command if it is issued after the job has completed execution. If it is issued before or during job execution, the command will have no effect on the routing of individually routed SYSOUT data sets.

4. SET DISCOUNT

The SET DISCOUNT command will cause the processing of all of a user's jobs submitted while it is in effect to be delayed until the discount period (6:00 p.m.-6:00 a.m. weekdays and all day on weekends) when it will cost 25% less.

LIST OFFLINE does not create a job unless a SPOUT tape is generated or a parameter which accesses the Extended Print Facility (i.e., UP, DOWN, BACK, ESCAPE, DENSITY, MERGE, HALFLINE, SPACING) is used. Except for these cases, DISCOUNT will have no effect on a LIST OFFLINE.

By specifying NODISCOUNT in a RUN, LIST OFFLINE, PUNCH or RETRIEVE command, the user can temporarily suspend the effect of SET DISCOUNT.

SET NODISCOUNT would cancel a previous SET DISCOUNT.

5. SET QUICK

The SET QUICK command can be used during the discount period to obtain faster turnaround for all jobs submitted during the rest of the session.

The NOQUICK parameter in a RUN, LIST, PUNCH or RETRIEVE command will override SET QUICK only for the job which is currently being submitted.

SET NOQUICK command would terminate an earlier SET QUICK request.

6. SET JOB

The SET JOB command permits the user to change the DISCOUNT, QUICK and NOTIFY parameters for a job which has been submitted.

To request quick processing during the discount period:

? SET JOB jjj QUICK

NOQUICK would nullify an earlier request for quick processing.

The following command causes the execution of the job to be done in the discount period.

? SET JOB jjj DISCOUNT

NODISCOUNT would nullify an earlier DISCOUNT request.

The following command will send messages concerning job progress to the WYLBUR or TSO user whose initials appear on the JOB statement.

? SET JOB jjj NOTIFY

If the person is not on WYLBUR or TSO no message is sent.

The following command will change the user to receive notification messages about the progress of a job.

? SET JOB jjj NOTIFY TO iii

7. SET LEVEL

The SET LEVEL command makes it possible to change the priority of a job within a single job class, after it has been submitted. If no level is set for a job, its level is the maximum possible for its class. The level for a job can also be set at the time the job is run. See section VII.C.1 "RUN". The higher the level of a job is, the sooner it will run. The level of a job cannot be changed while it is being executed.

Class	Maximum
A	9
B	8
C	7
H	7

Levels are meaningless except within job classes. A class B job of level 8, for example, will run after a class A job of level 1, but before a class B job of level 5.

? SET LEVEL n FOR jjj

where n is the level and jjj is the job number assigned to the job when it was run.

A level of zero will keep the job from being run until its level is changed.

To return a job to its maximum level, omit the level number.

? SET LEVEL FOR jjj

When a SET LEVEL command is issued, the system checks to see that the account and initials on the JOB statement match the registered initials and account number you are using. To change the level of a job with a different account and set of initials, supply them in the command. The system will ask for a keyword.

? SET LEVEL n FOR jjj INITIALS=iii ACCOUNT=aaaa (CR)
KEYWORD? kkk

If either ACCOUNT or INITIALS is omitted, your registered initials and the account number you are using serve as defaults.

8. SHOW STATUS, SHOW RUN, SHOW PRINT

These commands (which all produce the same response) list information on jobs awaiting execution, executing, awaiting print, printing and in output hold.

9. LOCATE

After a job has been submitted through WYLBUR, the user may wish to find out what (if any) processing has been done on it. The LOCATE command can be used to do this.

? LOCATE jjj

jjj is the job number (1 thru 9999) that has been given to the user when WYLBUR responded to a RUN, RETRIEVE, LIST OFFLINE, or PUNCH command.

WYLBUR will respond with one of several messages indicating the state the job is in:

1.	BEING INPUT	- the job is in the process of being submitted to the system.
2.	AWAITING EXECUTION	- the job is waiting to be run.
3.	HOLD	- the operator must take some action (e.g. get a tape) before the job can run.
4.	EXECUTING	- the job is running.
5.	AWAITING PRINT	- the job has run and the output is waiting to be printed.
6.	IN PRINT HOLD	- "held" output is available for FETCH, PRINT, or PURGE.
7.	BEING PRINTED	- the output is being printed.
8.	AWAITING PUNCH	- the output is waiting to be punched.
9.	BEING PUNCHED	- the output is being punched.
10.	AWAITING PURGE	- the job is awaiting elimination from the system.
11.	BEING PURGED	- the job is being eliminated from the system.
12.	NOT FOUND	- the job has been completed and has left the system.

The user may also search for a job by the job name rather than job number.

```
? LOCATE IIIJOB (CR)
JOB 226A IIIJOB EXECUTING ON CPU1 PRIO 9
```

He may also specify only the first part of the jobname (at least 3 characters) and see all jobs which match. This is useful for checking the status of all jobs in the system for a given set of registered initials.

10. SET NOPURGE

If a job is in "hold" status, it will be purged after 24 hours (4 hours if FETCHED). To cause it to be printed rather than purged, the user may give the SET NOPURGE command.

? SET NOPURGE FOR jjj

where jjj is the job number assigned to the job when it was run.

11. SET BOX

A user can SET BOX at any time during a terminal session. From then on, the specified box number will be used in all commands which require it (e.g., LIST OFFLINE, PUNCH and RETRIEVE). CLEAR BOX cancels a present box number. SHOW BOX indicates the current box.

VIII. Miscellaneous

A. Additional Set and Show Commands

1. SET BACK

The SET BACK command changes the function of the backspace key so that an upper case backspace (shift and backspace), will backspace without erasing and will enter a backspace in the text. This makes it possible, for example, to have a WYLBUR text containing underlined material. The SET BACK command can be given in response to any "?" prompt from WYLBUR.

SET BACK is somewhat limited in its usefulness. Backspaces count in determining the number of characters in a line. Since 133 is the maximum number of characters in a WYLBUR line, a completely underlined line, for example, can contain no more than 44 characters of text. See section VII.A. "LIST OFFLINE" for information on how to use carriage control to overcome this limitation. The continuation line feature described in the Extended Printing Facility manual may also be helpful.

CLEAR BACK returns the backspace to its usual function; (SET NOBACK has the same meaning). SHOW BACK tells which option is in effect.

2. SET TERMINAL, SHOW TERMINAL

The SET TERMINAL command allows the user to describe certain characteristics of his terminal which may differ from those WYLBUR would assume. SHOW TERMINAL lists the options which are in effect.

a. NOBREAK

```
? SET TERMINAL NOBREAK
```

NOBREAK informs WYLBUR that your Selectric terminal does not have the "Reverse Break" feature. This feature permits messages to be sent to a terminal at any time. If NOBREAK is in effect, any messages sent to your terminal will be delayed until you strike a carriage return. All characters typed on the line will be ignored.

When NOBREAK is in effect, no time warning messages will be sent, but the terminal will be logged off after 15 minutes of inactivity.

If a terminal number beginning with F (e.g., F99) is given during sign-on, NOBREAK will be set automatically.

If WYLBUR is not informed and a terminal does not have Reverse Break, all messages sent to the terminal will be lost, and the line being entered when they were sent will be interrupted.

If NOBREAK has been set accidentally, SET TERMINAL BREAK can be used to cancel it.

The following command will show whether BREAK or NOBREAK is in effect:

SHOW TERMINAL BREAK

b. WIDTH

The WIDTH option tells WYLBUR how many characters can be listed on a line. If a line longer than the current WIDTH (including the line number and any specified indent) is listed at a terminal, it will be "wrapped around", that is, continued on the following line.

```
? SET TERMINAL WIDTH=40(CR)
? LIST(CR)
   1.     This line is longer than the w
 idth which is in effect.
   2.     The extra length will be conti
 nued on the next line.
?
```

The default width for Selectric terminals is 131 characters, which is appropriate for 10-pitch machines.

Users with 12-pitch Selectric terminals should use the following command:

? SET TERMINAL WIDTH=156

This permits listing of the longest line that will fit on the terminal carriage.

Appropriate WIDTH values for Teletype-compatible (ASCII) terminals are given in Appendix E.

SET TERMINAL NOWIDTH removes the feature of "wrapping" lines.

SHOW TERMINAL WIDTH displays the current setting for WIDTH.

This should not be confused with the SET and SHOW LENGTH commands. SET LENGTH causes a message to be sent to the user when a line containing more than the specified LENGTH is created.

c. PAGE

SET TERMINAL PAGE=n

The PAGE option is useful for terminals with television-like display screens. The value given to PAGE determines the number of lines which will be listed before the command is suspended and the output pauses. When a PAGE of lines has been listed, WYLBUR issues a CONTINUE? prompt. A response of NO or striking the attention key terminates the command; any other response causes the listing to continue.

SHOW TERMINAL PAGE displays the current value for PAGE; SET TERMINAL NOPAGE causes lines to be listed without pause.

d. RETURN

The RETURN option is useful to users of Teletype-compatible (ASCII) terminals. It sets the speed of the carriage return in terms of column positions per second. If an ASCII terminal is losing or misprinting characters when a carriage return is entered, the default speed of 400 may be reduced to alleviate the problem.

SET TERMINAL RETURN=n

On the other hand, a higher value may be used to reduce the delay following a carriage return.

SET TERMINAL NORETURN may be used on certain display terminals to indicate that no return delay is needed. For further information on the defaults and appropriate settings for various terminals, see Appendix E.

SHOW TERMINAL RETURN displays the current return speed.

e. TAB

The TAB option is similar to the RETURN option except that it sets the delay between the time a tab is performed and the next character is listed.

The default speeds and appropriate settings for various terminals are given in Appendix E.

SET TERMINAL NOTAB indicates that no delay is necessary.

SHOW TERMINAL TAB displays the current tabbing speed.

f. FAST, SLOW

The FAST option of the SET TERMINAL command permits the use of tabs when a series of blanks are encountered on output, while the SLOW option means that blanks are not to be changed to tabs on output.

For information on the appropriate value and default for various terminal models, see Appendix E.

To display whether FAST or SLOW is currently in effect, either the FAST or SLOW option may be used on the SHOW TERMINAL command.

g. FORMFEED

SET TERMINAL FORMFEED

is used to indicate that a terminal supports use of the formfeed character. A formfeed character has a hexadecimal representation of 0C, and can be entered as a control-L on ASCII-compatible terminals. If FORMFEED is in effect and the terminal supports the use of formfeed, a formfeed character sent to the terminal causes a page eject followed by a Carriage Return.

For more information on the effects of the FORMFEED option on various terminal models, see Appendix E.

SET TERMINAL NOFORMFEED indicates that a terminal does not support the use of formfeed. If a formfeed character is sent to the terminal, it will cause a Carriage Return and will list four blank lines.

SHOW TERMINAL FORMFEED displays the current formfeed setting.

3. SET DELTA

The SET DELTA command can be used to change the default line number increment from 1 to another value such as .001, .5, 10, or 50. A DELTA value smaller than 1 may be needed to USE a large non-EDIT-format data set.

4. SET NOTALK

The SET NOTALK command prevents your terminal from receiving messages sent by other users. (Urgent messages from the system will still be received.) The sending user will be told that you are not receiving messages. SET TALK lifts the ban on messages and SHOW TALK displays the option currently in effect.

5. SHOW COUNT

SHOW COUNT displays the number of users currently signed on to the system.

6. SHOW PORT SHOW PORTS

The SHOW PORTS command causes a list of all active sessions connected to WYLBUR to be printed out. SHOW LINES has the same function.

? SHOW PORT (CR)

displays information for the user's session.

SHOW PORT n, SHOW PORT iii and SHOW PORT id display PORT information for the designated sessions. SHOW LINE has the same function.

"n" is the telephone line number assigned to a terminal in the identification message typed at the start of the sign-on process.

"iii" is a registered set of initials.

"id" is the terminal identification number found on the red terminal sticker.

7. SHOW TIME

The amount of editing and elapsed time used so far in a session may be obtained by issuing a SHOW TIME command.

```
? SHOW TIME (CR)
TUESDAY  05/10/77  2:33:24 P.M.
CONNECT TIME = 0:14:48
EDITING TIME = 0.09 SECONDS
```

8. SHOW SIZE

Prints out the number of lines in the active data set.

9. SHOW COLUMNS

SHOW COLUMNS types out a line of numbers representating column positions. Ten spaces are listed at the beginning of the line to provide space for the line number. The number of columns listed is equal to the WIDTH associated with the terminal minus 10 unless the user request that a particular number of columns be printed by specifying them with the LENGTH option.

```
? SHOW COLUMNS LENGTH=45 (CR)

          123456789112345678921234567893123456789412345
?
```

B. User Suggestions, Comments and Complaints

A user can register a suggestion or complaint about any Computer Center service by entering his comments in a clean active data set and then giving the command, SUGGEST. Only suggestions which include name, address and phone number will be answered.

Please do not experiment with this command unless you have a suggestion to make since doing so will send us a listing of whatever you have in the active data set at the time.

All signed suggestions will be considered for publication in the "Dataline" section of INTERFACE. If you wish your name withheld or do not wish to have your suggestion published, please say so in the suggestion.

```
? CLEAR TEXT (CR)
? COL (CR)
  1.    ? I THINK COMPUTER TIME SHOULD COST LESS (CR)
  2.    ? J. Q. User (CR)
  3.    ? Bldg. 19 Rm. 5876 (CR)
  4.    ? (ATTN)***
? SUGGEST (CR)
150 IS YOUR JOB NUMBER
```

The last line is printed because an off-line listing will be done.

The Technical Information Office, will welcome any suggestions you have concerning the content or format of this manual. To reach them, call, use the SUGGEST command, or use the comment form at the back of the manual.

C. Terminal Repair

Requests for repair of terminals ordered through NIH should be reported during normal working hours (8:30-5:00), to Dedicated Equipment Services. Do not use the SUGGEST command; doing so will only delay response to your problem. When you call, be prepared to supply the terminal number (found on the red terminal sticker), the location of the terminal, and a short description of the problem. Leave terminal output illustrating the problem at the terminal with your name, address, and extension, and mark it "ATTN: TERMINAL MAINTENANCE". For further information, see section VI.C. "Public Terminals".

If you are having trouble with your Data Phone, call the repair number given on the Data Phone itself.

D. The Message Facility (TO)

TO n message

TO id message

TO iii message

TO OPERATOR message

These commands are used to send a message to another terminal that is signed on to WYLBUR. "n" is the port number assigned to a terminal in the initial stage of the sign-on procedure. "id" is the terminal identification number found on the red terminal sticker. "iii" is the registered set of initials of a user who is signed onto WYLBUR.

The TO command should be used only when absolutely necessary since it interrupts whatever the receiving user is doing (unless he is using LIST CLEAN).

TO OPERATOR should be used only to respond to a query from a computer operator at the central facility.

APPENDIX A

Short Forms of Words Used in WYLBUR

ACCOUNT	ACC	LEVEL	LEV
AFTER	AFT	LIST	L
ALIGN	ALI	LOCATE	LOC
BACKSPACE	BKSP	LOWER	LOW
BEFORE	BEF	MARKER	MAR
BOX	B	MERGE	MER
CENTER	CEN	MODIFY	MOD
CENTRAL	CEN	NODISCOUNT	NODISC
CHANGE	CH	NOFORMFEED	NOF
CLEAR	CLR	NOLIST	NOL
COLLECT	COL,C	NOT	
COLUMN	COL	NUMBER	NUM
COLUMNS	COL	NUMBERED	NUM
CONTROL	CNTL,CTL	OFFLINE	OFF
CURRENT	CUR	OPERATOR	OPER,OPR
DELETE	DEL	OUTPUT	OUT
DENSITY	DEN	PREFIX	PRE
DISCOUNT	DISC	PRINT	PRT
DSNAME	DSN	PUNCH	PUN
DSNAMES	DSNS	REMEMBER	REM
ESCAPE	ESC	REMOTE	REM,RMT
EXCLUSIVE	EXC	REPLACE	REP
FASTLIST	FAST	RETRIEVE	RET
FETCH	FET	RETURN	RTN
FIRST	F	SCRATCH	SCR
FORGET	FOR	SHOW	SH
FORMFEED	FF	SLOWLIST	SLOW
IGNORE	IGN	SPACE	SP
INDENT	IND	SUGGEST	SUG
INITIALS	INIT	SUPPLANT	SUP
INSERT	INS	TERMINAL	TERM
JUSTIFY	JUS	UNNUMBERED	UNN
KEYWORD	KEY	UPPER	UPP
LAST	L	VOLUME	VOL
LENGTH	LEN	WIDTH	WID

The user can employ either the long or short form of a command. Notice that there are no periods after the short forms.

APPENDIX B

Sample Job Control Statements

Simply by using a few Job Control Language (JCL) statements, even those who are not programmers can take advantage of pre-written procedures to accomplish many tasks which enhance the usefulness of their terminals. Many more procedures are described in the "Utilities" section of the Computer Center Users Guide.

In the examples below, items in upper case are to be entered exactly as shown. User-supplied items are indicated in lower case. Since every program submitted to the computer for processing must begin with a JOB statement, it is described first.

Because all Job Control Language statements must be entered in upper case, SET UPPER should be in effect at the terminal when they are collected. Take particular care to enter all punctuation and spaces exactly as shown. The CHANGE command can be used to salvage JCL inadvertantly entered while UPLOW was set.

When the necessary Job Control Language statements have been entered, they may be submitted to the computer using WYLBUR's RUN command, (see section VII.C.)

1. The JOB Statement

The simplest form of the JOB statement is:

```
//jobname    JOB    (aaaa,box),name
```

jobname — 3-8 characters. Characters 1-3 must be the programmer's set of registered initials; they must be a valid combination with the account number defined below. See section I.A "Registering to Use WYLBUR" for information on how to obtain a valid set of initials, an account number, and an output box. The last 5 letters and/or numbers can be a name chosen by the user to identify the job.

aaaa — -Account number

box — -Box number of computer output box; 1-3 digits (or M followed by 1-3 digits for mailing purposes).

name — -Programmer's name; 1-13 characters, no spaces. Must be enclosed in single quotes if it contains any character which is not a letter, number, or period.

All of the items above are required; the additional ones, listed in the Users Guide are used only as needed. If the simplest form of the JOB statement is used, the job will be run as Class B. This class permits the use of magnetic tapes and is usually completed within two hours.

Small jobs which do not require a tape (for example, an EDSSORT, described below), may use class A. A class A JOB statement may have the following format:

```
//jobname    JOB    (aaaa,box,A),name
```

A class A job is usually completed within 30 minutes.

For detailed information on job classes and standards, see the Users Guide.

2. Recovering Lost Data Sets (ADSRECOV)

The Computer Center copies each of the online FILE packs onto tape for backup purposes twice a week (Wednesday and Saturday). These tapes are kept for approximately three weeks before the tapes are recycled. The WYLBUR data set, &PUBLIC.BACKUPS, described in section VI, "Public Information Data Sets", contains the exact dates and times the backup tapes were made.

The Job Control Language to recover a data set from the most recent backup tape is as follows:

```
//  (class A JOB statement)
//  EXEC  ADSRECOV
//SYSIN  DD  *
RECOVER  NAME='aaaaiii.dsname',DISK=fileser
```

where "aaaa" is the user's account number.
"iii" is his set of registered initials.
"fileser" is the disk pack where the data set was stored.

The ADSRECOV job submitted to the system by the user does not perform the actual recovery itself. Instead, this job will create and submit to the system another job which will actually perform the recovery process for the data set. Thus, the user submitting an ADSRECOV job, which includes at least one RECOVER control statement, will receive two pieces of printed output:

1) The output of the ADSRECOV job, which contains information concerning the job that was submitted (such as the job number and exactly what data sets will be recovered by the job).
2) The output of the job that performed the actual recovery which will tell the user if each data set was recovered properly, and if not, the problems encountered.

A request to recover more than one data set, either on the same FILE pack or on different FILE packs, can be made by using multiple RECOVER control statements.

```
//  (class A JOB statement)
//  EXEC  ADSRECOV
//SYSIN   DD  *
RECOVER   NAME='aaaaiii.dsname1',DISK=fileser
RECOVER   NAME='aaaaiii.dsname2',DISK=fileser
RECOVER   NAME='aaaaiii.dsname3',DISK=fileser
```

The control statement can specify that an earlier backup tape be used by including the DATE parameter.

```
RECOVER   NAME='aaaaiii.dsname',DISK=fileser,DATE=mm/dd/yy
```

If this control statement were used, the backup done on the specified mm/dd/yy or, if none was done on that date, the backup done on the nearest preceeding date would be used.

If a data set with the same name exists on the same disk at the time the recovery is done, the job will fail unless STATUS=OLD is specified to scratch the existing data set.

```
RECOVER NAME='aaaaiii.dsname',DISK=fileser,STATUS=OLD
```

Alternatively, a user may wish to use the NEWNAME and NEWDISK parameters. NEWNAME permits the user to specify a new name for the data set after it is recovered. NEWDISK permits the user to specify that the recovered data set is to be placed on another FILE or TMP pack.

```
//  (class A JOB statement)
//  EXEC  ADSRECOV
//SYSIN   DD  *
RECOVER   NAME='aaaaiii.dsname',DISK=fileser,
          NEWNAME='aaaaiii.dsname',NEWDISK=fileser
```

Use of the RECOVER ALL control statement, which allows the user to recover the entire contents of a disk from his private backup tape, is described in the Computer Center Users Guide.

The SET control statement is used to specify characteristics of the recovery job that is submitted by the ADSRECOV procedure. Any number of SET control statements can be included. If the same parameter appears more than once, the parameter encountered last is used. All the parameters are optional.

```
SET  REMOTE=n
SET  PRINT=n
```

Specifies the number of the remote terminal where the output of the recovery job submitted by the ADSRECOV procedure is to be sent. If it is not specified, the output is printed at the central facility.

SET HOLD

Specifies that the recovery job is to be placed in OUTPUT HOLD after it has completed execution. If this is not specified, the job is printed after it completes execution.

SET NOPURGE

Specifies that the recovery job routed to OUTPUT HOLD is to be printed (instead of purged) after the standard interval. If it is not specified, the output will be purged after the standard interval.

SET QUICK

Specifies that the recovery job is to have the QUICK attribute, for fast processing of jobs submitted between 6 p.m. and 6 a.m. weekdays and all day on weekends. Note that unless the ADSRECOV job submits the recovery job during these hours, QUICK will be ignored.

SET NOTIFY

Specifies that the user is to be notified when the recovery job completes execution if he is then signed on to WYLBUR or TSO.

SET DISCOUNT

Specifies that the recovery job is to be placed in the queue for DISCOUNT processing.

SET TIME

Specifies a maximum time for the recovery job in CPU seconds. If it is not specified, the default time for the automatic class of the recovery job (which is based on the mountable devices needed) will be used. If TIME is specified, the class of the recovery job will be changed if necessary to permit the time allotted.

```
//  (class A JOB statement)
//  EXEC  ADSRECOV
//SYSIN   DD  *
RECOVER   NAME='AAAAIII.LETTER',DISK=FILE09,DATE=8/16/77
RECOVER   NAME='AAAAIII.MANUAL',DISK=FILE17,
          NEWNAME='AAAAIII.WYLBUR.MANUAL',NEWDISK=TMP001
RECOVER   NAME='AAAAIII.UPDATE',DISK=FILE10,STATUS=OLD
SET       HOLD
```

In the example above, there are three data sets being recovered. The first data set, AAAAIII.LETTER on FILE09, will be recovered from the backup tape on the specified date, or from the nearest preceeding date. The second data set, AAAAIII.MANUAL on FILE17, will be recovered with the new name AAAAIII.WYLBUR.MANUAL on TMP001. The last data set, AAAAIII.UPDATE, presently exists on FILE10; it will be scratched and replaced with the version from the most recent backup tape.

The SET HOLD control statement causes the output from the job that performs the recoveries to be routed to OUTPUT HOLD, after it has completed execution.

3. Saving Data Sets on Tape (DSSAVE)

The following Job Control Language can be used to copy a WYLBUR data set from an online disk pack onto a preassigned tape. To obtain a preassigned tape, call the Information Media Library. Be prepared to tell them your account number, registered initials, and a descriptive name to be placed on the external label on the tape reel.

```
// (class B JOB statement)
/*MESSAGE    serial,W
//  EXEC  DSSAVE,NAME='aaaaiii.dsname',
//        DISK=fileser,TAPE=serial
```

where "serial" is the number of the user's preassigned tape.
"fileser" is the disk pack where the data set has been stored.

If a data set is to be scratched from the disk after it has been saved on tape, it is a good idea to save it on two different tapes since magnetic tape does deteriorate with time.

More than one data set can be put on the same tape.

```
// (class B JOB statement)
/*MESSAGE    serial,W
//  EXEC  DSSAVE,NAME='aaaaiii.dsname1',
//        DISK=fileser,TAPE=serial,SEQ=seqno
//  EXEC  DSSAVE,NAME='aaaaiii.dsname2',
//        DISK=fileser,TAPE=serial,SEQ=seqno
          .
          .
          .
```

where "seqno" is the sequence number of the data set on tape.

Up to 45 data sets can be saved by a single job. The data sets must be saved in the order in which they are to appear on the tape. For example, data sets 1 and 2 must be put on the tape before an attempt is made to write a data set with sequence number 3.

Sequence numbers must not be skipped. For example, data set 4 cannot be copied to the tape until data set 3 exists.

Later jobs can put one or more additional data sets on the tape. Note, however, that when a data set is put on the tape, all information following it on the tape is destroyed. Thus, writing data set 3 destroys old data set 3 and all those which followed it.

4. Copying Data Sets from Tape (DSGET)

The following Job Control Language can be used to copy a data set from a tape onto one of the online FILE or TMP packs.

```
// (class B JOB statement)
/*MESSAGE    serial,R
//   EXEC   DSGET,NAME='aaaaiii.dsname',
//        DISK=fileser,TAPE=serial
```

where "serial" is the number of the preassigned tape which contains the data set.
"fileser" is the FILE or TMP pack where you want to put the data set.

If the tape contains more than one file, the sequence number must be given.

```
// (class B JOB statement)
/*MESSAGE    serial,R
//   EXEC  DSGET,NAME='aaaaiii.dsname',
//        DISK=fileser,TAPE=serial,SEQ=seqno
```

where "seqno" is the sequence number of the data set on tape.

5. Listing Available Space on the Online Packs (PUBLIST)

The following Job Control Language can be used to obtain information on how much space is available on each of the online FILE, TMP and PDS packs. The PDS packs cannot be used to save data sets from WYLBUR; for further information, see the Users Guide.

```
// (class A JOB statement)
//   EXEC  PUBLIST
```

The listing, which is produced at the central facility, includes information on the number of free tracks, cylinders and table of contents entries. The information in this listing is current when the job is executed.

6. Alphabetizing Data Sets (EDSSORT)

The following Job Control Language can be used to put up to 9,999 lines of an EDIT format data set into alphabetical and numerical order and save the sorted output into a new data set.

```
//  (JOB statement)
//  EXEC   EDSSORT,NAME='aaaaiii.dsname',DISK=fileser,
//          NEWNAME='aaaaiii.newdsname',NEWDISK=newfile
//EDSSORT.SYSIN  DD  *
  SORT  FIELDS=(col,len,order,....),FORMAT=CH
```

where "newdsname" is the name to be given to the sorted copy of the data set.
"newfile" is the online disk on which the sorted data set is to be stored.
"col" is the starting column number of the field to be used to sort the lines in the data set.
"len" is the length of the field.
"order" is A for ascending order or D for descending order.

"col", "len" and "order" are given once for each field to be used to sort the data set. If the SORT statement is to be continued onto the next card, it should be broken after a comma and column 72 must contain a non-blank character. The continuation card must start in column 16. Notice that the first few columns of the SORT statement should be left blank.

7. Retrieving Multiple Data Sets With a Single Job

The following Job Control Language shows how a single job may be used to retrieve more than one data set which has been migrated from a FILE disk. For information on the migration service, see section V, "Data Set Migration."

```
// (class C JOB statement)
/*RETRIEVE retrieval number
/*RETRIEVE END
/*RETRIEVE aaaaiii.dsname
/*RETRIEVE END
/*RETRIEVE retrieval number NEWNAME=aaaaiii.new dsname
/*RETRIEVE END
/*RETRIEVE retrieval number DISK=fileser
/*RETRIEVE NEWNAME=aaaaiii.dsname VOL=FILEnn
```

where "retrieval number"	is the appropriate number of the form n/m
"aaaaiii.dsname"	is the complete name of a data set to be retrieved
NEWNAME=	permits the retrieved data set to be renamed
DISK=	specifies the disk to which the data set is to be retrieved
VOL=	specified the FILE disk from which the data set is to be retrieved
END	END is needed to separate retrieval requests

Approximately 10 data sets may be retrieved per job using this method. If more are to be retrieved, additional class C jobs should be submitted.

8. Entering Card Decks into a Data Set

A facility is available which permits a deck of cards to be read in, and a copy immediately placed into the OUTPUT HOLD queue without executing a job. Once in OUTPUT HOLD, the data may be accessed with the FETCH command and saved in an online data set with the SAVE command or otherwise manipulated with WYLBUR's editing commands. The job will be released from the OUTPUT HOLD queue according to the normal schedule, unless it is otherwise disposed of.

To use this facility, use the following control cards:

```
//    (JOB card)
/*KEYWORD kkk
/*DECK
(deck of cards to be placed in OUTPUT HOLD)
```

The listing in the OUTPUT HOLD queue will contain a few lines of system output preceding the input data. These lines may be removed with WYLBUR's DELETE command. In addition, an ASA carriage control character will be placed at the beginning of each line. These control characters may be deleted with WYLBUR's CHANGE command (i.e., CHANGE 1/1 to '' IN ALL NOLIST).

All cards following the /*DECK card through end of file at the card reader are placed in OUTPUT HOLD. Thus, /*DECK jobs cannot be stacked with other jobs in the card reader. JES2 control cards (e.g., /*NOPURGE), as described in the Users Guide, may be placed before the /*DECK card. Because no job is executed, the job class and other execution parameters on the JOB card, have little or no meaning. The cost of the process is $0.87 per one thousand lines placed in the OUTPUT HOLD queue.

APPENDIX C

FETCH Command

A. FETCH Command Example

The FETCH Command, described in detail in section VII.C.2 "FETCH, PRINT and PURGE", is used to inspect output from batch jobs at the terminal.

The following example shows how FETCH can be used to find a JCL error. The example takes advantage of the fact that JCL error messages have message numbers beginning with 'IEF' in column two.

```
? COLLECT                          create program
   1.   ? //IIIFETCH  JOB  (AAAA,999,A),DOE
   2.   ? //   EXEC  FORGCOMP
   3.   ? //COMP.SYSIN   DD   *
   4.   ?       WRITE(15,100)
   5.   ? 100   FORMTA(' HELP, I AM TRAPPED INSIDE OF THIS MACHINE!')
   6.   ?       END
   7.   ? /*
   8.   ? //   EXEC   FORGLKGOO
   9.   ? ***
? SAVE EXAMPLE ON FILE03           save program for later use
"EXAMPLE" SAVED ON FILE03
? RUN HOLD                         run job - to be FETCHed
718  IS YOUR JOB NUMBER.
? LOCATE 718                       test status of job
JOB 718  IIIFETCH IN OUTPUT HOLD           job finished execution - awaiting FETCH
? FETCH 718 CLEAR                  FETCH output of job
? LIST UNNUMBERED CC               list output using ASA carriage control


                  J E S 2   J O B   L O G   --   S Y S T E M   C P U 4   --   N O D E   N I H M V S

  12.52.11 JOB 718 IEF452I IIIFETCH  JOB NOT RUN - JCL ERROR
***(ATTN)


? LIST 'IEF'                       search for JCL errors
   2.      -12.52.11 JOB 718 IEF452I IIIFETCH  JOB NOT RUN - JCL ERROR
  26.           4     IEF653I SUBSTITUTION JCL - PARM='NOLIST,MAP,ID,LINECNT=60,TERM'
  27.          10     IEF632I FORMAT ERROR
? LIST '10'1/6                    list statement 10 containing JCL error
  23.          10     //  EXEC  FORGLKGOO
  27.          10     IEF632I FORMAT ERROR
? PURGE 718                        delete job
JOB 718 WILL BE PURGED
?
```

After the JCL error has been corrected and the job is run again, the output is examined for compiler errors. Since FETCHed output contains ASA carriage control characters, the first line of each page is easily listed.

```
? USE EXAMPLE ON FILE03 CLEAR       bring back program
? MODIFY 8                          correct JCL error
   8.     //  EXEC  FORGLKGOO
 ALTERS ?                   d
   8.     //  EXEC  FORGLKGO
 ALTERS ?
? SAVE EXAMPLE ON FILE03 SCRATCH    save program
"EXAMPLE" REPLACED ON FILE03
? RUN HOLD                          run job - to be FETCHed
721  IS YOUR JOB NUMBER.
? LOCATE 721                        test status of job
JOB 721  IIIFETCH IN OUTPUT HOLD          job finished execution - awaiting FETCH
? FETCH 721 CLEAR                   FETCH output of job
? LIST 'JCL ERROR'                  check for JCL error
VOID RANGE.
? LIST '1' 1                        list page headings
   1.     1                     J E S 2  J O B  L O G  --  S Y S T E M  C P U 4  --  N O D E  N I H M V S
   4.     1    1      //IIIFETCH  JOB  (ZZZZ,999,A),DOE                                  JOB 721
 148.     1G1 COMPILER ENTERED
 155.     1  FORTRAN IV G1  REL...
? LIST 148/LAST UNNUMBERED CC       list statistics from compiler


G1 COMPILER ENTERED
   5.     100 FORMTA(' HELP, I AM TRAPPED INSIDE OF THIS MACHINE')
             $
01)   IGI013I SYNTAX
SOURCE ANALYZED
PROGRAM NAME = MAIN
* 001 DIAGNOSTICS GENERATED, HIGH...
? PURGE 721                         delete output of job
JOB 721 WILL BE PURGED
?
```

The compiler error is corrected and the job is rerun. Since there are no compiler errors, the last line, containing a message, is listed.

```
? USE EXAMPLE ON FILE03 CLEAR       bring back program
? CHANGE 'FORMTA' TO 'FORMAT' IN 5  correct compiler error
   5.     100   FORMAT(' HELP, I AM TRAPPED INSIDE OF THIS MACHINE!')
? SAVE EXAMPLE ON FILE03 SCRATCH    save program
"EXAMPLE" REPLACED ON FILE03
? RUN HOLD                          run job - to be FETCHed
723  IS YOUR JOB NUMBER.
? LOCATE 723                        test status of job
JOB 723   IIIFETCH IN OUTPUT HOLD         job finished execution - awaiting FETCH
? FETCH 723 CLEAR                   FETCH output of job
? LIST 'G1 COMPILER ENTERED'        check for compiler errors
 188.     1G1 COMPILER ENTERED
? LIST 189/LAST UNNUMBERED CC
SOURCE ANALYZED
PROGRAM NAME = MAIN
*  NO DIAGNOSTICS GENERATED...
? LIST LAST                         list answer
 259.      HELP, I AM TRAPPED INSIDE OF THIS MACHINE!
? PRINT 723                         print output of job
JOB 723  WILL BE PRINTED
?
```

B. Managing Fetched Output

Listing all of the output of a fetch job is very time consuming. Unwanted data can be eliminated and specific useful items can be located by using associative ranges in the DELETE and LIST commands. If important information is accidently deleted, the output of the job can be fetched again since it is held until it is PRINTed or PURGEd.

When searching for error messages, the following examples may be helpful. Just listing the message is usually not sufficient; the lines to be looked at are usually either immediately above the message or are identified in the error message. Explanations of the messages may be found in the appropriate IBM reference manual.

To find a particular line of output, use associative ranges to search for a known character string:

? LIST 'string' (CR)

Since column one contains ASA carriage control (see section VII.A. "LIST OFFLINE") it is easy to locate the head of each page of output.

? LIST '1' 1 (CR)

If you know approximately where the output you are interested in appears, line numbers can be used to list that portion.

It is easy to either LIST or DELETE accounting information since it contains an '*' in column 133.

? DELETE '*' 133 IN ALL (CR)

JCL messages:

JCL messages are prefixed by IEF. It is sometimes advantageous to delete some of the most common messages and then list those remaining. Some of the common messages are:

IEF236I ALLOC. FOR jobname stepname

> Identifies the job and step for which devices were being allocated.

IEF237I device ALLOCATED TO ddname

Names the devices allocated to each DD statement.

IEF272I jobname stepname STEP WAS NOT EXECUTED

Indicates step was not executed, perhaps due to a JCL error or an ABEND in this or some other step.

IEF285I dsname disposition
IEF285I VOL SER NOS = serial number, ...

Gives disposition for the data set named dsname for the volumes serial numbers listed.

IEF373I STEP/stepname/ START year date.hour minutes

Indicates time, date step was started.

IEF374I STEP /GO / STOP date.time CPU ...

Gives step completion time, date, CPU time, and bytes of core used in the step.

IEF653I SUBSTITUTION JCL - text

Lists text that results from symbolic parameter substitution in catalogued procedures. This message may show the source of a JCL error.

The DELETE command can be used to remove JCL messages you don't want to list. For example, all data set disposition messages can be deleted.

? DELETE 'IEF285I' IN ALL (CR)

The remaining JCL messages contain 'IEF' beginning in column 2 and can be listed.

? LIST 'IEF' 2 (CR)

FORTRAN

1. FORTRAN-G1

At the beginning of each compiler step is a listing containing the statistics for the step. If an error occurs, the line in error is listed along with the error message. The first line of the page containing the statistics contains the title "G1 COMPILER ENTERED".

Execution error messages begin with IHN. To list them, enter

? LIST 'IHN' (CR)

Some IHN error messages consist of several lines. IHN errors may contain compiler line numbers. Compiler line numbers (four digits with leading zeros beginning in column five) can be used to locate a specific statement. For example, statement 15 can be listed.

? LIST '0015' 5 (CR)

2. FORTRAN-H

The fact that compiler messages have numbers beginning with IEK can be used to search for error messages.

? LIST 'IEK' (CR)

The IEK messages are prefixed with a character string which refers to three possible sources of error: (1) ISN refers to a compiler line number; (2) LABEL refers to a FORTRAN statement number; and (3) NAME refers to a variable name.

Compiler line numbers (four digits with leading zeros beginning in column nine) can be used to locate a specific statement. For example, statement 7 can be listed.

? LIST '0007' 9 (CR)

Some errors are marked with a message immediately following the incorrect statement. Such messages can be listed by entering

? LIST 'ERROR DETECTED' (CR)

Statistics are listed at the end of each compilation. The number of diagnostics generated and the highest severity code set for a compilation can be listed.

? LIST 'DIAGNOSTICS' (CR)

Execution error messages begin with IHC and may contain compiler line numbers. To list them, enter

? LIST 'IHC' (CR)

Some IHC error messages consist of several lines. They may refer to compiler line numbers.

3. WATFIV

The fact that WATFIV error messages contain the string '***ERROR***', can be used to search for these messages.

? LIST '***ERROR***' (CR)

Look at the lines immediately above this line for program statement errors and immediately below this line for execution errors.

Program statement numbers (five digits with leading blanks beginning in column three) can be used to locate a specific statement. For example, statement number 92 can be listed.

? LIST ' 92' 3 (CR)

The program statements can be listed by listing the lines following the line number found by entering

? LIST '$WATFIV' (CR)

The output can be listed by listing the lines following the line number found by entering

? LIST '$ENTRY' (CR)

A line after the output can be listed by entering

? LIST '$STOP' (CR)

COBOL

In COBOL, the error messages are all listed following a line which contains the string "ERROR MESSAGE". Each COBOL compiler message refers to a compiler line number. The compiler line numbers (five digits with leading zeros beginning in column two) can be used to locate a specific statement. For example, compiler line number 38 can be listed.

? LIST '00038' 2 (CR)

The severity of the error is indicated by a 'W' (warning), 'C' (conditional), 'E' (error), or 'D' (disastrous error) appearing immediately after the compiler error number.

PL/I

The fact that compiler error numbers begin with IEL, for PL/I Optimizer and IEN for PL/I Checkout can be used to search for compiler errors. For example,

? LIST 'IEL' (CR)

IEL and IEN compiler errors are located between two specific lines: 'COMPILER DIAGNOSTIC' and 'END OF COMPILER DIAGNOSTIC'. The messages are grouped according to the severity of the error. There are four categories of errors, with the messages pertaining to a category appearing immediately after a line indicating the category. The four lines are (1) UNRECOVERABLE, (2) SEVERE and ERROR, (3) WARNING, and (4) INFORMATORY.

Some compiler error messages contain the compiler line number. The compiler line numbers (five digits with leading blanks beginning in column three) can be used to locate a specific statement. For example, compiler line number 76 can be listed.

? LIST ' 76' 3 (CR)

Execution error messages, which usually contain the compiler statement number, begin with IBM for PL/I Optimizer and IEN for PL/I Checkout. Some IBM Messages consist of several lines.

ASSEMBLER

The number of statements flagged by the assembler can be listed by searching for the string "STATEMENTS FLAGGED". The compiler errors can be listed by listing the lines following the line containing "ASSEMBLER (F) DONE" or "ASSEMBLER (G) DONE" beginning in column 2.

LINKAGE EDITOR and LOADER

The fact that the LINKAGE EDITOR and the LOADER have message numbers beginning with IEW can be used to search for these messages.

? LIST 'IEW' (CR)

The LINKAGE EDITOR will list the error messages after a line that can be easily searched by entering

? LIST 'DIAGNOSTIC MESSAGE DIRECTORY' (CR)

After listing what the messages are, it may be necessary to search for the complete message number in order to solve the problem.

Depending on the options specified and the language being used, some messages that appear don't indicate an error.

UTILITIES

The IBM Utilities have message numbers beginning with either IEB or IEH. IBM Utilities having names beginning with IEB have message numbers beginning with IEB; those having names beginning with IEH have message numbers beginning with IEH. To search for messages when using the IEBGENER Utility, enter

? LIST 'IEB' (CR)

Some of the procedures supported by the Computer Center Branch use the IBM Utilities and therefore IEB and IEH can be used to search for messages when using these procedures. The following list indicates how to search for messages when using these procedures.

IEB: COMPARE, COPY, DSCARDS, DSLIST, DSPUNCH, IDSGET, IDSGETRN, IDSSAVE, PRINT, PUNCH

IEH: DDSGET, DDSSAVE, DISKGET, PDSGET, PDSSAVE, UNCATDS

The following procedures print messages at the top of a page:

DSGET, DSSAVE, EDSCARDS, EDSIN, EDSLIST, EDSOUT, EDSPUNCH

Remember the top of each page can be listed by entering

? LIST '1' 1 (CR)

SORT/MERGE

The fact that SORT/MERGE message numbers begin with IGH can be used to search for messages when using the SORT or MERGE programs.

? LIST 'IGH' (CR)

The Computer Center Branch supports the EDSSORT, BIGSRT, and LITSRT procedures for using SORT and the MERGE procedure for using MERGE.

APPENDIX D

Using WYLBUR from Teletype Terminals

Users who have model 33, 35, 37 or 38 Teletypes (or terminals compatible with them) can use WYLBUR, but their operation differs in several respects from that of the Selectric terminals.

A. Sign-on Procedure

1. Turn the duplex switch on the Teletype to half-duplex, the speed switch to ten or thirty characters per second, and the parity switch to even. Some terminals may not have all of these switches. WYLBUR does not support 15 characters per second transmission or odd parity. However, terminals without parity checking may be used. Full duplex Teletypes equipped with an acoustic coupler may be used; set the DUPLEX switch on the coupler to half.

2. If you are using an acoustic coupler, follow the appropriate procedure in Appendix F.

If you are using a telephone company Data-Phone, do the following:

1. Depress the TALK button on the data-phone.
2. Dial the WYLBUR Teletype number found on the red terminal sticker.
3. Wait for a high-pitched tone, which should occur after one or two rings, and depress the DATA button which should then light up. Hang up the phone; the DATA button will stay lighted.
4. Type a comma followed by the appropriate model number in the chart below and then strike the carriage return. (Model 37 is assumed if only a comma is entered).

Users can determine which model they are using by how the terminal reacts when a backspace is transmitted to it. If it cannot backspace then it is a 33; if it can then it is basically a 37. Note that upper/lower case makes no difference to WYLBUR since it will accept lower case from a 33 and send it on output. There may be instances where a user wishes to sign a 37 on as a 33 or vice versa (if it lacks a vertical bar, for example).

For the purposes of WYLBUR the differences between models 33 and 37 teletypes are as follows:

Character	treated on 33 as:	treated on 37 as:
"BS"	used if available	"BS"
"<-"	"BS"	"_"
"_"	"BS"	"_"
"\"	"|"	"/"

"BS" - backspace key

Models 33 and 37 are the basic Teletype functional units. The model 35 is basically a model 33 and the model 38 is a 10 CPS version of the model 37.

B. Other Differences

1. Use the BREAK key in place of the attention key.

2. If your terminal has a BRK-RLS button and it lights up, press it to turn it off and unlock the keyboard.

3. Model 33 and 35 Teletypes have no backspace key. Use the left arrow to erase a character typed in error. The account number and keyword are not over-printed on Models 33 and 35.

4. Teletype compatible terminals cannot distinguish between an upper case backspace and a lower case backspace. However, backspaces may be entered in the text, when SET BACK is in effect, by either of the following methods:

   a. To enter one backspace, type Control-Z followed by a backspace. (Control-Z normally causes no action at the terminal.)

   b. To enter multiple backspaces in a line, precede them with Control-N; Control-O or a carriage return restores the backspace to its erasing function.

5. Tabs will not be used for output for Models 33 and 35 since not all have the ability to tab. If you wish to SET TABS and have them used on output, enter the SET TERMINAL FAST command.

6. Not all Teletypes have lower case letters, so the SET UPLOW command may not be meaningful. The SET LOWER command makes it possible to enter lower case letters from such terminals. All letters entered after a SET LOWER command has been given will be in lower case. To enter an upper case character when SET LOWER is in effect, precede it with a Control-Z. Similarly, if SET UPPER is in effect, a character preceded by Control-Z will be entered as lower case.

7. On Models 33 and 35, the reverse slash is used for vertical bar (|) and up-arrow for not-sign (¬). On the Model 37, the not-sign may be shown as up-arrow or circumflex (hat).

8. Paper tape readers, tape cassettes, floppy disks, etc., may be used with WYLBUR if the data has an XOFF (Control-S) and a DEL (RUBOUT) character at the end of every line. In addition, CR (carriage return) and LF (line feed) characters may be present immediately before the XOFF. If a unit has the ability to stop at the end of each line and wait for the signal from the computer to send the next line (XON), then it may be used to send data to WYLBUR which does not have XOFF and DEL (RUBOUT) characters at the end of each line. In this case, each line must end with a CR character. Optionally, the CR character may be followed by an LF character. Data listed with WYLBUR has CR, LF, XOFF and DEL characters at the end of each line and, therefore, may be recorded and read back in.

APPENDIX E

Tables of Terminal Characteristics

1. Terminal Sign-On Codes

The data set &PUBLIC.TERMINALS contains current information on terminals supported by WYLBUR.

The following table summarizes the terminal type codes and SET TERMINAL command options which should be specified when logging onto WYLBUR with some of the more popular terminals. The SET TERMINAL options are given only as a guide. Terminals with certain optional features or certain option settings may require different parameters. For information regarding your terminal's requirements contact the supplier of the terminal.

TERMINAL	TYPE CODE	SET TERMINAL
IBM 2741 (EBCD keyboard)	,2741	WIDTH=156 if 12 pitch
IBM 2741 (correspondence keyboard)	,2741	WIDTH=156 if 12 pitch
IBM 2741 (correspondence keyboard with PL/I type element)	,PL/I	WIDTH=156 if 12 pitch
Teletype Model 33*	,33	
Teletype Model 35*	,35	
Teletype Model 37*	,37	
Teletype Model 38*	,38	
Anderson-Jacobson AJ 630*	,AJ630	
DECwriter LA-36*	,LA36	
Delta Data NIH5200	,NIH5200	
Tektronix 4006, 4010, 4012, 4013,4014, 4015*	,T4010	
Anderson-Jacobson AJ 832*	,37	NORETURN, NOTAB, WIDTH=132
Anderson-Jacobson AJ 841* (EBCD keyboard)	,2741	WIDTH=156 if 12 pitch
Anderson-Jacobson AJ 841* (correspondence keyboard)	,2741	WIDTH=156 if 12 pitch
Anderson-Jacobson AJ 841* (correspondence keyboard with PL/I type element)	,PL/I	WIDTH=156 if 12 pitch
Anderson-Jacobson AJ 860*	,37	WIDTH=132, NORETURN, NOTAB
Carterfone S15B* (EBCD keyboard)	,2741	WIDTH=156 if 12 pitch
Carterfone S15B* (correspondence keyboard)	,2741	WIDTH=156 if 12 pitch
Carterfone S15B* (correspondence keyboard with PL/I type element)	,PL/I	WIDTH=156 if 12 pitch
Computer Devices (most models)*	,37	
Computer Devices CDI 1132*	,37	WIDTH=132
Datagraphix 132A*	,37	WIDTH=132, PAGE=29, NORETURN, NOTAB

TERMINAL	TYPE CODE	SET TERMINAL
DEC VT50*	,37	NORETURN, NOTAB, PAGE=11
DEC VT52*	,37	NORETURN, NOTAB, PAGE=23
DECwriter LS-120	,37	WIDTH=132, NORETURN, NOTAB
Delta Data 4000*	,37	NORETURN, NOTAB, PAGE=24
Delta Data 5000*	,37	NORETURN, NOTAB, PAGE=26
Diablo 1620*	,37	NORETURN, NOTAB, WIDTH=132
Execuport 300 series*	,37	WIDTH=132
Execuport 3000*	,37	RETURN=600, WIDTH=136
Gen-Com GSI 300Q*	,37	NORETURN, NOTAB, WIDTH=132
Hazeltine 2000*	,37	NORETURN, WIDTH=74, PAGE=26
Hewlett Packard HP-2640*	,37	NORETURN, NOTAB, PAGE=23
Lear-Siegler ADM1*	,37	NORETURN, NOTAB, PAGE=23
Lear-Siegler ADM2*	,37	NORETURN, NOTAB, PAGE=23
Lear-Siegler ADM3*	,37	NORETURN, NOTAB, PAGE=23
Omron 8025AG*	,37	RETURN=999, TAB=999, PAGE=23
Superterm*	,37	WIDTH=132, NORETURN, NOTAB
Tektronix 4023*	,37	NORETURN, PAGE=23
TI Silent 700 (most models)*	,37	
Trendata 4000 and 4000A*	,37	NORETURN, NOTAB, WIDTH=132
Western Union Video 100*	,37	NORETURN, NOTAB, PAGE=23
Xerox 1700 and 3010*	,37	NORETURN, NOTAB, WIDTH=132

* indicates a terminal which is not supplied by the Computer Center. Note that the Computer Center can take no responsibility for the function of terminals obtained from other sources.

2. SET TERMINAL Defaults

TERMINAL	WIDTH	RETURN	TAB	FAST/SLOW	FORMFEED
IBM 2741	131	150	150	FAST	NOFORMFEED
33 TTY	72	400	30	SLOW	NOFORMFEED
35 TTY	72	400	30	SLOW	NOFORMFEED
37 TTY	80	400	30	FAST	FORMFEED
38 TTY	80	400	30	FAST	FORMFEED
NIH5200	80	NORETURN	NOTAB	FAST	FORMFEED
T4010	74	NORETURN	NOTAB	SLOW	FORMFEED
AJ630	140	400	104	FAST	NOFORMFEED
DEC LA-36	132	NORETURN	55	FAST	FORMFEED

APPENDIX F

Using WYLBUR with an Acoustic Coupler

How to Use the Carterfone and Omnitec Acoustic Couplers

1. Be sure that the DUPLEX switch, located on the back of the coupler, is in the FULL position and that the ACST-TEL.TERM. switch, also on the back of the coupler, is set to ACST.

2. Turn the terminal on.

3. Turn the coupler off. The ON-OFF switch is located on the front of the coupler.

4. Dial the number of the computer on your telephone (see the red sticker on the terminal). When the computer answers with its high-pitched tone, place the handset in the cradle of the coupler with the cord coming out the front.

5. Turn on the coupler. The light underneath the ON-OFF switch will come on and remain on as long as the terminal is connected to the computer.

6. Type a comma followed by the model number of your terminal and strike the carriage return.

If you have another model of acoustic coupler, it will probably have switches which perform these functions though they may be in different locations.

APPENDIX G

Printing on Indicia Labels

WYLBUR's LIST OFFLINE command can be used to print a properly formatted address list on NIH self-adhesive Indicia mailing labels.

Before trying to print addresses on the labels, the user must obtain a box of labels from the NIH Self-Service store and take them to Output Distribution Services in Building 12. They will be put in a carton labeled with the name to be used when they are requested. Two types of Indicia labels are available:

Stock Number	Form Number	Description	Cost/Label
7-2308	NIH-1793-8	Book rate under 4 lbs.	$ .82
7-2311	NIH-1793-9	Book rate 4-8 lbs.	$1.32

All of these labels require use of the 1793 carriage control loop. More expensive first class mailing labels are also available and may be used with this loop.

In order to use WYLBUR to put addresses on such labels, the user collects a data set as follows:

```
 1.    ? #
 2.    ? 12A  1017
 3.    ?
 4.    ?
 5.    ?
 6.    ?
 7.    ? Dr. Henry W. Brown
 8.    ? 3516 E. Lambert Street
 9.    ? Chicago
10.    ? Illinois  66876
11     ? #
12.    ? 12A  1017
             .
             .
             .
```

The first line should contain a marker (we used #) in column one. On line 2, the room number begins in column 6. There are four blank lines followed by the address which may take up to six lines. This pattern is used for each label.

When all the labels have been entered, the command,

```
LIST BOX=n FORMS='START PRINT ON 3rd PRINT LINE - USE iiiMAIL
   LABELS and 1793 LOOP' UNN INDENT=20 MARKER=#
```

will cause the mailing list to be printed on Book rate labels for packages under 4 pounds. The command must be typed on one line. The 1793 LOOP is a carriage control loop especially designed for use with these labels. The indentation of 20 positions the building number properly.

A few labels at the beginning and end of each run will be printed with header and trailer information. Save such labels and, when you have $25.00 worth or more, send them with a brief memo giving the appropriate CAN number to receive refund credit to Mr. James Thompson, Building 31, Room B1E-02.

APPENDIX H

Using WYLBUR Under TSO

The editing functions in the TSO version of WYLBUR are the same as those of the standard (non-TSO) version of WYLBUR. The following standard WYLBUR features are not supported in the TSO version, corresponding TSO facilities are shown where applicable:

WYLBUR Facility	TSO Facility
SHOW PORT	SHOWLINE
SHOW PORTS	SHOWLINE ALL
SHOW COUNT	SHOWLINE COUNT
TO	SEND
SET TERMINAL	TERMINAL (same options)
SET TALK	PROFILE INTERCOME
SET NOTALK	PROFILE NOINTERCOME
SET BOX	Box number from LOGON
SET BACK	
SHOW COLUMNS	
LENGTH OPTION OF SET TABS	
CLEAR SCREEN (for CRT terminals)	
CLEAN OPTION OF LIST	
@(ATTN) & $(ATTN) FEATURES OF MODIFY	
Type ball twitch	

TSO's SHOWTIME shows editing time only.

Terminal support is the same as for standard WYLBUR except that the TSO version:

- does not support the correspondence PL/I type element

- supports NIH5200 terminals only as a model 37 Teletype

- tabs will not be used on output to speed up the listing.

The "TSO" parameter of the SAVE command will cause the data set to be saved in a TSO-usable format (i.e., with IBM-style line numbers like 00001000). Data sets saved through WYLBUR are not automatically cataloged for TSO use.

Because TSO data sets must follow standard Operating System rules for data set names, private data sets saved through TSO WYLBUR must begin with an "@" if the user intends to access them via the TSO ALLOCATE command.

APPENDIX I

WYLBUR Messages

This appendix explains many of the messages you may encounter while using WYLBUR. A special effort has been made to include error messages and messages which are not explained in the main body of the text. Some of the messages in this appendix occur very rarely; they are included to assist you in the unlikely event that you should encounter them.

The fixed portions of each message are in upper case. Lower case letters are used for the portions which vary. The messages are alphabetized on the upper case letters only.

ABOVE LOST BECAUSE NO LINE NUMBER AVAILABLE.

Occurs: After an ALIGN or JUSTIFY command.

Explanation: The preceding line has been lost from the active data set because WYLBUR could not find a line number available for assignment to the line.

System Action: The operation is aborted; it has been partially completed. The data set has not been renumbered. WYLBUR prompts for the next command.

User Response: Provide room for the line by manipulating the active data set with the NUMBER, MOVE, SAVE, and DELETE commands. Retype the line into the active data set. Reissue the ALIGN or JUSTIFY command as necessary.

ACCOUNT/INITIALS/KEYWORD DO NOT MATCH JOB VALUES.

Occurs: After a FETCH, PRINT, PURGE, ROUTE, SET JOB or SET LEVEL command.

Explanation: The account, initials, and keyword used when signing on (or in a prefix you have set), or those specified in the command, do not correspond to those assigned to the job when it was submitted for execution.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Re-enter the command including INITIALS=iii and/or ACCOUNT=aaaa (where "iii" is the set of initials used when the job was submitted and "aaaa" is the account). When prompted for the keyword, enter the correct keyword for those particular initials.

aaaa: ACCOUNT INVALID FOR iii.

Occurs: After responding to the ACCOUNT? prompt during sign-on.

Explanation: You have specified an account which does not exist or for which you are not an authorized user.

System Action: The sign-on procedure is restarted.

User Response: Enter only accounts for which you are an authorized user. If in doubt, contact the Project Control Office.

ACTIVE DATA SETS NOT ROUTED

Occurs: After a ROUTE command.

Explanation: The job is already printing at the original location and cannot be redirected.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: If the job is printing at an RJE workstation, a sequence of JES2 commands given in the Users Guide can be submitted at the remote to redirect the output to the central facility.

ACTIVE FILE TOO BIG. COMMAND TERMINATED.

Occurs: After an ALIGN, CENTER, CHANGE, COLLECT, COPY, FETCH, INSERT, JUSTIFY, MODIFY, REPLACE, SUPPLANT or USE command.

Explanation: The command tried to add a line to the active data set or increase the length of a line. More storage was required to accomodate the increased size of the active data set; it was not possible to add storage to the active data set because it was already at the maximum permissible size.

System Action: The operation in process is terminated; it may have been partially completed. WYLBUR prompts for the next command.

User Response: Reduce the size of your active data set. If necessary split it into two or more parts.

"dsname" ALREADY EXISTS ON volume.
TO REPLACE REPLY "YES".

Occurs: After a SAVE command.

Explanation: There is already a data set having the name you specified on the volume you specified. Since duplicate data set names are not permitted on the same volume, WYLBUR is asking you to decide whether to keep the old data or delete the old data set and replace it with the new one.

System Action: WYLBUR issues a "REPLACE?" prompt.

ARE YOU STILL THERE?

System Prompt: Issued by MILTEN (WYLBUR'S terminal controller) after terminal has been idle for five minutes. Will be issued unless SET TERMINAL NOBREAK is in effect.

Explanation: WYLBUR has been waiting five minutes for you to do something.

System Action: If you leave your terminal idle another ten minutes, WYLBUR will issue a LOGOFF command for you. This is true whether or not SET TERMINAL NOBREAK is in effect.

User Response: Enter a command or a line of text if you do not wish to be logged off. (A carriage return is sufficient.) If you do not plan to use the terminal soon, issue a LOGOFF command.

"dsname" CAN'T FIND SPACE AFTER SCRATCH ON volume.

Occurs: After a SAVE command which included the SCRATCH option.

Explanation: WYLBUR has deleted the old data set from the specified volume but cannot find enough space to save the new data set. You are in a dangerous position as you will lose your data set entirely if the system goes down or you lose the phone connection.

System Action: SAVE operation is not performed; WYLBUR prompts for next command.

User Response: Try saving your data set on another FILE pack. If you still can't find space, use the TMP packs.

"dsname" CAN'T FIND SPACE ON volume.

Occurs: After a SAVE command.

Explanation: WYLBUR cannot find enough space on the specified volume to save your data set.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Try saving your data set on another FILE pack. If you cannot find space, use the TMP packs.

CATASTROPHIC DATA FILE ERROR NO. xxxx, LOGGED WITH OPERATOR.

Occurs: After a SAVE, SCRATCH, USE, RUN, PUNCH, LIST OFFLINE, RETRIEVE, LOCATE, PRINT, PURGE, SHOW STATUS, ROUTE or SET JOB command.

Explanation: A serious error occurred when WYLBUR attempted to perform the requested operation.

User Response: Retry the command. If this is not successful, submit a Programmer Trouble Report to the PAL Unit.

COMMAND INTERRUPTED BY ATTENTION.

Occurs: After the attention key is pressed.

Explanation: The command being executed has terminated execution early because the attention key was pressed.

System Action: The operation is aborted; it has been partially completed. WYLBUR prompts for the next command.

User Response: Check the active data set to see if the results of the partially completed command are what you intended.

COMMAND WON'T REPLACE OR INTERLEAVE.

Occurs: In collect mode, or after a COPY or MOVE command.

Explanation: In incrementing to the next line number to be collected, WYLBUR has found that the new number is the same as that of an existing line or that the new number would cause an existing line to fall between lines of collected text. Replacement or interleaving is not permitted.

System Action: WYLBUR aborts the COLLECT operation and prompts for the next command.

User Response: Specify a smaller increment by issuing the COLLECT command with the BY option. If necessary, use the NUMBER command to renumber the data set or move existing lines with the MOVE command.

COPY TERMINATED BEFORE EXTERNAL LINE nnnn.nnn. nnnn.nnn - LAST LINE

Occurs: After an external COPY command (with the FROM option).

Explanation: The external COPY operation has been aborted because there was not enough room for all the lines to be copied. The first line number specified was the next line in the external data set to be copied; the second number is the line number of the last line which was inserted into the active data set.

System Action: The operation is terminated; it has been partially completed. WYLBUR prompts for next command.

User Response: Correct the error condition then reissue the external COPY starting with the external line specified in the message.

DELTA TOO BIG, FETCH TERMINATED.

Occurs: After a FETCH command.

Explanation: While retrieving the output of a job WYLBUR exceeded a line number of 9999.999.

System Action: Aborts the FETCH operation. The active data set contains the output retrieved up to that point. WYLBUR prompts for next command.

User Response: Set DELTA to a small value (such as 0.001) and re-issue FETCH command. If the entire output still won't all fit in the active data set, it must be dealt with in sections. Save the first part of the output and retrieve the next part with the FETCH command using the SKIP option.

END OF SERVICE.

Occurs: After a LOGOFF or LOGON command following END OF SESSION message.

Explanation: The WYLBUR system is being brought down and no new terminal sessions may be started.

System Action: If LOGON was issued, it will be treated as a LOGOFF command.

User Response: Wait until WYLBUR is again available. (Call 654-2771 for a recording.)

END OF SESSION. day date time

Occurs: After a LOGOFF or LOGON command.

Explanation: Indicates end of the terminal session.

System Action: Disconnect telephone connection if LOGOFF, issue sign-on message if LOGON.

9999.999 EXCEEDED.

Occurs: In collect mode.

Explanation: When WYLBUR incremented to the next line number, it was found to be greater than 9999.999, the maximum permissible line number.

System Action: The COLLECT operation is terminated and WYLBUR prompts for the next command.

User Response: Collect with a smaller increment, rearrange lines in data set to provide space for collecting, or use the NUMBER command to renumber the data set with a smaller increment.

9999.999 EXCEEDED. REDONE.

Occurs: After a NUMBER command.

Explanation: When WYLBUR renumbered the data set using the starting line number and/or increment you specified (or the default values), it generated a line number greater than 9999.999, the maximum permissible line number.

System Action: If you specified an increment with the BY option, WYLBUR tries again to renumber the data set, this time starting at 1 and incrementing by 1. If 9999.999 is exceeded again, or if no BY option was specified, the active data set is renumbered using the smallest possible increment (.001); this will always be successful.

EXTERNAL DATA SET FOR COPY MUST BE IN EDIT FORMAT.

Occurs: After a COPY command with the FROM option.

Explanation: The data set specified in the FROM option is not an edit format data set; the COPY command can only process edit format data sets.

System Action: Copy operation is not performed; WYLBUR prompts for next command.

User Response: Convert the external data set to edit format if COPY operation is essential. If data set can be accessed through the CARD, PRINT, or LRECL option of the USE command, the SAVE command can be used to store it as edit format.

xxxxxx: EXTRA OPERAND.

Occurs: After a command.

Explanation: Extraneous operand entered.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

FOR ASSISTANCE, CONTACT THE PAL UNIT, EXT. 496-5525. HOURS ARE 8:30AM to 1PM ON THURSDAYS; 8:30AM to 5PM OTHER WEEK DAYS.

Occurs: After a HELP command.

Explanation: Unlike TSO, there is no HELP facility in WYLBUR.

User Response: Consult this manual; if you still need help, get your terminal listing and call the PAL Unit; they will be happy to assist you.

FROM iii (port): message-text

Occurs: Any time if BREAK is in effect. At end of output or after hitting carriage return if SET TERMINAL NOBREAK is in effect. Messages from other users cannot occur during execution of a LIST command with the CLEAN option.

Explanation: A user on another terminal has sent you a message. The three letters following FROM identify the sender. OPR indicates the message is from an operator at the central facility.

"dsname" HAS AN ILLEGAL BLKSIZE ON volume

Occurs: After a USE or SAVE command.

Explanation: You specified a blocking factor such that the block size (the product of the record length and the blocking factor) was greater than 13,030 when issuing the SAVE command. If the USE command was issued, the data set block size is too large.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Specify a smaller blocking factor.

"dsname" HAS UNDEFINED OR NON-SEQUENTIAL DATA SET ORGANIZATION.

Occurs: After a USE command.

Explanation: The data set you specified is empty or is not a sequential data set. Only sequential data sets can be accessed through WYLBUR.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check to see if an error occurred while the data set was being created.

xxxxxxx: ILLEGAL

Occurs: After entering a command line.

Explanation: You have made an error in entering a command. An option is misspelled, or a required space (or other delimiter) has been omitted, or some other error is present.

System Action: Command is ignored; WYLBUR prompts for next command.

User Response: If error is not obvious, check spelling or abbreviation of command names and options and check to see that you have not left out required blanks (or other delimiters). If in doubt, consult the "WYLBUR Commands" card for the valid forms of the command.

xxxxxx: ILLEGAL CLEAR COMMAND

Occurs: After one of the CLEAR commands.

Explanation: WYLBUR doesn't recognize the word after CLEAR as it is not a legal value.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the command just issued for correct spelling. If the error is not obvious, consult the "WYLBUR Commands" card for valid options.

xxxxxx: ILLEGAL COMMAND.

Occurs: After anything typed while in the command mode which is not recognizable as a command.

Explanation: WYLBUR does not recognize the information typed.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Recheck the information typed. If you meant to give a command, check spelling or abbreviation and reissue the command correctly. If you meant to collect text, simply hit the attention key to get out of the command mode and back to the collect mode and continue collecting text.

ILLEGAL INDENTATION

Occurs: After an ALIGN, CENTER or JUSTIFY command.

Explanation: The INDENT option specified a negative indentation or was otherwise in error.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Specify a valid indentation. The indentation must be less than the current value of LENGTH. A single indentation cannot be negative. If a negative indentation is specified for the second value (n-m), m must be equal or less than n.

ILLEGAL KEYWORD

Occurs: After responding to a KEYWORD? prompt during sign-on or after issuing a command.

Explanation: Your response was not the proper keyword for the combination of user id and account you had specified in the command or in response to the prompts during sign-on.

System Action: If message was issued during sign-on, the sign-on process is restarted. If it was issued during a terminal session, your command is ignored and WYLBUR prompts for the next command.

User Response: Verify the proper keyword before signing on or issuing commands which require a keyword to be supplied. If you have forgotten your keyword, consult the body of this manual for directions on finding out what it is.

x: ILLEGAL MODIFY CHARACTER.

Occurs: After entering a modification line in response to an ALTERS prompt.

Explanation: The modification line starts with a character which is not a valid modify character (n, i, r, d, (CR), @(ATTN), $(ATTN)).

System Action: The modification line is ignored, WYLBUR re-issues the ALTERS ? prompt.

User Response: Enter a line starting with a valid modify character or terminate the modification process.

xxxxxx: ILLEGAL OPTION.

Occurs: After a command is entered.

Explanation: The option mentioned in the message is not valid.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check spelling or abbreviation of the command name and options, and check to see that you have not left out required blanks (or other delimiters). If in doubt, consult the "WYLBUR Commands" card for valid options.

ILLEGAL PORT

Occurs: After a SHOW LINE, SHOW PORT, SHOW LINES, SHOW PORTS, or TO command.

Explanation: The port number you specified in the command is not a valid port number.

System Action: The command is ignored; WYLBUR prompts for the next command.

xxxxxx: ILLEGAL SET COMMAND.

Occurs: After a SET command.

Explanation: WYLBUR doesn't recognize the word after SET as it is not a legal value.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the command just issued for correct spelling. If the error is not obvious, consult the "WYLBUR Commands" card for valid options.

xxxxxx: ILLEGAL SHOW COMMAND.

Occurs: After a SHOW command.

Explanation: WYLBUR doesn't recognize the word after SHOW as it is not a legal value.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the command just issued for correct spelling. If the error is not obvious, consult the "WYLBUR Commands" card for valid options.

ttt: ILLEGAL TERMINAL

Occurs: After responding to the TERMINAL? prompt during sign-on.

Explanation: Your response was not a valid terminal id number.

System Action: The terminal prompt is reissued.

User Response: Be certain you enter the terminal id number which appears on the red sticker on the terminal. If in doubt about the proper terminal id to use, contact Dedicated Equipment Services.

ILLEGAL TERMINAL TYPE

Occurs: After hitting carriage return for the first time after establishing the phone connection to the computer.

Explanation: Either you entered an incorrect terminal type code, or the code you entered was transmitted incorrectly to WYLBUR.

System Action: WYLBUR again waits for you to enter a terminal type code. The sign-on procedure will not start until WYLBUR has identified the terminal type.

User Response: Enter the correct terminal type code again.

xxxxxx: ILLEGAL VOLUME

Occurs: After a COPY (external), RETRIEVE, SAVE, SCRATCH, USE, or SHOW DSNAMES command.

Explanation: The volume specified in the command just given or in an earlier SET VOLUME command is not a valid volume name (e.g. FILE00-FILE50 and TMP001-TMP005). The initial string of characters in the message is the improperly specified volume.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the initial string in the message carefully to determine your error. (Typing the letter "L" for the number "1" and inclusion of a space are frequent.) Then use the SET VOLUME command to set a correct volume for the rest of the session, or re-enter the previous command specifying a proper volume.

INCORRECT KEYWORD.

Occurs: After a response to a KEYWORD prompt.

Explanation: Your response was not the proper keyword for the combination of user initials and account specified in the command.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Verify the proper keyword before issuing commands which require a keyword to be supplied.

xxxxxx: INTEGER REQUIRED.

Occurs: After a command.

Explanation: An integer was not entered for an option which requires that an integer be given.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

"dsname" IN USE BY A BATCH JOB OR ANOTHER USER.

Occurs: After a COPY (external), SAVE, SCRATCH, or USE command.

Explanation: The data set name you specified is currently being used by a job executing in the batch processing job stream or by TSO. Therefore, the command cannot be executed.

System Action: The command is ignored, WYLBUR prompts for the next command.

User Response: Re-issue the command later when the data set is no longer being used by the batch job or TSO.

xxxxxxx: INVALID

Occurs: After entering a command line.

Explanation: WYLBUR could not process the character string at the start of the message as part of your command. You have submitted an option which is not valid with this command, or have misspelled an option, or have left out a required space (or other delimiter), or have made some other error.

System Action: The command is ignored; WYLBUR prompts for next command.

User Response: Correct the error in the command and re-enter. If in doubt, consult the body of this manual or the "WYLBUR Commands" card for the valid forms of commands.

aaaa: INVALID ACCOUNT

Occurs: After a COPY (external), FETCH, LIST OFFLINE, PRINT, PUNCH, PURGE, RUN, SAVE, SCRATCH, SET PREFIX, FIND or USE command.

Explanation: The account specified either in the ACCOUNT option or with an &AAAA prefix to a data set name is either not a valid account code or is one you are not authorized to use.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Enter only valid account numbers. If in doubt, contact the Project Control Office.

xxx: INVALID BOX NUMBER.

Occurs: After a SET BOX command.

Explanation: The information after BOX is not in the proper format.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Recheck the information typed for the box number, and reissue the command using the correct format.

iii: INVALID INITIALS

Occurs: After a COPY (external), FETCH, LIST OFFLINE, PRINT, PUNCH, PURGE, RUN, SAVE, SCRATCH, SET PREFIX, SHOW DSNAMES, or USE command.

Explanation: The initials you specified in the INITIALS option or with an &III prefix to a data set name is not a valid set of user initials.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Enter only valid sets of registered initials. If in doubt, contact the Project Control Office.

INVALID KEYWORD

Occurs: After responding to a KEYWORD? prompt following a COPY (external), FETCH, LIST OFFLINE, PRINT, PUNCH, PURGE, RUN, SAVE, SCRATCH, SET PREFIX, SHOW DSNAMES, or USE command, or to an OLD KEYWORD? prompt following a SET KEYWORD command.

Explanation: Your response was not the proper keyword for the combination of user initials and account specified in the command.

System Action: The command is ignored or aborted; WYLBUR prompts for the next command.

User Response: Verify the proper keyword before issuing commands which require a keyword to be supplied.

xxx: INVALID OR EXTRANEOUS ACCOUNTING INFORMATION.

Occurs: After responding to a prompt during the sign-on sequence.

Explanation: The value entered has the wrong format or duplicates information already entered.

System Action: The prompt will be reissued.

User Response: Recheck your response for correct spelling, enter only valid account numbers and initials.

If you have progressed past the INITIALS prompt and wish to return to the INITIALS prompt, press the attention key. If you wish to terminate the sign-on sequence, enter attention in response to the INITIALS prompt.

xxxx: INVALID PORT

Occurs: After a SHOW PORT command.

Explanation: The information after PORT is not in the proper format.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Recheck the information typed for the port number and reissue the command using the correct format.

INVALID SEQUENCE OF CHARACTERS IN LINE nnnn. ACTIVE DATA SET MAY BE DAMAGED, PLEASE CHECK CAREFULLY.

Occurs: After an ALIGN or JUSTIFY command.

Explanation: Invalid combinations of BACKSPACE or IGNORE characters caused the ALIGN or JUSTIFY command to terminate before reaching the end of the specified range.

System Action: The command was terminated at the point the error occurred.

User Response: Do not save the data set as a replacement for the latest good version of your data set, since the line containing the error as well as several of the immediately preceding lines may have been deleted. Instead, reuse the original data set, as it existed before the ALIGN or JUSTIFY was issued, and correct the line referenced in the error message. The ALIGN or JUSTIFY command may then be reissued.

iii IS ALREADY LOGGED ON. ONLY ONE SESSION TO A CUSTOMER.

Occurs: After your response to the KEYWORD? prompt during the sign-on.

Explanation: Another terminal is already signed onto WYLBUR with your initials.

System Action: The session is terminated.

User Response: If someone you know is using your initials, have him register his own initials. Next time you log on, change your keyword so your initials cannot be misused again. For help in discovering who is using your initials, contact the PAL Unit. If you think the system may have failed to disconnect an earlier session of your own, contact the Dedicated Equipment Services.

"dsname" IS AN ILLEGAL DATA SET NAME.

Occurs: After a COPY (external), SAVE, SCRATCH or USE command.

Explanation: The data set name specified is not a valid data set name because it contains illegal characters. WYLBUR data set names may contain only letters (A-Z), digits (0-9), and periods, except that the first character of the name may be an asterisk (*) if it is to be a private data set.

System Action: The command is ignored, WYLBUR prompts for the next command.

User Response: Specify a valid data set name.

"DSNAME" IS PASSWORD PROTECTED.

Occurs: After a USE, SAVE or SCRATCH command.

Explanation: The data set you are accessing is password protected. Password protection is not supported at the Computer Center.

System Action: The command is ignored; WYLBUR prompts for the next command. Contact the PAL Unit if you need assistance.

nnn IS YOUR JOB NUMBER.

Occurs: After a LIST OFFLINE, PUNCH, RUN, RETRIEVE or SUGGEST command.

Explanation: This message tells you the job number (1-9999) which the computer system assigned to your job when it was placed in the job queue for the batch processing stream.

User Response: Note the job number since it may be useful later to inquire into the status of the job with the LOCATE command.

nnn IS YOUR JOB NUMBER. JOB REJECTED.

Occurs: After a RUN command.

Explanation: An error has been detected in your JOB statement or in a /* control statement. The job has been deleted from the system without processing. Some printed output will be generated which may contain error messages.

User Response: Carefully compare your JOB statement and /* statements to the correct formats given in this manual and the User's Guide. Correct your JOB statement and/or /* statements and RUN again. If you cannot find your error, contact the PAL Unit for assistance.

nnn IS YOUR JOB NUMBER - QUICK.

Occurs: After entering a RUN command requesting QUICK processing.

Explanation: The job was submitted during the discount period.

System Action: The job will be run with QUICK in effect.

User Response: Note the job number since it may be useful later to inquire into the status of the job with the LOCATE command.

nnn IS YOUR JOB NUMBER - QUICK NOT AVAILABLE.

Occurs: After entering a RUN command requesting QUICK processing.

Explanation: The job was not submitted during the discount period so QUICK is not available. The job will be scheduled as soon as possible, not delayed until the discount period.

System Action: The job will be run.

User Response: Note the job number since it may be useful later to inquire into the status of the job with the LOCATE command.

JOB DELETED BY OPERATOR.

Occurs: After a LIST OFFLINE, PUNCH, RUN, RETRIEVE or SUGGEST command.

Explanation: The computer operator deleted your job while it was being read into the batch processing job stream. (You will not be notified directly if it is deleted after it is read in.)

User Response: Contact the PAL Unit to find out why the job was deleted.

JOB(S) NOT FOUND.

Occurs: After a LOCATE, PURGE, PRINT, FETCH, SET JOB or SET LEVEL command.

Explanation: The job number specified could not be located in the system. This is the normal response if the job has been completed and has left the system.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Make certain the job number was specified correctly. If not, reissue the command. If so, then the job has already left the system.

JOB NOT IN OUTPUT HOLD.

Occurs: After a FETCH command.

Explanation: The job specified has no data sets eligible to be fetched.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Wait until the job has been placed in output hold or has generated one or more data sets for output hold, or check for correct job number.

JOB QUEUE FULL. TRY AGAIN LATER.

Occurs: After a LIST OFFLINE, PUNCH, RUN, RETRIEVE or SUGGEST command.

Explanation: The batch processing job stream is not able to accept your job at this time because there is no space available to store it.

User Response: Submit the job at a later time.

JOB REJECTED.

Occurs: After a RUN command.

Explanation: The job you submitted has an error in the JOB card, or the JOB card was missing. If the active data set contains more than one JOB card, the error detected was in the final JOB card.

System Action: The job has been deleted from the system without processing.

User Response: Provide a proper JOB card and resubmit the job.

JOB SUBMISSION CLOSED. TRY AGAIN LATER.

Occurs: After a LIST OFFLINE, PUNCH, RUN, RETRIEVE or SUGGEST command.

Explanation: WYLBUR is not able to submit your job to the batch job stream for processing at the present time.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Submit the job at a later time.

JOB SUBMISSION FAILED - TRY AGAIN LATER.

Occurs: After a LIST OFFLINE, PUNCH, RUN, RETRIEVE or SUGGEST command.

Explanation: WYLBUR is not able to submit your job to the batch job stream for processing at the present time.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Submit the job at a later time.

KEYWORD ACCESS FAILED, SEE PAL UNIT.

Occurs: While signing-on.

Explanation: Something is wrong with the keyword file. Contact the PAL Unit.

System Action: WYLBUR proceeds with the sign-on sequence.

User Response: Contact the PAL Unit.

KEYWORD CANNOT BE BLANK.
KEYWORD TOO LONG.
KEYWORD TOO SHORT.

Occurs: Any of these three messages may occur after your response to a KEYWORD? or NEW KEYWORD? prompt when you are assigning a keyword to an account and initials.

Explanation: A keyword must be three characters long and cannot contain blanks.

System Action: The command is aborted; WYLBUR prompts for the next command.

User Response: Choose a keyword which meets the requirements.

KEYWORD CHECKING NOT IN EFFECT.

Occurs: While signing-on.

Explanation: There is a system problem and keywords cannot be checked.

System Action: WYLBUR continues with the sign-on sequence.

User Response: Contact the PAL Unit.

KEYWORD UPDATE FAILED, SEE PAL UNIT.

Occurs: After a SET KEYWORD or after responding to ASSIGN A KEYWORD FOR aaaa iii.

Explanation: A system error prevented the keyword file from being updated.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Contact the PAL Unit (telephone 496-5525) for assistance. The PAL Unit is open 8:30 a.m.-1:00 p.m. Thursdays, 8:30 a.m.-5:00 p.m. other weekdays.

LIMIT LESS THAN STARTING TAB POSITION.

Occurs: After a SET TABS command.

Explanation: The limit specified in the notation (tab increment/limit) is less than the initial tab position.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and reissue.

LINE nnnn.nnn CONTAINS nnn CHARACTERS.

Occurs: In COLLECT mode, or during execution of a CHANGE, MODIFY, INSERT, REPLACE or SUPPLANT command.

Explanation: As a result of the operation the indicated line contains the indicated number of characters, which is longer than the current value of LENGTH.

System Action: The line is placed in the active data set; no attention is paid to the fact that it is too long. Processing continues.

User Response: If the line is longer than it should be, change it. If LENGTH is not set to what you currently wish to be the maximum line length, reset it with the SET LENGTH command. If you wish the current line to be an exception to the maximum line length, ignore the message.

LINE FROM EXTERNAL RANGE EXCEEDED 133 characters.

Occurs: After the COPY FROM command.

Explanation: a line in the data set being copied from had more than 133 characters.

System Action: The command was halted at the point where a line was longer than 133 characters.

User Response: List the data set offline to see at what point the copied data was stopped. Correct this line in the external data set before reissuing the COPY FROM command.

LINE nnnn.nnn TRUNCATED TO 133 CHARACTERS.

Occurs: In COLLECT mode or during execution of a CHANGE, INSERT, MODIFY, REPLACE or SUPPLANT command.

Explanation: As a result of the operation the indicated line had a length longer than 133 characters. Since a WYLBUR line cannot be longer than 133 characters, the excess characters have been lost

System Action: The line is truncated to 133 characters and placed in the active data set. Processing continues.

User Response: If the truncation is not acceptable, perform editing as necessary to shorten the line and restore the lost characters; splitting the line into two lines may be desirable.

LINE NO. ALREADY EXISTS.

Occurs: After a COLLECT, INSERT, COPY or MOVE command.

Explanation: The command specifies creation of a line, but a line already exists having that line number.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Specify only line numbers which do not currently exist in these commands. It may be necessary to delete or move lines or renumber the active data set before issuing the command.

LINES WON'T FIT.

Occurs: After a COPY or MOVE command.

Explanation: There are not enough line numbers available between existing lines to insert the lines to be copied or moved using the smallest possible increment (.001).

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Use the MOVE or NUMBER commands to make space for the lines and then reissue the COPY or MOVE command.

LINES WON'T FIT, DELTA TOO BIG.

Occurs: After a USE command on a non-edit format data set.

Explanation: While performing the USE operation WYLBUR generated a line number greater than 9999.999; it is not possible to complete the USE operation with the current value of DELTA, the default line number increment.

System Action: The command is aborted; WYLBUR prompts for the next command. Part of the external data set has been copied into the active data set.

User Response: Do one of the following:

1. Use SHOW SIZE to determine how many lines have been brought in. Process and save the lines which have been brought in. CLEAR TEXT and then issue USE with the SKIP option to bring in the rest of the data set.
2. Set a smaller line number increment with the SET DELTA command. Then CLEAR TEXT and re-issue the USE command.

ppp: LOGGED ON MORE THAN ONCE.

Occurs: After a TO or SHOW PORT command.

Explanation: The port number was specified as a set of initials or a terminal number and more than one port has a session with the specified value.

System Action: The command is ignored; WYLBUR prompts for the next command.

MACHINE FAILURE MAY HAVE DAMAGED YOUR ACTIVE DATA SET.

Occurs: After any command.

Explanation: Due to some machine error there may have been damage to your active data set.

System Action: The command may have partially executed; WYLBUR prompts for the next command.

User Response: Check the active data set to see if any damage was done. Do not save the active data set as a replacement for a good data set until you have examined it's contents.

xxxxxx: MAXIMUM LENGTH ALLOWED IS n.

Occurs: After a command.

Explanation: The value of an option is too long.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

value: MAXIMUM VALUE ALLOWED IS n

Occurs: After any command.

Explanation: The value specified for some option was too large.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command giving a value within the proper range.

MISSING PORT NUMBER.

Occurs: After the TO command.

Explanation: When using the TO command to send a message the port number was not included.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command including the port number.

MORE THAN n TABS SPECIFIED

Occurs: After a SET TABS command.

Explanation: You have attempted to set more than the permitted maximum of n tabs.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the maximum number of tabs allowed for the particular type terminal you are using, then re-enter the command specifying no more than the maximum number of tabs allowed.

NO CLEAR OPTION SPECIFIED.

Occurs: After a CLEAR command.

Explanation: Nothing was entered after the word CLEAR so WYLBUR does not know what to clear.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command using a valid CLEAR option (e.g., CLEAR TEXT).

NO DATA SETS FOUND.

Occurs: After a FIND DSNS or FIND DSN command.

Explanation: When the FIND index was last updated, (usually in the early morning hours), there were no data sets meeting the conditions in your command. Note, the index for all FILE, TMP and PDS packs will be searched for your account and initials unless you specify otherwise.

NO KEYWORD IS IN EFFECT FOR...PLEASE HAVE THE APPROPRIATE PERSON ASSIGN ONE.

Occurs: After a LIST OFFLINE, RUN, PUNCH, or RETRIEVE command in which you specified another account and/or initials for which no keyword had been set.

Explanation: Any account/initials combination must have a keyword set before it can be used.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Re-enter the command without that account/initials combination or have a keyword set before re-entering the command.

NO MORE SESSIONS PERMITTED ON THIS PORT.

Occurs: After a LOGON command.

Explanation: The operator has initiated system shutdown procedures and no more sessions are permitted on this port.

System Action: The telephone connection is broken.

User Response: Consult the System Status number for information on the approximate time the system is expected to be back in service.

NO SET OPTION SPECIFIED.

Occurs: After a SET command.

Explanation: Nothing was entered after the word SET so WYLBUR does not know what to set.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command using a valid SET option.

NO SHOW OPTION SPECIFIED.

Occurs: After a SHOW command.

Explanation: Nothing was typed after the word SHOW so WYLBUR doesn't know what to show.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command including a valid SHOW option (e.g., SHOW TIME).

NO SUCH DSNAME.

Occurs: After a FIND DSN command.

Explanation: When the FIND index was last updated, (usually in the early morning hours), no data set with the name and other specifications given (if any) existed on the FILE, TMP, or PDS packs or had been migrated.

System Action: WYLBUR prompts for the next command.

User Response: Employ SHOW DSNAMES to find data saved since the index was updated.

NO TABS SET.

Occurs: After a SHOW TABS command.

Explanation: No tab stops are currently in effect. Therefore WYLBUR will space across an output line rather than tabbing across even if FASTLIST is in effect, and the tab key may not be used in input.

port ttt iii NOT ACCEPTING MESSAGES.

Occurs: After a TO command.

Explanation: You tried to send a message to a user with the port, terminal number, and initials indicated who has SET NOTALK and will not be informed of your message.

System Action: The command is ignored; WYLBUR prompts for the next command.

"dsname" NOT EDIT FORMAT.

Occurs: After a USE command.

Explanation: The data set you specified is empty or is not in edit format and you did not supply any format option (CARD, PRINT or LRECL) in the USE command.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: If the data set was created in a non-edit format, reissue the USE command specifying the proper format option(s). Otherwise, check to see if an error occurred while the data set was being created (perhaps because of a system crash).

NOT ENOUGH SOURCE LINES. nnnn.nnn - LAST LINE.

Occurs: After a CHANGE command with the USING option.

Explanation: The replacement text specified by the USING option has been exhausted, but there are still lines to be changed.

System Action: Operation is aborted; if the LAST LINE portion of the message is present, the operation was partially completed. WYLBUR issues last line message and prompts for next command.

User Response: Supply additional source lines and reissue the command or take other appropriate corrective action.

"dsname" NOT FOUND ON volume.

Occurs: After a USE or SCRATCH command.

Explanation: No data set with that name exists on the indicated volume.

System Action: If CLEAR was specified in a USE command, the active set has been emptied; otherwise the command is ignored and WYLBUR prompts for the next command.

User Response: Employ a FIND DSNS or SHOW DSNS command to check the exact data set name; be sure that the account and initials you are using are the same as those with which the data set was saved.

user: NOT LOGGED ON.

Occurs: After a SHOW LINE or a TO command.

Explanation: The user or terminal you specified in the command is not logged onto the system at the present time.

System Action: The command is ignored; WYLBUR prompts for the next command.

iii NOT REGISTERED INITIALS.

Occurs: During sign-on.

Explanation: The initials entered after the initials prompt are not valid initials registered with the Project Control Office.

System Action: Reprompts for initials.

User Response: Enter only valid sets of registered initials. If in doubt, contact the Project Control Office.

NOTHING FOUND TO CHANGE.

Occurs: After a CHANGE command.

Explanation: The CHANGE command was executed, but no lines were changed as a result, either because there were no lines in the specified range or, if a source string was specified, no line within the specified range contained the source string.

System Action: WYLBUR prompts for the next command.

User Response: Use LIST command to find appropriate range.

OPERAND MISSING.

Occurs: After a command is given.

Explanation: The command you have given is incomplete.

System Action: The command is ignored; WYLBUR prompts for another command.

User Response: Consult the "WYLBUR Commands" card or the body of this manual for the correct format of the command.

parameter: PARENTHESIZED STRING REQUIRED.

Occurs: After a command.

Explanation: No string in parentheses was entered for an option which requires a string in parentheses be entered.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

text: "/" OR "*" REQUIRED WITH "+".

Occurs: After a SET TABS command.

Explanation: No column position limit (/ column) or number of tabs (* count) was specified along with a tab position increment (tab + increment).

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the command using the required symbols.

PLEASE CONTACT THE PAL UNIT AS SOON AS POSSIBLE DURING REGULAR HOURS FOR AN IMPORTANT MESSAGE REGARDING INITIALS iii AND ACCOUNT aaaa.

Occurs: At sign-on time.

Explanation: The PAL Unit is anxious to contact you.

System Action: The sign-on sequence continues.

User Response: Contact the PAL Unit at your earliest opportunity.

PLEASE LOGOFF. SYSTEM GOING DOWN AT time.

Occurs: At any time.

Explanation: The WYLBUR system will be brought down at the time specified. The operator is informing you in advance so that you will have time to save your active data set and logoff in an orderly manner.

System Action: No new terminal sessions may be started.

User Response: Save your active data set and logoff the system as soon as you can conveniently do so, but in no event later than the time specified in the message.

xxx: PORT NUMBER GREATER THAN xxx.

Occurs: After a SHOW PORT xxx command.

Explanation: The port number you entered exceeded the maximum permissible value.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check to be sure you entered the number correctly and reissue the command giving correct port number.

nnn: POSITIVE VALUE REQUIRED.

Occurs: After a command.

Explanation: Zero value was entered, a positive value is required.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

PREFIX TOO LONG.

Occurs: After a SET PREFIX command.

Explanation: The specified prefix is longer than 28 characters.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Reponse: Use a shorter prefix.

PRIVILEGED COMMAND

Occurs: After entering a command line.

Explanation: You have issued a WYLBUR system management command which you are not authorized to use.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Enter a valid WYLBUR command.

PROJECTS MAY NOT LOGON TO INTERACTIVE SYSTEMS.

Occurs: After responding to the INITIALS? prompt during sign-on.

Explanation: You have entered three initials which are registered as project or storage initials. Project and storage initials are not valid for signing onto the system.

System Action: The sign-on procedure is restarted.

User Response: Enter only your registered user initials in response to the INITIALS? prompt. If in doubt, contact the Project Control Office.

parameter: QUOTED STRING REQUIRED.

Occurs: After a command.

Explanation: No string was supplied for an option which requires a quoted string be entered.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

REQUEST ABORTED.

Occurs: After hitting attention while WYLBUR is waiting to execute a TO, LIST OFFLINE, RUN, PUNCH, SUGGEST, LOCATE, SHOW, SAVE, SCRATCH or USE command.

Explanation: WYLBUR honors attention as a request not to execute the command if attention is hit before execution of the command commences.

System Action: The command is ignored; WYLBUR prompts for next command.

REQUEST REJECTED. SYSTEM BUSY.

Occurs: After a FETCH command.

Explanation: The system is unable to honor your command at the present time.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Wait a short time before reissuing the command.

RESPOND OR BE LOGGED OFF.

System Prompt: Issued by MILTEN (WYLBUR's terminal controller) after terminal has been idle for ten minutes.

Explanation: WYLBUR has been waiting ten minutes for you to do something.

System Action: If you leave your terminal idle another five minutes, WYLBUR will issue a LOGOFF command for you.

User Response: Enter a command or a line of text if you do not wish to be logged off (a carriage return is sufficient). If you do not plan to use the terminal soon, issue a LOGOFF command.

SYSTEM?

Occurs: When MILTEN (WYLBUR's terminal handler) is waiting for a system name or command.

Explanation: You are being prompted by MILTEN rather than by WYLBUR for one of the following reasons:

1. You have just signed on and WYLBUR was not ready for use.
2. You have been using WYLBUR (or some other system) but the system has gone down.
3. You gave WYLBUR the MILTEN command, which transferred control of your terminal to MILTEN.

System Action: If the response is the name of an active system, control of the terminal is transferred to that system. If the response is a command recognized by MILTEN the command will be executed. In all other cases an error message will be issued and the SYSTEMS? prompt reissued.

User Response: Type in "WYLBUR" or the name of some other active system you want to use. (The active systems can be displayed with the SHOW SYSTEMS command), or type in one of the following commands which are recognized by MILTEN:

LOGOFF	SHOW COUNT
LOGON	SHOW LINE or PORT
SET BACK	SHOW LINES or PORTS
SET NOBACK (CLEAR BACK)	SHOW TABS
SET TERMINAL	SHOW TIME
SHOW BACK	TO

SYSTEM OUT OF SERVICE, PLEASE STAY OFF.

Occurs: Before the INITIALS prompt.

Explanation: The system is not in service due to a hardware failure, a software failure or some other problem.

System Action: Issues the prompt "WHAT'S THE MAGIC WORD?"

User Response: Press the attention key to break the connection. Call the System Status number (654-2771) for information on the approximate time the system is expected to be back in service.

SYSTEM PATHS FULL. TRY AGAIN LATER.

Occurs: After RUN, LIST OFFLINE, SHOW STATUS, RETRIEVE, LOCATE and other commands which require information from the batch system.

Explanation: The system is temporarily overloaded with requests of this type.

System Action: WYLBUR prompts for the next command.

User Response: Wait a minute or two before re-entering the command. Make only essential requests.

TAB MAY NOT BE SET BEYOND COLUMN 255.

Occurs: After a SET TABS command.

Explanation: A tab value requested was greater than 255 including indentation.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the values given in the command and reissue the command giving values which will stay within the allowable range.

TAB PLUS INDENT IS GREATER THAN 255.

Occurs: After a SET TABS command.

Explanation: A value given resulted in a figure greater than the allowable range.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the values of the command just typed for a typographical error, reissue the command giving values which will stay within the allowable range of 255.

TAB POSITION GREATER THAN 255.

Occurs: After a SET TABS command.

Explanation: An attempt was made to set a tab position beyond column 255.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and reissue.

TABS ERROR. NO TABS SET.

Occurs: After a SET TABS command.

Explanation: An error was found in the tab specifications entered.

System Action: No tabs are set; WYLBUR prompts for the next command.

User Response: Re-issue the SET TABS command with proper specifications. The error could have been:

1. If the TAB? prompt was issued, a character other than 1 may have been entered, or the carriage may have been backspaced from the start of the line.
2. If the tab specifications were contained in the SET TABS command itself, the columns specified may not have been in ascending order, or a column greater than the line length of the terminal may have been specified, or a space may have been omitted between two column numbers, or more than fifteen tabs may have been specified.

TABS MAY NOT BE SET BEYOND RIGHT MARGIN.

Occurs: After a SET TABS command.

Explanation: You have tried to set tabs beyond the right margin.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Reissue the SET TABS command and don't set any past the right margin, or change the right margin with the SET TERMINAL WIDTH command then reissue the SET TABS command if you want to set tabs beyond where the right margin had been set.

TERMINAL OR TRANSMISSION ERROR. RETYPE LINE.

Occurs: After hitting carriage return to send WYLBUR a line. More rarely while terminal is idle or you are typing a line.

Explanation: The line you just entered contained invalid data when WYLBUR received it. The invalid data may have resulted from noise on the telephone line or other telephone line malfunction, or a malfunction of the terminal or acoustic coupler (or data phone).

System Action: The line containing the error is ignored.

User Response: Re-enter the line which caused the error. (If this message occurs frequently, report the trouble to Dedicated Equipment Services).

TERMINATED BY ATTEMPT TO REPLACE OR INTERLEAVE. nnnn.nnn - LAST LINE

Occurs: After COPY command.

Explanation: When copying lines in an overlapping range, WYLBUR has found that the next line to be copied would have the same number as an existing line or would fall after a previously existing line. Replacing or interleaving is not permitted.

System Action: WYLBUR aborts the command, which has been partially completed.

User Response: LIST the last line to determine how much was copied. Use the NUMBER or MOVE command to make line numbers available and give another COPY command to complete the process.

TOO MANY ACCOUNTS.

Occurs: After a SET KEYWORD command.

Explanation: You have entered more than the maximum of 17 accounts.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Enter no more than 17 accounts.

TOO MANY DIGITS IN PATTERN.

Occurs: After a CHANGE command with the TO option.

Explanation: You specified the replacement-value in the form of an integer to be incremented or a pattern containing such an integer. The integer contains more than the nine digits permitted.

System Action: Command is ignored; WYLBUR prompts for next command.

User Response: Re-enter the CHANGE command specifying a valid integer.

TOO MANY ENTRIES, COMMAND TERMINATED.

Occurs: After a FIND command.

Explanation: The FIND command cannot handle more than about 500 responses.

System Action: The command was terminated prematurely.

User Response: Use the parameters ON, PAST, CURRENT or LIKE to reduce the number of qualifying data sets to less than 500.

TOO MANY INITIALS.

Occurs: After a SET KEYWORD command.

Explanation: You have entered more than the maximum of 17 initials.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Use more than one command if you need to specify more initials.

TWO TABS SPECIFIED IN SAME COLUMN.

Occurs: After a SET TABS command.

Explanation: Two identical values were given when issuing the command.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Check the values requested in the command and reissue the command eliminating the duplicate value.

xxxxxx: UNBALANCED QUOTES.

Occurs: After any command.

Explanation: A quoted string was entered but there was no terminating quote.

System Action: The command is ignored.

User Response: Reissue the command including the terminating quote.

xxxxxx: UNBALANCED PARENTHESES.

Occurs: After any command.

Explanation: A left parenthesis was entered but there was no matching right parenthesis.

System Action: The command is ignored.

User Response: Reissue the command using proper syntax.

USE OF UNSET TABS ILLEGAL. RETYPE LINE.

Occurs: After hitting carriage return to send WYLBUR a line.

Explanation: In entering the line you either:
1. Used the tab key when no tabs were set, or
2. Used the tab key more times than the number of tabs set.

Unless tabs are set with the SET TABS command, WYLBUR does not know what column they are set in and cannot process them.

System Action: The line containing the illegal tabs is ignored.

User Response: Issue the SET TABS command for any tabs you will use and then re-enter the line, or re-enter the line without using the TAB key.

USE OPTION ERROR.

Occurs: After a USE command with the NUMBERED option.

Explanation: You specified the NUMBERED option, but the data set does not contain valid WYLBUR line numbers in columns 73-80.

System Action: Command is ignored; WYLBUR prompts for the next command.

User Response: Use the data set without the NUMBERED option and check the columns containing the line numbers to find out why they were not acceptable to WYLBUR. WYLBUR line numbers must be of the form xxxx.xxx where x is a digit 0-9; leading and trailing zeroes may be omitted, but decimal points must be present and properly aligned.

xxxxxx: VALUE REQUIRED.

Occurs: After a command.

Explanation: No value was supplied for an option which requires that a value be entered.

System Action: The command is ignored; WYLBUR prompts for the next command.

User Response: Correct and re-enter.

VOID RANGE

Occurs: After a COPY, MOVE, LIST, ALIGN, JUSTIFY, CENTER, RUN, SAVE, MODIFY, PUNCH, DELETE, REPLACE or SUPPLANT command.

Explanation: No lines were found within the specified range of lines. If the command referred to the entire active data set, the active data set is empty.

System Action: Command is ignored, WYLBUR prompts for next command.

WHAT'S THE MAGIC WORD?

System Prompt: Issued either before the sign-on procedure or when you respond to a SYSTEM? prompt with a system name.

Explanation: Either the entire teleprocessing system or the system you requested is not currently available for public use. You may not use the system unless you know a special password ("magic word").

System Action: If your response to the prompt is the correct magic word, sign-on proceeds or you are granted access to the requested system. Otherwise a YOU LOSE message is issued. If the prompt was issued prior to the sign-on procedure, the telephone connection is also broken.

User Response: Unless you know the magic word, hit carriage return or attention and try again later.

WYLBUR HAS DIED. YOU ARE IN MILTEN.

Occurs: At any time.

Explanation: WYLBUR has gone down and MILTEN (WYLBUR's terminal handler) has assumed direct control of your terminal.

System Action: MILTEN issues a SYSTEM? prompt and waits for your instructions.

User Response: Wait until WYLBUR is again available, logoff the system, or use a command available in MILTEN (see explanation under SYSTEM?).

WYLBUR IS NOT UP YET. YOU ARE IN MILTEN.

Occurs: At the completion of the sign-on procedure

Explanation: Normally you would receive WYLBUR's "?" prompt at this point. However WYLBUR has not come up yet, so MILTEN (WYLBUR's terminal handler) has assumed control of the terminal.

System Action: MILTEN issues a SYSTEM? prompt.

User Response: Wait until WYLBUR is active (the operator will send a message) and then type WYLBUR in response to the SYSTEM? prompt.

WYLBUR: NOT AN ACTIVE SYSTEM.

Occurs: After typing "WYLBUR" in response to a SYSTEM? prompt.

Explanation: WYLBUR is not currently available.

System Action: MILTEN issues a SYSTEM? prompt.

User Response: Wait until WYLBUR is available, request another active system, issue any of the commands recognized by MILTEN, or LOGOFF and try again later.

WYLBUR OUT OF SERVICE. PLEASE STAY OFF.

Occurs: As second line typed during sign-on procedure.

Explanation: WYLBUR is not available for public use at the present time. Either it is being tested or some other reason exists why it is not safe for use. You will not be permitted to sign onto the system unless you know a special password ("magic word").

YOU LOSE.

Occurs: After responding to a WHAT'S THE MAGIC WORD? prompt.

Explanation: Your response was not the correct magic word. You have been denied access to the requested system.

System Action: If the prompt was issued before the sign-on procedure, the telephone connection is broken.

User Response: Try again later.

YOUR INITIALS MAY NOT BE YOUR KEYWORD.

Occurs: After responding to the PLEASE ASSIGN A KEYWORD FOR THIS ACCOUNT AND INITIALS request.

System Action: WYLBUR prompts for another keyword.

User Response: Enter a 3 character keyword not composed of your initials.

YOUR SESSION IS BEING MONITORED BY iii (port)

Occurs: After calling the PAL Unit for assistance with certain types of problems.

Explanation: The PAL Unit is receiving duplicate copies of all transmission to and from your terminal in order to provide assistance in solving your problem.

YOUR SESSION IS NO LONGER BEING MONITORED BY iii (port).

Occurs: Anytime during current session.

Explanation: After the PAL Unit has monitored your session and found the problem, the monitoring has been discontinued.

INDEX

COMMENT FORM

Is the WYLBUR MANUAL	YES	NO
Clear?	--	--
Well Organized?	--	--
Complete?	--	--
Accurate?	--	--
Suitable for the beginner?	--	--
Suitable for the advanced user?	--	--

Comments:_____

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Please give page references where appropriate.

Send to: NIH
DCRT
Computer Center
Technical Information Office
Bldg. 12A, Rm. 1017