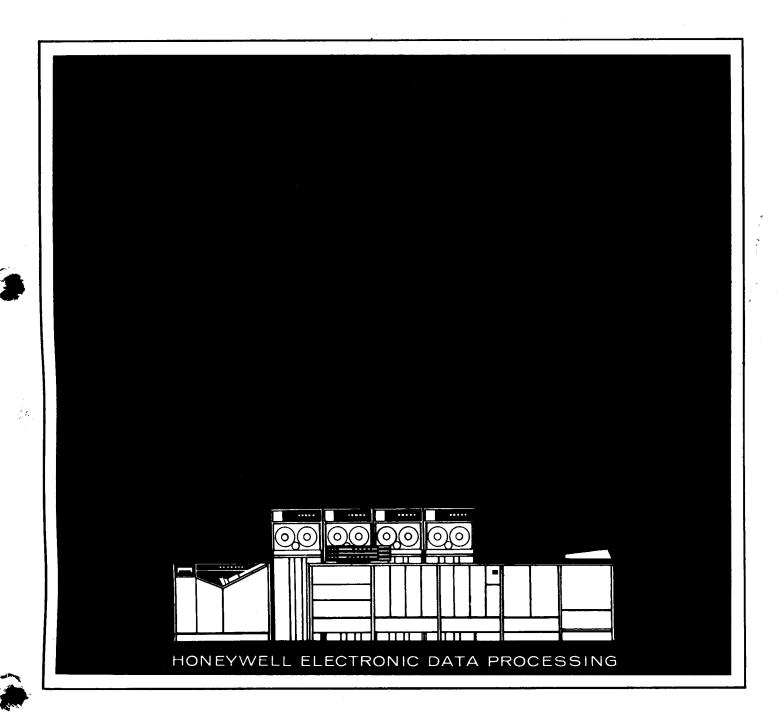
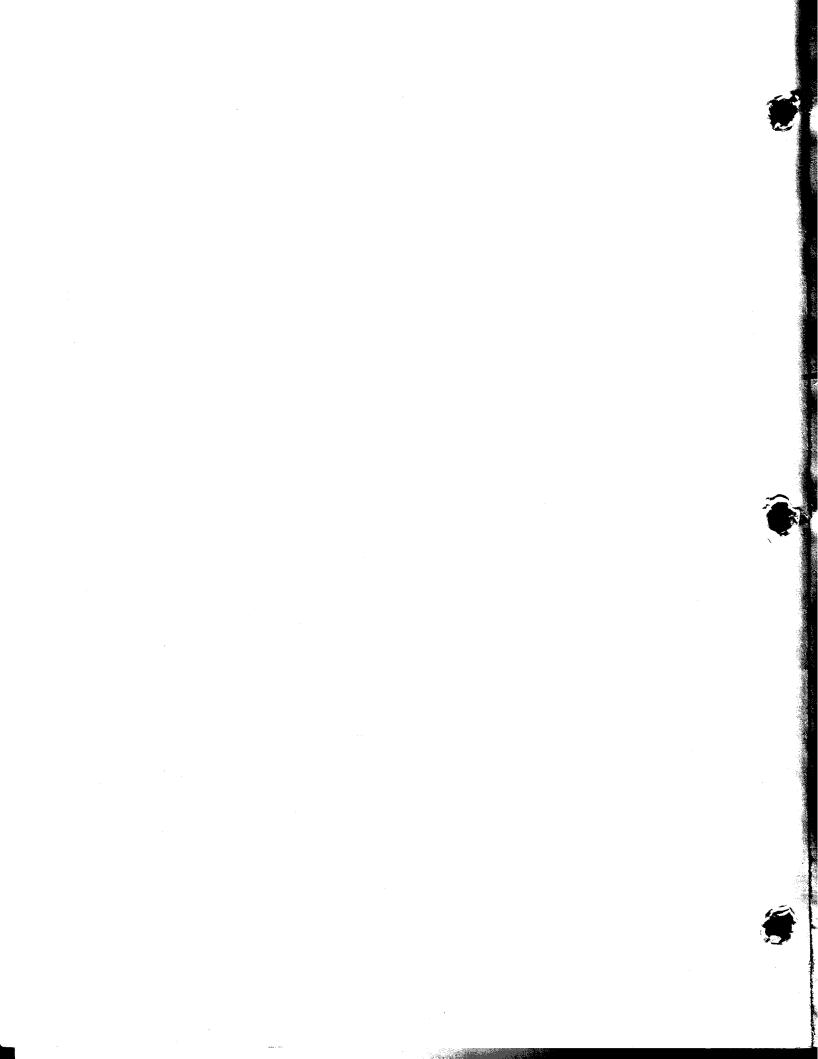
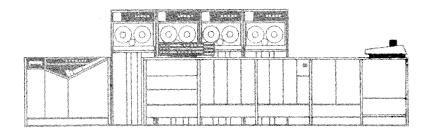
STUDY GUIDE: EASYTAB SYSTEM





STUDY GUIDE: EASYTAB SYSTEM



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PREFACE

The purpose of this study guide is to illustrate some practical applications for the utility programs provided with the Easytab system. The options and functions available with each program are presented by utilizing them in one or more examples. Each example includes a brief description of the application, the record layouts of the files involved, the preparation required, the keypunching of the parameter card(s), and the suggested computer setup for run execution.

A separate section is devoted to each of the utility programs. The concluding section contains a payroll application which was transferred from a tabulating environment to the Series 200 computer via the utilization of several of these Easytab programs plus three individually written COBOL programs. For those readers not familiar with COBOL, a companion set of publications entitled Study Guide: COBOL Programming (Order No. 259) is recommended. Sections I, II, and III of this set are the minimum prerequisites for the understanding of this manual. It is further suggested to all readers that they reference the Honeywell Software Manual Easytab Utility Programs, File Number 206, when adapting these programs to their own applications.

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Table 1-1.

Easytab Utility Program Chart...... 1-1

SECTION I THE EASYTAB SYSTEM

INTRODUCTION

The Easytab System consists of a series of utility routines which perform functions similar to those of basic tabulating equipment. Together with the COBOL Language programming system, these routines enable the user to transfer any tabulating process to a Series 200 computer.

As mentioned in the set of publications entitled Study Guide: COBOL Programming, Order No. 259, each data processing application destined for transfer to the Series 200 computer must be studied in order to determine which segments can be handled by these precoded routines and which segments might best be individually coded in the COBOL language. In general, when the process consists of some basic unit-record function such as sorting, merging, listing, or reproducing, the same results can very likely be accomplished on the Series 200 computer by merely punching a card, called a director or parameter card which provides basic information concerning the particular job, and executing the appropriate routine. Table 1-1 indicates the utility routines provided, the basic functions performed by them, and the tabulating equipment which they replace.

-AND REPLACE -THIS THESE PERFORM • THESE EQUIPMENT FUNCTIONS UTILITY ROGRAMS Sorter Sort B Sorting Normal merging, match-merging, selecting of Collator Merge B unmatched primary or secondary cards Tabulator Total B Listing or tabulating of cards Collator, Sorter Select B Selection of cards according to the contents of one or more fields, their location within a control group, or by card count No equivalent PERIO B Conversion of punched cards to magnetic tape, magnetic tape to punched cards, magnetic tape to printer Reproducing punch Reproducing cards, emitting information, card Reproduce B numbering Manual Filing cards into, pulling cards from, or re-Alter B placing cards within a card file

Table 1-1. Easytab Utility Program Chart

USE OF THE UTILITY PACKAGES

In determining whether the Easytab utility routines offer a solution, and in what manner they can best be utilized in a particular application, several questions must be answered:

- 1. Does any single utility routine perform the processing required? To discover this, you must first choose the utility routine which seems to most closely fit these requirements. Is a file to be <u>sorted</u> in some ordered sequence? Is one file to be <u>merged</u> with another file? Are certain cards to be <u>selected</u> from a file? Are totals to be <u>tabulated</u> for control groups within a file? Is information to be <u>reproduced</u> from one file to another? Once you have selected what seems to be the appropriate routine, the next step is to discover whether that routine provides the complete processing desired. If not, will the use of several utility routines provide the complete solution? If again the answer is no, then the use of COBOL must be considered, usually in combination with one or more of the utility functions.
- 2. Is reassignment of an input file to a different hardware device necessary? If so, this can be accomplished very quickly by altering the ASSIGN TO statement for that particular file in the utility program's COBOL source deck and recompiling. For example, in the Alter program, the input file to be corrected is assumed to be on magnetic tape and the corrections on punched cards. If this is not so, then the ASSIGN TO statements for one or both of the files must be changed and the program recompiled.
- 3. Is reassignment of an output file to a different hardware device necessary? If so, the ASSIGN TO statement for that file must be changed to the appropriate output device. For example, if it would be more convenient to have the selected output of the Select program on magnetic tape instead of punched cards or the printer, the ASSIGN TO statement for the selected output can be changed.
- 4. What peripheral units are available and what are the restrictions on their use? In those computer configurations having a card reader/punch unit as the only punched card input/output device, any utility routine operation is limited to either one card input file or one card output file. The PERIO B program can be used to place one or more input card files on magnetic tape prior to executing the utility routine or to place one or more magnetic tape files on punched card decks following the execution of the routine. Other decisions to be made concerning the assignment of peripheral units may relate to the number of magnetic tape drives available. For example, in the Sort B program the number of drives available will determine such things as whether a four-tape sort can be used instead of the slower three-tape sort and whether the Sort B program will be loaded from tape or from cards.

Each of the following sections relates to a separate utility routine and can be referenced independently of each other. The concluding section contains a sample payroll application as it was transferred from a tabulating environment to the computer via the Easytab utility routines and the COBOL language.

SECTION II SORT B PROGRAM

INTRODUCTION

The Sort B program performs all of the basic functions of the sorter. Eighty-character items (punched cards or card images on tape) are read, sorted in ascending or descending order on a maximum of eight key fields, and written onto an output tape. Any unreadable records are printed out for correction and deleted from the sort. The number of items sorted is limited to approximately 57,000, the number which can be stored on a full reel of tape. Three or four tapes can be utilized by the sorting process.

The general setup for the Sort B program is shown in Figure 2-1.

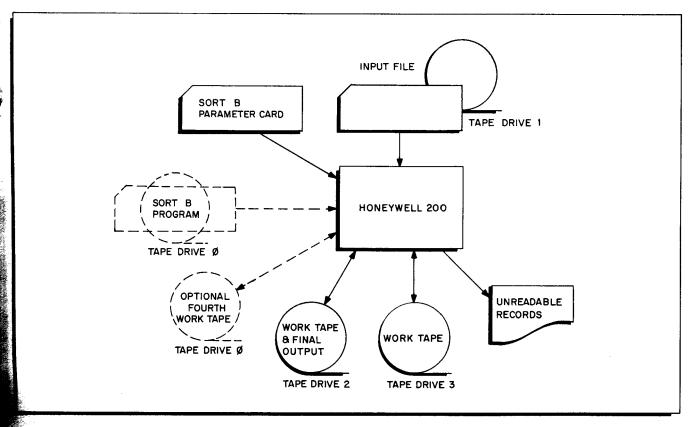


Figure 2-1. The Sort B Program

A complete coverage of the Sort B program can be found in Section III of the <u>Easytab</u> <u>Utility Programs</u> Software Manual, File Number 206.

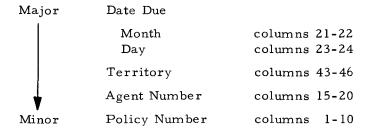
SPECIFICATIONS

- 1. The input file can be on punched cards or magnetic tape. The total number of input records must not exceed the number of items which can be written on a full reel of tape (approximately 57,00 items).
- 2. The final sorted output file is on tape.
- 3. A minimum of three tapes is needed during the sort. If the input reel contains 30,000 items or less, the user can indicate that the portion of the tape following the input data is to be used for one of the tapes. If the input reel contains more than 30,000 items, the input tape file must be removed following the presort phase and a work tape must be mounted. If four tape drives are available, a third tape can be utilized.
- 4. The Sort B program consists of three segments:
 - a. Presort Input items are read, ordered into strings, and written out onto two of the tapes.
 - b. Merge Groups of strings are merged together until a single ordered string remains on each of the tapes. Read-backward polyphase merging is used to advantage during this segment.
 - c. Last pass The string from each tape is merged together, giving one string which is the sorted output file.
- 5. A maximum of eight key fields can be specified.

THREE-TAPE SORT (CARD INPUT, ASCENDING ORDER)

Application

An input deck of insurance premium cards is to be placed on tape and sorted as follows:



Three tape drives are available.

- 1. Punch a Sort B parameter card as shown in Figure 2-2.
- 2. Set up the computer run as shown in Figure 2-3. Since only three drives are available, notice the manner in which the Sort B program is loaded from cards along with the data input deck.

,	EASYTAB - SORT B	Date
APPLICATION HREE-TAPE SORT	(CARD INAG, ASSENDING)	I.D
$ \begin{bmatrix} S_1 O_1 R_1 T_1 B \end{bmatrix}_{5} $	INPUT 6 C = Card T = Tape 4TH TAPE OPTION 7 C = No 4th Tape 4 = 4th Tape	INPUT TAPE OPTION ① SEQUENCE
NO. OF REELS MACHINE SIZE Input on cards; \square leave blank 10 1 Thru 9 $\Delta = 8K$ $3 = 12K$ $4 = 16K$	INPUT BLOCKING ② Input on cards; $15 16$ 17 16 17 16 blank blank	Output file blocked by two in order to be
Month, Day Key 1 20 23 25	Key 2 Key 3 4.3 8.4 1.5 8.6	Key 4 Cont # Key 4 Cont Con
Key 5	Key 6 Key 7	Key 8 55 58
61	Input Reel Identification)
1 Input tape (s) may contain no ras a work tape.	Output Reel Identification DAILY - PREM 80	Sorted output file.
(2) Tape Input and output of Soft	more than 30,000 items, Blocked 2 B are assumed to be blocked 2, with for must be entered in the approprie	thin an 8K machine. If blocking

Figure 2-2. Sort B Program; Three-Tape Sort (Card Input, Ascending Order) - Parameter Card

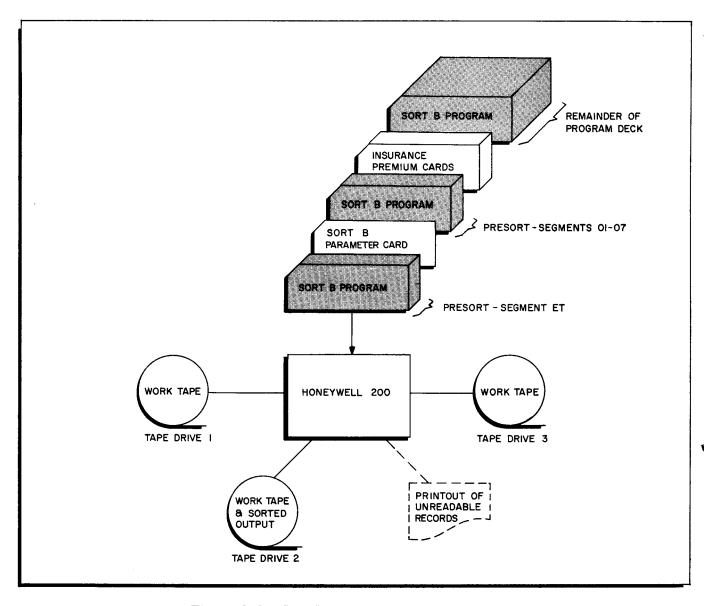


Figure 2-3. Sort B Program; Three-Tape Sort (Card Input, Ascending Order) - Computer Setup

THREE-TAPE SORT (TAPE INPUT, DESCENDING ORDER)

Application

The accounts receivable master file is to be sorted by balance outstanding (columns 40-47) in descending order in preparation for printing the monthly balance report. The master file contains a maximum of 27,000 items.

- 1. Punch a Sort B parameter card as shown in Figure 2-4. Since the input tape tape contains less than 30,000 records, the remainder of the reel can be used as a work tape.
- 2. Set up the computer run as shown in Figure 2-5.

	EASYTAB - SOI	RT B	Date
APPLICATION HREE-TAPE	Sat (TAPE INPU	T-DESCENDING	I.D.
$ \begin{array}{c c} S_1 O_1 R_1 T_1 B \\ 1 \end{array} $		7 n = No 4th Tape R = 4th Tape	INPUT TAPE OPTION ① SEQUENCE 2 8 D 9 Do Not Use Tape 1 as Work Use Tape 1 as Work
NO. OF REELS MACHIN OF INPUT 10 1 Thru 9 $\Delta = 8$ 3 = 12 4 = 16	BLOCKIN 15 15 A \(\triangle = 02 \)	16 17 A = 02	G ②] 18
Key 1 Wey 1 20 Balance O	Key 2	Key 3	Key 4 35 38
Key 5	Key 6	Key 7	Key 8 55 58
	Input Reel Iden A/R MA	tification S F E R 70	This value will be compared with the value found in the header label of the input file.
Input tape (s) may contain	Output Reel Ide SORTED 71 no more than 30,000 its	A/R 80	This value will be placed in the header label of the sorted output tape. n order to use Tape 1

- Tape input and output of Sort B are assumed to be blocked 2, within an 8K machine. If blocking factor is other than 2, the factor must be entered in the appropriate input and/or output box.

Figure 2-4. Sort B Program; Three-Tape Sort (Tape Input, Descending Order) - Parameter Card

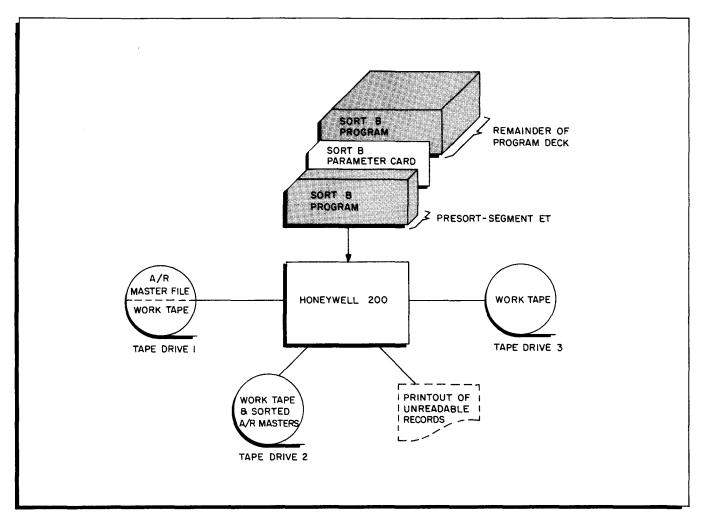


Figure 2-5. Sort B Program; Three-Tape Sort (Tape Input, Descending Order) - Computer Setup

FOUR-TAPE SORT (CARD INPUT)

Application

A hospital patients' history file is to be sorted on the following fields:

Attending Physician No. (columns 60-67)

Date of Admission (Month, Day, Year - columns 25-30)

Date of Discharge (Month, Day, Year - columns 31-36)

Patient Name (columns 1-15)

The history file is on punched cards. The computer being used has a 12,288-character memory and four tape drives.

- 1. Punch a Sort B parameter card as shown in Figure 2-6.
- 2. Set up the computer run as shown in Figure 2-7.

	, , , , , , , , , , , , , , , , , , ,
EASYTAB - SORT B	Date
	I.D
APPLICATION FOUR-TAPE SORT (CARD INPUT)	
APPLICATION 780X-1772 CONT (CHAD INPUT)	Author
	cates lith
$S_1O_1R_1T_1B$	tape is available TAPE TAPE
1 5 INPUT OPTION	
<u>C</u> 4	
$ \begin{array}{ccc} 6 & 7 \\ C = Card & \Delta = No & 4th & 7 \end{array} $	
T = Tape $4 = 4th Tape$	Work
Machine has 12,288 characters	1 = Use Tape 1 as Work
NO. OF REELS MACHINE of memory INPUT OF INPUT SIZE BLOCKING ②	OUTPUT BLOCKING (2)
3	
10 11 15 16	17 18
1 Thru 9 $\Delta = 8K$ $\Delta \Delta = 02$ 3 = 12K	△△= 02
4 = 16K Attending Physician #	
Admission	Admission Discharge
Key 1 Key 2-Year Key	3 Month/Day Key 4 Year
6008 2902 251	<u>84</u> 3582
_Discharge Patient	33 33 36
Key 5 Month/Day Key 6 Name Key	7 Key 8
3/84 0/15	, , , , , , , , , , , , , , , , , , ,
40 43 45 48 50	53 55 58
Input Reel Identification	1 1
61	70
Output Reel Identification	
	value to be placed in
SORTED HIS	output file.
① Input tape (s) may contain no more than 30,000 items, Bloc	sked 2 in order to use Tane 1
as a work tape.	and 27 in order to ose tupe t
Tape input and output of Sort B are assumed to be blocked factor is other than 2, the factor must be entered in the ap	

Figure 2-6. Sort B Program; Four-Tape Sort (Card Input) - Parameter Card

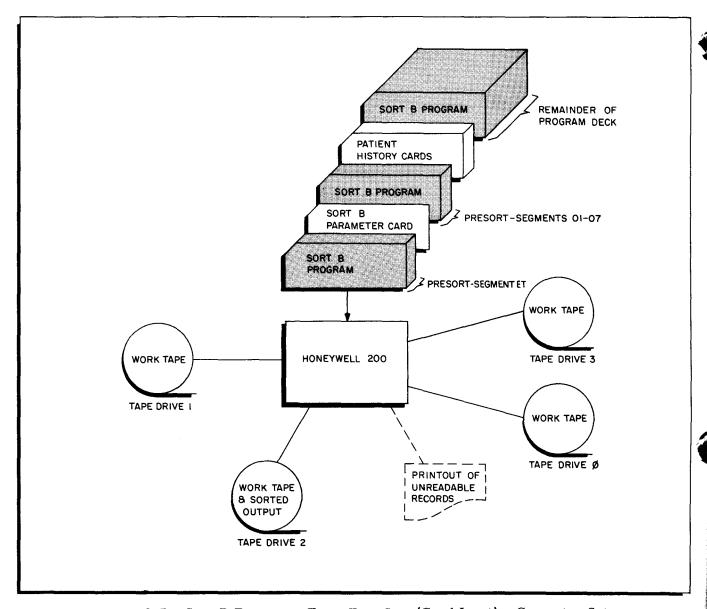


Figure 2-7. Sort B Program; Four-Tape Sort (Card Input) - Computer Setup

FOUR-TAPE SORT (TAPE INPUT)

Application

An inventory master file is to be sorted according to the contents of the following fields:

Cost Ratio (columns 71-76)

Component Number (columns 1-8)

The inventory file is on tape. The computer being used has 16,384 characters of memory and four tape units. The number of items in inventory vary between 40 - 45,000.

	EASYTAB - SORT B	Date
. 		I.D
APPLICATION FOUR-TAPE S	AT (TAPE INPUT)	Author
S ₁ O ₁ R ₁ T ₁ B ₅	INPUT 6 C=Card \(\Delta = \text{No 4th Tape} \) T=Tape 4TH TAPE OPTION 7 7 C=Card \(\Delta = \text{No 4th Tape} \) 4 = 4th Tape 7 T=Tape 4 = 4th Tape	Finput file is to be rewound at end of Presort INPUT and replaced by work tape OPTION ① SEQUENCE R = Do Not Use Tape 1 as Work 1 = Use Tape 1 as Work
NO. OF REELS OF INPUT ID 10 1 Thru 9 $\Delta = 8K$ $3 = 12K$ $4 = 16K$	INPUT BLOCKING ② B 15 16 $\Delta \Delta = 02$	OUTPUT LOCKING ② 17 18 ΔΔ= 02 Casytab blocking
Cost Ratio Key 1 7/ 0/6 20 23 2	Component Number Key 2 Key 3 September 1	Key 4
Key 5	Key 6 Key 7	Key 8 53 55 58
6	Input Reel Identification IN VMA STER	Input label checked for this identification value
7	Output Reel Identification IN IN A STER	Value to be placed in output
Input tape (s) may contain no as a work tape.	more than 30,000 items, Block	ed 2, in order to use Tape 1
2 Tape input and output of Sor		, within an 8K machine. If blocking opriate input and/or output box.

Figure 2-8. Sort B Program; Four-Tape Sort (Tape Input) - Parameter Card

Preparation

- 1. Punch a Sort B parameter card as shown in Figure 2-8. Notice that the program is directed to rewind the input reel so that it can be removed and replaced by the work tape.
- 2. Set up the computer run as shown in Figure 2-9.

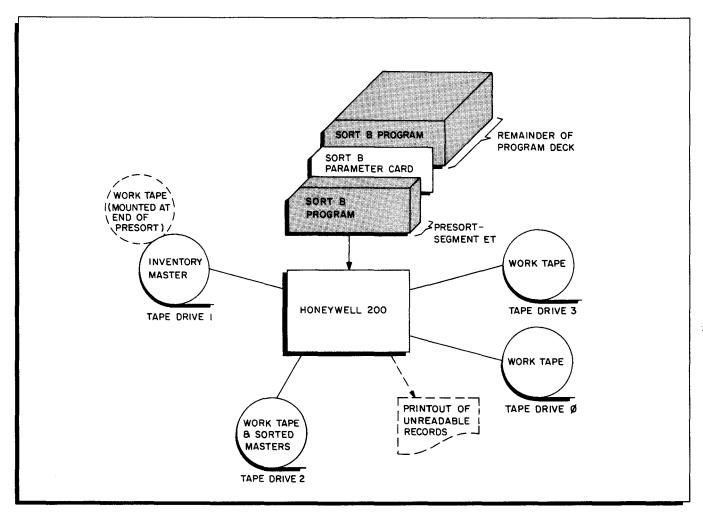


Figure 2-9. Sort B Program; Four-Tape Sort (Tape Input) - Computer Setup

LOADING THE SORT B PROGRAM FROM TAPE

In all of the previous examples, the Sort B program was loaded from cards. On any computer having only three tape drives this is mandatory since the sorting process requires a minimum of three work tapes. In a four-tape system, two alternatives are possible: (1) the fourth drive can be used for loading the Sort B program; or (2) the additional drive can be used for a work tape. In most instances faster sort speeds can be realized by choosing the latter alternative. One obvious exception to this rule is the situation where many short files are to be sorted in consecutive operations. In this case, the time consumed by the repeated loading of the sort program from cards for each execution might well be longer than the time saved by adding the fourth work tape.

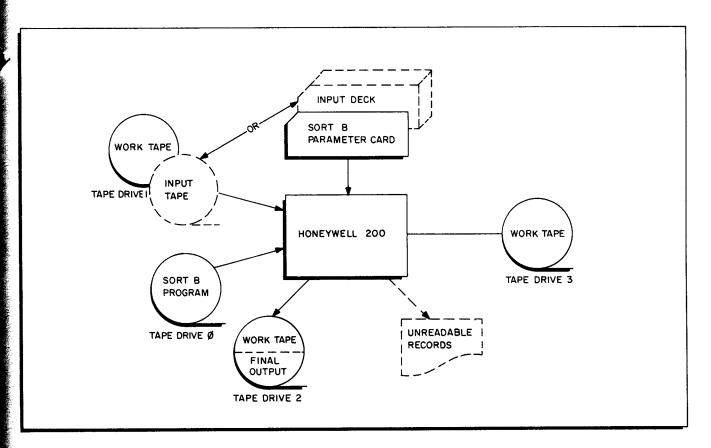


Figure 2-10. Sort B Program; Four-Tape Configuration - Program Tape with Three-Tape Sort

	EASYTAB - SORT B	Date
		I.D
APPLICATION CHECK SHE	ET	Author
$ \begin{bmatrix} S_{\uparrow} O_{\downarrow} R_{\downarrow} T_{\downarrow} B \\ 1 \end{bmatrix} $	INPUT OPTION $ \begin{array}{cccc} & & & & & & & & & \\ & & & & & & & \\ & & & & $	N OPTION
Leave blank if input on cards. NO. OF REELS MACHINE OF INPUT SIZE $ \begin{array}{cccccccccccccccccccccccccccccccccc$	INPUT BLOCKING ② 15 16 Δ Δ = 02 Blocking = "02	1 = Use Tape 1 as Work OUTPUT BLOCKING ② 17 18 \[\Delta \to = 02 \] " if Easytab compatibility is desired
Check Key l beginning 20 23 2 position and length of	Key 2 Key	3 Key 4 33 35 38
each key. Key 5	Key 6 Key 50 50	7 Key 8 53 55 58
6	Input Reel Identificatio	n
 	Output Reel Identificati	on 1 80
as a work tape. ② Tape input and output of Sort	· B are assumed to be blocked	cked 2, in order to use Tape 1 2, within an 8K machine. If blocking opropriate input and/or output box.

Figure 2-11. Sort B Program Check Sheet

SECTION III MERGE B PROGRAM

INTRODUCTION

The Merge B program performs four collator functions: merging, match merging, selecting unmatched primaries, and selecting unmatched secondaries.

The general setup of the program is shown in Figure 3-1.

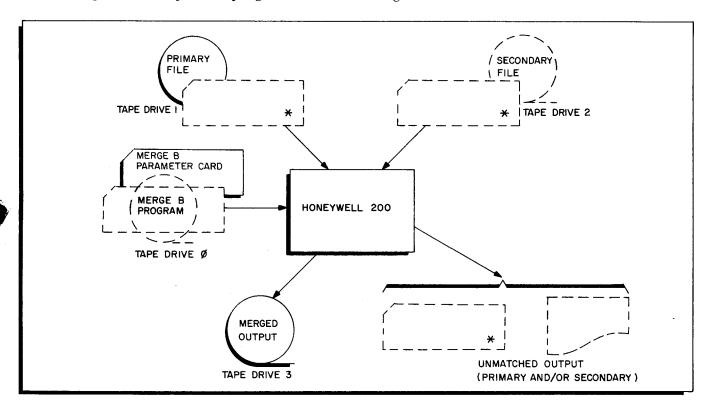


Figure 3-1. The Merge B Program

A complete coverage of the Merge B program director card and operations procedures can be found in Section II of the Easytab Utility Programs Software Manual, File Number 206.

SPECIFICATIONS

1. Both the primary and the secondary files must be sorted in the same sequence and in the same direction (ascending or descending) before being entered into the merge. The key data fields, of which a maximum of five may be specified, need not occupy the same relative positions in the primary file as they do in the secondary file, although this is usually the case when merging. All tape files are assumed to have a blocking factor of two.

- 2. The appropriate Merge B parameter card must be punched and inserted into the card reader to provide the following data to the Merge B program:
 - a. The number of key fields to be considered during the merge.
 - b. The function (normal merge, match merge, select unmatched primary, or select unmatched secondary) to be performed on the two files.
 - c. The type of media (punched cards or magnetic tape) on which the primary and secondary input files are stored and the type of media (punched cards or printed output) desired for the selected records. Unless a separate card reader and a card punch are available, only one type of card operation can be specified.
 - d. The location of the key fields on the primary and the secondary input files. The key fields are specified, left to right, in the same order as they are wired into the selector hubs on the collator plugboard.

NORMAL MERGE

Application

Two card decks, a year-to-date summary file and a monthly summary file are merged, producing a merged output deck. The setup under the former tabulating system is shown in Figure 3-2.

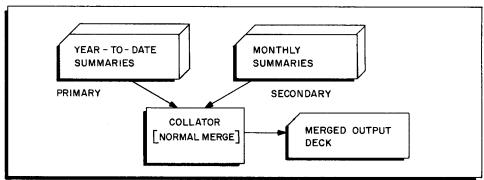


Figure 3-2. Merge B Program; Normal Merge - Tabulating Setup

Under the computer system, the year-to-date summaries have been stored on magnetic tape. The key fields are located as follows:

Area code (major) col. 16-23
Account number (interm.) col. 1-10

Date (minor) col. 75-80 (Month, day, year)

Both files are in ascending order.

- 1. Punch a Merge B parameter card (Figure 3-3).
- 2. Set up the run as shown in Figure 3-4. Set SENSE switch 4 OFF to indicate that the files are in ascending sequence.

	EASYTAB - MERGE	<u> </u>
		Date
	_	I.D
ICATION AMOUNT MERCA		Author
NO. OF KEYS To 5 NO. OF KEYS FUNCTION 1 to 5 SP = Select Prim SS = Select Seco MM = Match Merg NM = Normal Mer	ndary PT = Tape ST = Tape ge	SELECTED PRIMARY OUTPUT 18 19 21 22 PL = Printer PP = Punch SELECTED SECONDARY OUTPUT 21 22 PL = Printer SP = Punch
PRIMARY KEYS Key 1 25 28 29	Key 2 Key 3 51 10 7 9 6 2 32 33 33	
	Area code (Major) Key 2 Account (Interm.) Key 3 7 9 02 52 53 56	Date (Minor) Year Month D Key 4 Key 5 7 5 0 2 7 7 0 2 57 60 61 64

Figure 3-3. Merge B Program; Normal Merge - Parameter Card

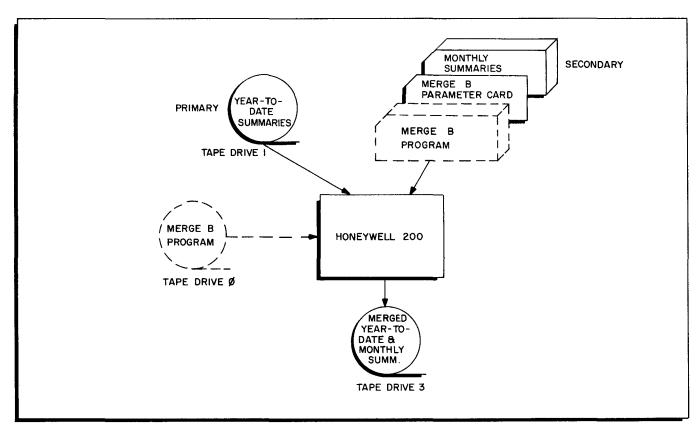


Figure 3-4. Merge B Program; Normal Merge - Computer Setup

MATCH MERGE

Application

Twice each year the year-to-date summary file is used as input to a run which prints a semiannual statement for each customer account. Statements are printed only for those accounts which were active during the six month period. As part of the processing, a name and address card must be merged in front of the summary record for each account. The setup under the tabulating system is shown in Figure 3-5.

Under the computer system both files are on magnetic tape. The key fields are located as follows:

	Name and Address File	Year-to-Date Summary File	
Area Code (major)	col. 1-8	col. 16-23	
Account Number (minor)	col. 9-18	col. 1-10	

Preparation

Punch a Merge B parameter card (Figure 3-6). Since, under the old system the unmatched primaries (name and address cards) were listed, we indicate in columns 18-19 that they are to be printed. Likewise, since the unmatched

- secondaries (summary cards) were corrected and later inserted, we indicate in columns 21-22 that selected secondaries are to be punched out.
- 2. Set up the run as shown in Figure 3-7. Set SENSE switch 4 OFF to indicate that the input files are in ascending sequence.

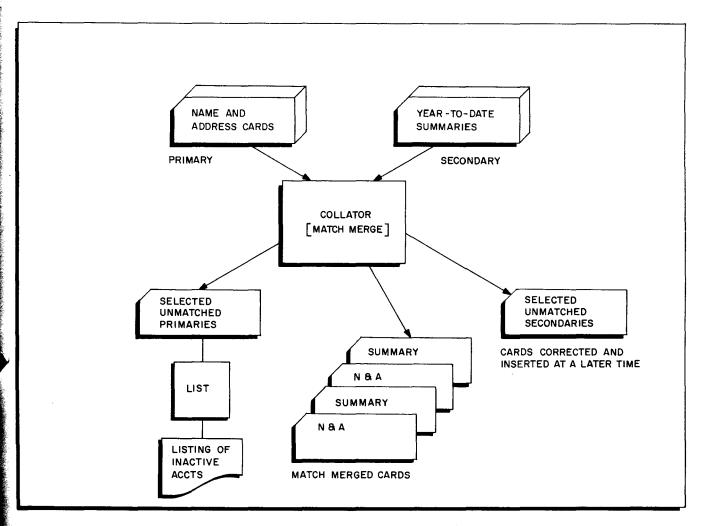


Figure 3-5. Merge B Program; Match Merge - Tabulating Setup

EASYTAB - MERGI	E Date	
APPLICATION MATCH MERGE EXAMPLE	I.D	
M, E, R, G, E,		
NO. OF KEYS FUNCTION PRIMARY INPUT INPUT INPUT INPUT INPUT INPUT INPUT INPUT ST 15 16 1 to 5 SP = Select Primary SS = Select Secondary MM = Match Merge NM = Normal Merge	SELECTED PRIMARY OUTPUT PL 18 19 21 22 PL = Printer PP = Punch SELECTED SECONDARY OUTPUT SI = Printer SP = Punch	
PRIMARY KEYS Key 1 Key 2 Key 3 25 28 29 32 33 36	Key 4 Key 5 5 37 40 41 44	
Area Code Account Number (Minor) Key 1 Key 2 Key 3 As 48 49 52 53 56	Key 4 Key 5	

Keys are in descending order - Major is Key 1, Lowest Minor is Key 5.

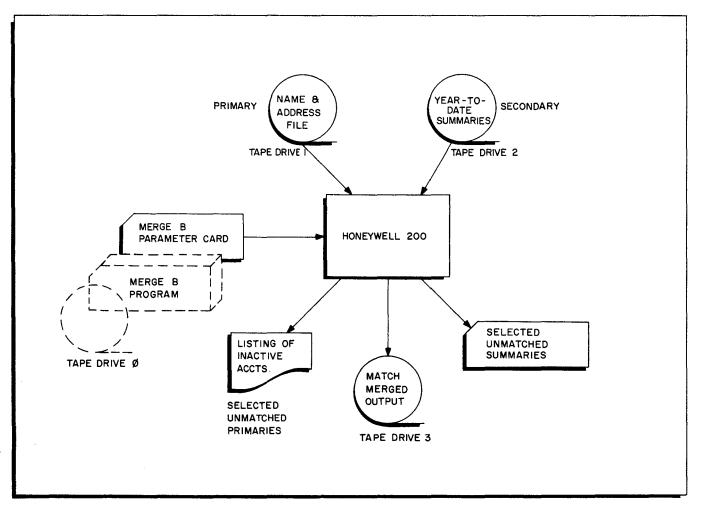


Figure 3-7. Merge B Program; Match Merge - Computer Setup

SELECT PRIMARY

Application

Once each week the accumulated sales detail cards are merged in front of the month-to-date sales summaries in preparation for the month-to-date tabulation and summarizing run. Unmatched detail cards are selected as errors. The setup under the tabulating system is shown in Figure 3-8.

Under the computer system, the monthly summary file has been converted to magnetic tape. The key data for both files is located as follows:

Store code (major) col. 75-80

Department (intermediate) col. 70-74

Merchandise code (minor) col. 01-10

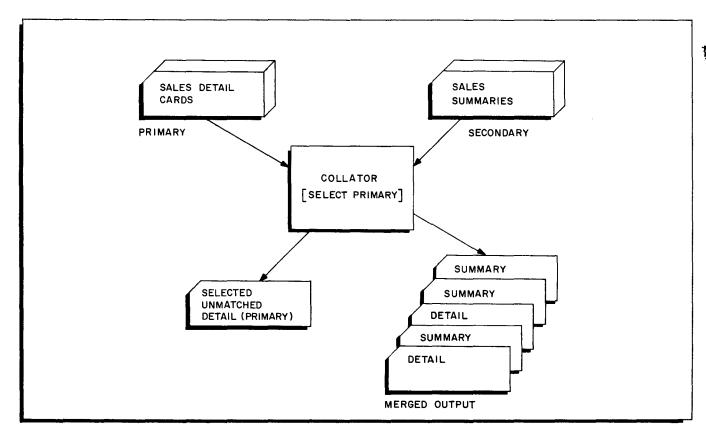


Figure 3-8. Merge B Program; Select Primary - Tabulating Setup

Preparation

- 1. Punch a Merge B parameter card (Figure 3-9). Since only one card operation can be executed, the selected unmatched primaries cannot be punched out at the same time as the input detail sales cards are being read. Because of this, we have chosen to print the unmatched detail cards.
- 2. Set up the run as shown in Figure 3-10. Set SENSE switch 4 OFF to indicate that the input files are in ascending sequence.

SELECT SECONDARY

Application

Preparatory to calculating gross pay, the weekly payroll cards must be merged behind the corresponding payroll master cards which contain the hourly rate for each employee. Unmatched employee payroll cards are selected. The setup under the tabulating system is shown in Figure 3-11.

EASYTAB - MERGE				
APPLICATION SELECT PRIMARY EXAMPLE	I.D			
M, E, R, G, E, 5				
NO. OF KEYS FUNCTION PRIMARY INPUT INPUT To 5 SP = Select Primary SS = Select Secondary MM = Match Merge NM = Normal Merge PRIMARY INPUT SECONDARY INPUT SET 15 16 SC = Card SC = Card ST = Tape	SELECTED PRIMARY OUTPUT SECONDARY OUTPUT 18 19 21 22 PL = Printer PP = Punch SL = Printer SP = Punch			
New 1 Key 2 Key 3	Merchandise code (Minor) Key 4 Key 5			

Keys are in descending order - Major is Key 1, Lowest Minor is Key 5.

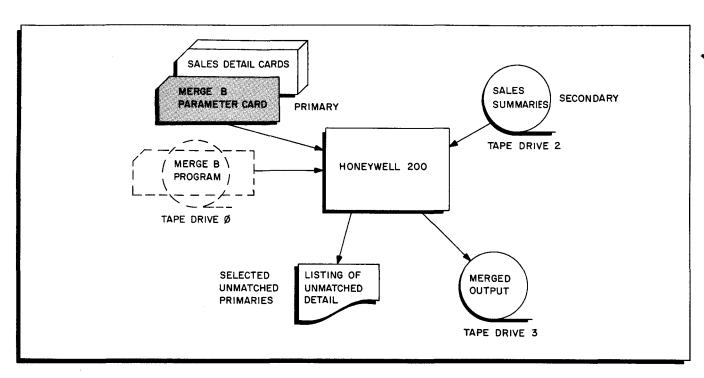


Figure 3-10. Merge B Program; Select Primary - Computer Setup

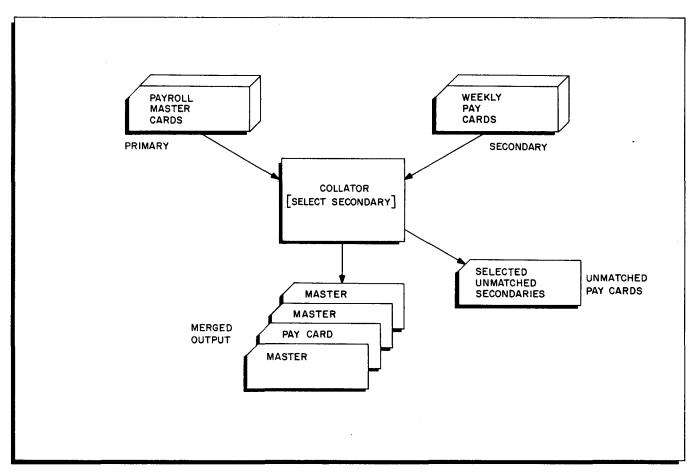


Figure 3-11. Merge B Program; Select Secondary - Tabulating Setup

EASYTAB - MERGE	Date
	I.D
PPLICATION SEIECT SECONDARY EXAMPLE	Author
NO. OF KEYS FUNCTION PRIMARY INPUT INPUT To 5 1 to 5 SP = Select Primary SS = Select Secondary PC = Card SS = Select Secondary PT = Tape MM = Match Merge NM = Normal Merge	SELECTED PRIMARY OUTPUT 18 19 21 22 PL = Printer PP = Punch SELECTED SECONDARY OUTPUT 21 22 PL = Printer SL = Printer SP = Punch
Key 1 Key 2 Key 3	Key 4 Key 5 J J J S 40 A1 44 Department Number Key 4 Key 5 Key 5 The state of the state
Keys are in descending order – Major is Key	1, Lowest Minor is Key 5.

Figure 3-12. Merge B Program; Select Secondary Example - Parameter Card

Under the computer system the payroll masters and the payroll cards have both been placed on magnetic tape. The key data fields for both files are located as follows:

	Master file	Pay card file
Plant number	col. 1-3	col. 20-22
Building number	col. 4-6	col. 23-25
Department number	col. 7-10	col. 26-29
Employee number	col. 11-15	col. 1-5

- 1. Punch a Merge B parameter card (Figure 3-12). Indicate in columns 21-22 that the selected unmatched secondaries are to be punched out onto cards due to their extremely small volume.
- 2. Set up the run as shown in Figure 3-13. Set SENSE switch 4 OFF to indicate that the input files are in ascending sequence.

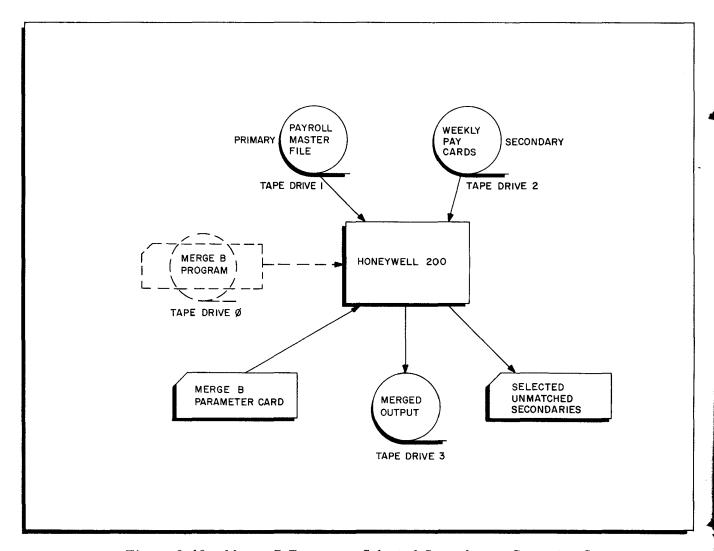
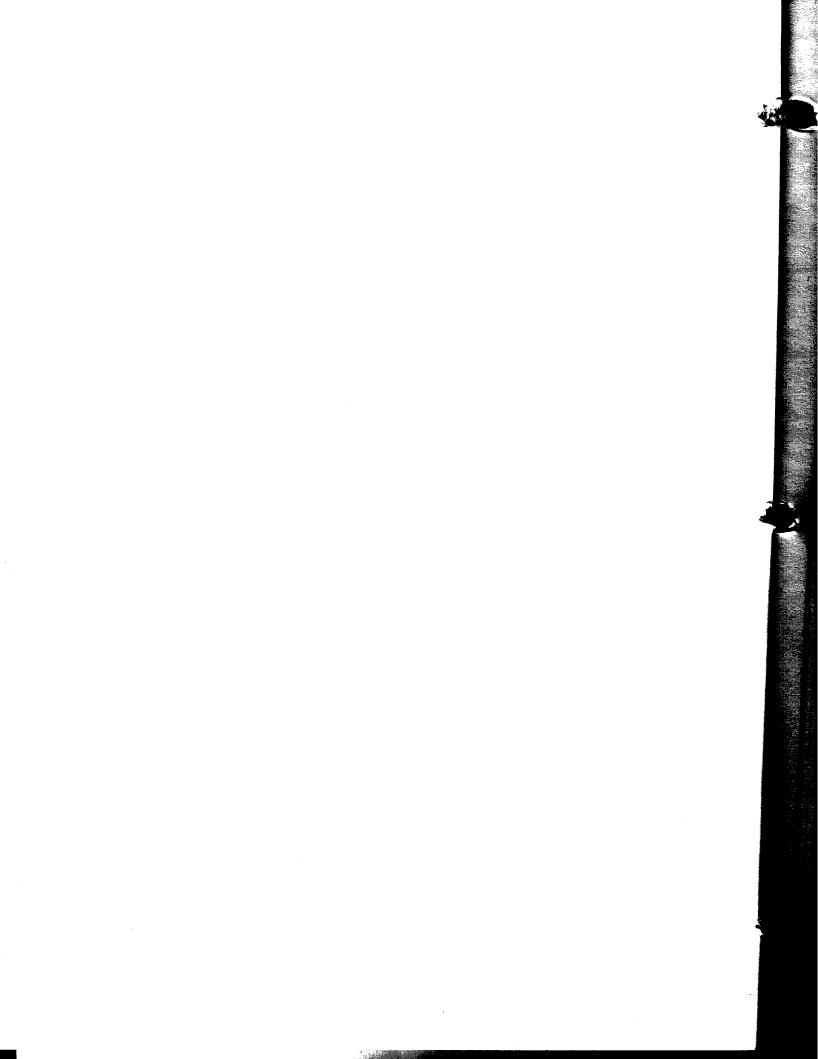


Figure 3-13. Merge B Program; Selected Secondary - Computer Setup

EASYTAB - MERGE		
	Date	
APPLICATION CHECK SHEET	Author	
AFFEICATION	Author	
$ \underbrace{\mathbf{M}_{1}\mathbf{E}_{1}\mathbf{R}_{1}\mathbf{G}_{1}\mathbf{E}_{5}}_{\mathbf{S}} $		
	Must be specified.	
Number of keys No. OF must be equal KEYS FUNCTION INPUT INPUT INPUT to number of boxes filled below. 7	SELECTED PRIMARY OUTPUT 18 19 21 22 PL = Printer PP = Punch SELECTED SECONDARY OUTPUT 21 22 PL = Printer SL = Printer SP = Punch	
MM = Match Merge NM = Normal Merge Card reader/punch	unit: only one card file can be	
specified. Only one print fil	e can be specified.	
PRIMARY KEYS		
Check beginning position and length	Key 4 Key 5 37 40 41 44	
of each SECONDARY KEYS Key 1	Key 4 Key 5 5 57 60 61 64	
Check corresponding Primary/Secondary k	cey lengths (e.g., columns 27-28	
must equal columns 47-48, etc.)		
Keys are in descending order – Major is Key	1, Lowest Minor is Key 5.	

Figure 3-14. Merge B Program Check Sheet



SECTION IV TOTAL B PROGRAM

INTRODUCTION

The Total B Program performs the three basic functions of the accounting machine:

- 1. <u>Listing</u> produces a line of print for each input item plus a total line for each control level break.
- 2. Accumulation accumulates and prints a maximum of seven total fields on up to four control levels plus a final total line.
- 3. Tabulating individual input items are not printed; a line of totals is printed for each control break.

The general setup for the Total B Program is shown in Figure 4-1. A complete coverage of the program can be found in Section VI of the Easytab Utility Programs Software Manual, File Number 206.

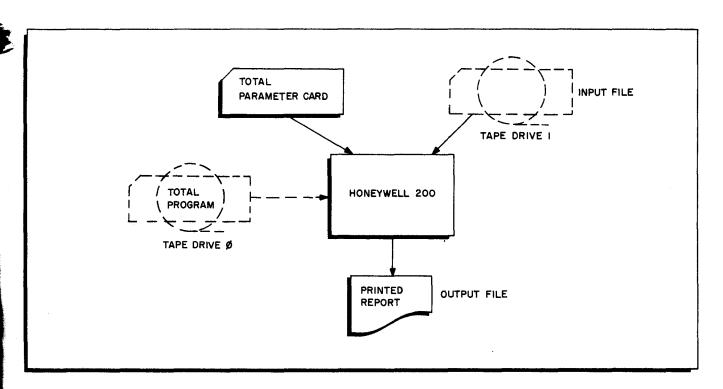


Figure 4-1. The Total B Program

SPECIFICATIONS

1. Input can be on punched cards or on magnetic tape.

- 2. Output is a printed report.
- 3. Listing: One line is printed for each input item. Each line contains the printout of the contents of up to four control fields and the contents of up to seven total fields. In addition, up to four level of totals plus a final total can be printed.
- 4. Tabulating: Each line contains the contents of up to four control fields and the totals of up to seven accumulated amount fields. Four levels of totals plus a final total level can be selected.
- 5. Page Headings: A page number is automatically printed at the top of each page. In addition, one- or two-line report headings and field headings can also be printed.

LISTING

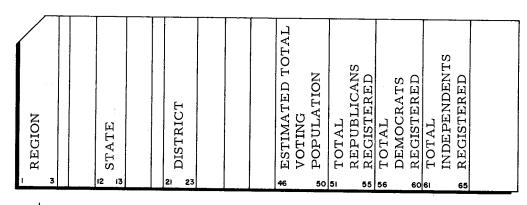
Application

A deck of cards (see Figure 4-2) is to be listed with controls on the following fields:

Region (columns 1-3) major field.

State (columns 12-13) intermediate field.

District (columns 21-23) minor field.



						73	86
		POLL ST	TATISTICS A	AS OF DE	CEMBER	31, 1967	
	REGION	STATE	DISTRICT	TOTAL VOTE	REPUB- LICANS	DEMOCRATS	INDEPENDENTS
	001	25	205	10259	2056	1437	975
	001	25	205	7702	1502	5516	1961
Minor-	→TOTAL-1			17961	3558	6953	2936
1 1	001 001	25 25	206 206	584 200	303 85	125	86
	001	25	206	25500	14680	8945	50 855
Minor —	→TOTAL-1			26284	15068	9103	991
Interm.—	→TOTAL-2			44245	18626	16056	3927
	001	26	046	9009	2564	6015	333

Figure 4-2. Total B Program; Listing - Input and Output File Formats

EASYTAB - TOTAL	
	Date
Comment of the second s	I.D
APPLICATION LISTING - CARD TO PRINTER	Author
TOTAL	
$ \begin{array}{c c} \hline \Gamma_1 O_1 \Gamma_1 A_1 L \\ \hline 1 & 5 & 7 \text{ 3 control levels} \\ \hline \end{array} $	otal fields
NO. OF ACCUMU-	REPORT FIELD
INPUT CONTROL KEYS LATIONS FUNCTION	HEADER HEADER
7 9 11 13	See Figure 15 16 Li-h
C = Card 1 To 4 1 To 7 \bigcirc T = Tab T = Tape L = List	0 To 4 0 To 4
CONTROL KEYS ^③	1 to 4 = No of Header Cards
Key 1 Key 2 Key 3	Key 4
0/103 1202 2/103	
20 23 24 27 28 Region State	31 32 35 - District
LEFT - MOST PRINT POSITIONS OF CON	^
Key 1 Key 2 Key 3	Key 4
9 1 2 1 2 1 3 3 3 3 9 4 0 4 1	42 43
30 37 30 35 40 41	**************************************
ACCUMULATION FIELDS ©	
Field 1 Field 2 Field 3	Field 4
44 47 48 51 52 Total Republicans De	55 56 59 emocrats Independents
44 47 48 51 52 Total Republicans Field 7	emocrats Lindependents
60 63 64 67 68	
Indicates the highest accumulation key field used.	
Print positions 117–120 of the first line of a Report Header co.	ntain the Page Number.
(3) Each key may not exceed ten characters.	
 Total number of print positions may not exceed 36 characters. The print positions for the accumulations are fixed as follows: 	
Field 1 = 37 to 48; Field 2 = 49 to 60; Field 3 = 61 to 72; Field 5 = 85 to 96; Field 6 = 97 to 108; Field 7 = 109 to	; Field 4 = 73 to 84;
71610 5 05 16 70, Fleta 6 77 16 100, Fleta 7 107 10	120.

Figure 4-3. Total B Program; Listing (Card to Printer) - Parameter Card

Preparation

- 1. Punch the following cards:
 - a. Total B parameter card (see Figure 4-3).
 - b. Report heading card (see Figure 4-4).
 - c. Three field heading cards (see Figure 4-4).
- 2. Set up the Total B program run as shown in Figure 4-5.

TABULATING

Application

The same poll statistics cards are to be tabulated to produce a report as shown in Figure 4-6. Controls are on the same fields (region, state, district) as in the listing example.

Preparation

The preparation is the same as that of the listing example (page 4-5) except that a "T" must be punched in column 13 of the director card.

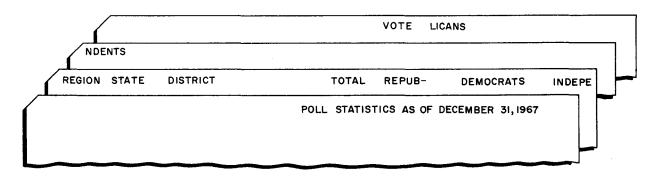


Figure 4-4. Total B Program; Listing - Report and Field Heading Cards

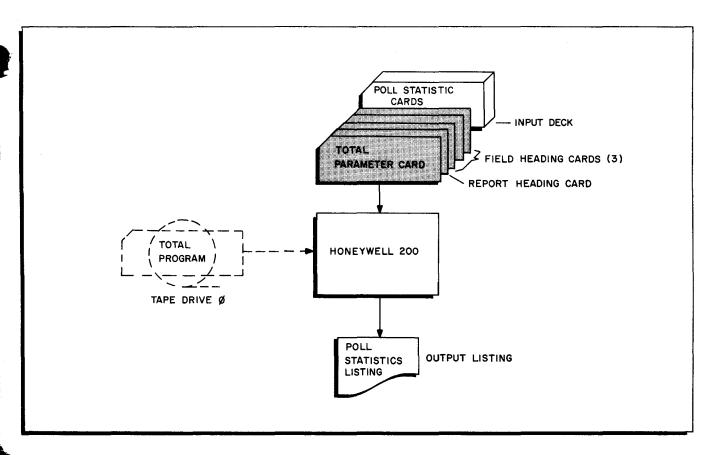


Figure 4-5. Total B Program; Listing (Card to Printer) - Computer Setup

ı							
i	POLL STATISTICS REPORT						
	REGION	STATE	DISTRICT	TOTAL	REPUB- LICANS	DEMOCRATS	INDEPENDENTS
Minor_	001	25	205	17961	3558	6953	2936
WITHOT	001	25	206	26284	15068	9103	991
Interm.	→TOTAL-2			44245	18626	16056	3927
	001	26	046	356700	220005	114330	12240
	001	26	049	4500	3627	300	265
	001	26	054	6650	4771	1520	123
	TOTAL-2			367850	228403	116150	12628
Major —	→TOTAL-3			412095	247029	132206	15555
	002	04	155	55607 —	23661	25817	599

Figure 4-6. Total B Program; Tabulating - Output File Format

EASYTAB - TOTAL			
	I.D		
APPLICATION CHECK SHEET			
APPLICATION CHECK GHEET	Author		
T ₁ O ₁ T ₁ A ₁ L Must equal number of keys fill Must equal	led below. highest accumulation field used.		
INPUT TO SERVICE TO S	FUNCTION REPORT FIELD HEADER Total must equal number of header cards that follow (cannot be 1 to 4 = No of Header Cards blank).		
CONTROL			
not exceed 36.	Key 3 Key 4 35 35		
LEFT - MOST PRINT POSITION	······································		
Last print position used must be less than 36. $ \begin{cases} $	Key 3 Key 4 40 41 42 43		
ACCUMULATIO	n fields [©]		
Maximum length of each Field 1 Field 2	Field 3 Field 4 2 55 56 59		
accumulation Field 5 Field 6 field is nine.	Field 7		
Indicates the highest accumulation key field used Print positions 117-120 of the first line of a Report Header contain the Page Number.			
3 Each key may not exceed ten characters.4 Total number of print positions may not exceed 3	36 characters		
5 The print positions for the accumulations are fixed 1 = 37 to 48; Field 2 = 49 to 60; Field 5 = 85 to 96; Field 6 = 97 to 108; Field 5	ed as follows: I 3 = 61 to 72; Field 4 = 73 to 84;		

Figure 4-7. Total B Program Check List

SECTION V SELECT B PROGRAM

INTRODUCTION

The Select B program provides selection functions far in advance of those available on the collator. On the typical collator, selection of cards can be made according to whether a card is the first or last card within a control group, or whether a card contains a particular number or other value in certain columns. In contrast, the Select program permits the selection of cards or card images according to any one of the following methods:

- 1. Selection by count Every nth item of the input file can be selected.
- 2. Selection by location within the control group The first or the last item in each group of items can be selected from the input file.
- 3. Selection by test Up to three fields on each input item can be compared to one or more values for an equal to, higher than, or lower than comparison. All cards which satisfy these tests can be selected. For example, all cards specifying a subscriber's age of greater than 30 and an average income of less than 7000 dollars and no dependents can be selected from an input file.

The general setup for the program is shown in Figure 5-1.

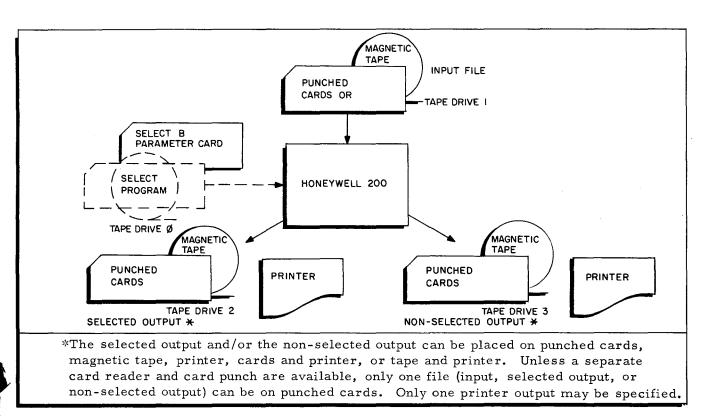


Figure 5-1. The Select B Program

A complete coverage of the Select B program, including the format of the director card and the operating procedures, can be found in Section IV of the Easytab Utility Programs Software

Manual, File Number 206.

SPECIFICATIONS

- 1. The input file can be in the form of punched cards or magnetic tape. The selected and non-selected output files can be placed on cards, tape, or printer, or on a combination of cards and printer or tape and printer.
- 2. Selection by count Selection of every nth item of the input file is specified by coding columns 1-10 and columns 12-15 of the Select parameter card.
- 3. Selection by location within group All columns of the parameter card except for the counter select field (columns 12-15) and the test constant field (columns 33-80) may be utilized whenever this function is chosen. A control group is determined by comparing on up to three key fields. If more than one key field is specified a logical OR relationship is assumed and a control break occurs each time there is a change in the contents of one or more of the fields between two contiguous card records. Then, depending upon the value in column 29 (must be a "1" or "2" only), the first or the last card of the preceding control group is selected.
- 4. Selection by test Cards are selected by comparing the contents of one to three key fields to constant values for an equal to, greater than, or less than relationship. If a logical OR is indicated in column 29, only one key field test need be satisfied in order for the card to be selected. If a logical AND is indicated, the contents of all of the key fields specified must satisfy the tests specified in order to select the card. All columns of the parameter card can be utilized with the exception of the counter select field (columns 12-15).

SELECTION BY COUNT (TAPE TO CARD)

Application

Every twentieth item of an input income status file is to be selected for a statistical study. The income status file is on tape; the selected items are to be punched and listed.

- 1. Punch a Select B parameter card as shown in Figure 5-2.
- 2. Set up the computer run as shown in Figure 5-3. Notice that the non-selected items are not written out since they are not desired. Therefore, no output device was specified for them in the director card.

EASYTAB - SELECT APPLICATION SELECTION BY COUNT (TAVE TO CARD)	Date I.D Author
SIEILEC	
INPUT SELECTED OUTPUT OUTPUT OUTPUT OUTPUT CP C C C C C C C	COUNTER SELECT 12 15
Key 1 Key 2 Key 3 16 19 20 23 24 27 Test 1 Test 2 Test 3 29 30 31	CONDITION 28 A = And O = Or
Key 1 Test Constant	
33	48
Key 2 Test Constant	
49	64
Key 3 Test Constant	
65	80
TESTS: E = Equal H = High	
L = Low 1 = First Card	
2 = Last Card	

Figure 5-2. Select B Program; Selection by Count (Tape to Card) - Parameter Card

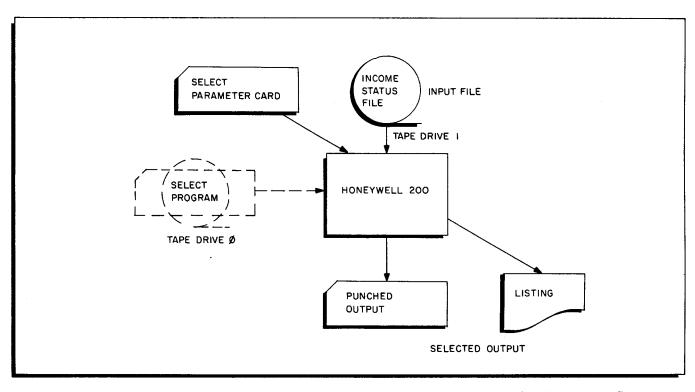


Figure 5-3. Select B Program; Selection by Count (Tape to Card) - Computer Setup

SELECTION BY LOCATION WITHIN GROUP (CARD TO TAPE)

<u>Application</u>

In a deck of cards representing the sales transactions for the month, the first card of each control group is a name and address header. It is desired to place this file on tape, but eliminate the header cards.

- 1. Punch a Select B parameter card as shown in Figure 5-4. Notice that the header cards are eliminated by indicating that the <u>first</u> card is to be selected from each control group. The key fields are region number (columns 8-10) and store code (columns 20-25). The OR condition (column 28) is assumed; i.e., a control break in either of the control fields constitutes the beginning of a new group.
- 2. Set up the run as shown in Figure 5-5. The selected output (i.e., the header cards) can be eliminated entirely by not specifying an output device in columns 7-8 of the parameter card.

EASYTAB - SELECT	Date
	I.D
APPLICATION SELECTION BY LOCATION WITHIN GROUP	Author
S ₁ E ₁ L ₁ E ₁ C ₅	
INPUT SELECTED OUTPUT OUTPUT OUTPUT 6 7 8 $C = Card$	COUNTER SELECT 12 15
Region Key 1 Key 2 Key 3 A A A A A A A A A A A A A A A A A A	CONDITION 28 A = And O = Or
Key 1 Test Constant	48
Key 2 Test Constant	
49	64
Key 3 Test Constant	
65	80
TESTS: E = Equal H = High L = Low	
1 = First Card 2 = Last Card	

Figure 5-4. Select B Program; Selection by Location within Group (Card to Tape) - Parameter Card

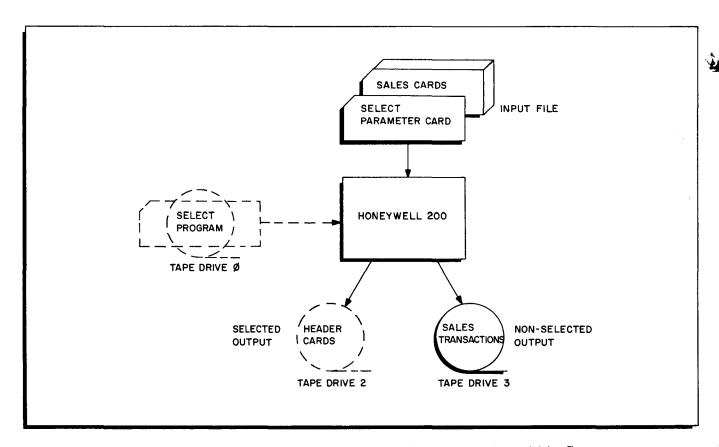


Figure 5-5. Select B Program; Selection by Location within Group (Card to Tape) - Computer Setup

SELECTION BY TEST

Application 1 - Single Field Test With Multiple Values

Whenever only one key field is being examined as a basis for card selection, the field can be tested for one, two, or three different values. For example, we might want to select all cards which have a coverage code of either 2300, 5614, or 7779 from an insurance subscriber file. The coverage code is located in columns 34-37. The insurance file is on tape and we need both a punched deck and a printed listing of all of the items containing any of these codes.

- Punch a Select B parameter card as shown in Figure 5-6. Notice that the same key field definition (coverage code) is repeated in all three key fields. The three values to be used in the comparison are indicated below in the three fields reserved for test constants. The OR condition is specified in column 28 since an equal comparison to any one of the three values will satisfy the requirements for selection.
- 2. Set up the run as shown in Figure 5-7. The non-selected output tape file can be eliminated by not specifying an output device in columns 9-10.



EASYTAB - SELECT	Date
PPLICATION STUGIE FIELD TEST (TAPE TO CARD)	1.D
SELEC	
$\begin{bmatrix} S_{1}E_{1}L_{1}E_{1}C \\ 1 \end{bmatrix}$	
INPUT SELECTED OUTPUT OUTPUT CUTPUT CUTPUT KEYS OUTPUT NO. OF KEYS OUTPUT SELECTED OUTPUT KEYS OUTPUT SELECTED OUTPUT KEYS OUTPUT SELECTED OUTPUT SELECTE	COUNTER SELECT 12 15
TP = Tape & Print TP = Tape & Print AP = Print Coverage Code Field Key 1 Key 2 Key 3	CONDITION
3 4 0 4 3 4 0 4 27	28 A = And
Test 1 Test 2 Test 3 29 30 31	O = Or
Key 1 Test Constant	
2366	48
Key 2 Test Constant	
5-6-1-4	64
Key 3 Test Constant	
03	80
TESTS: E = Equal H = High L = Low	
1 = First Card	
2 = Last Card	

Figure 5-6. Select B Program; Selection by Test with Single Field Containing Multiple Values - Parameter Card

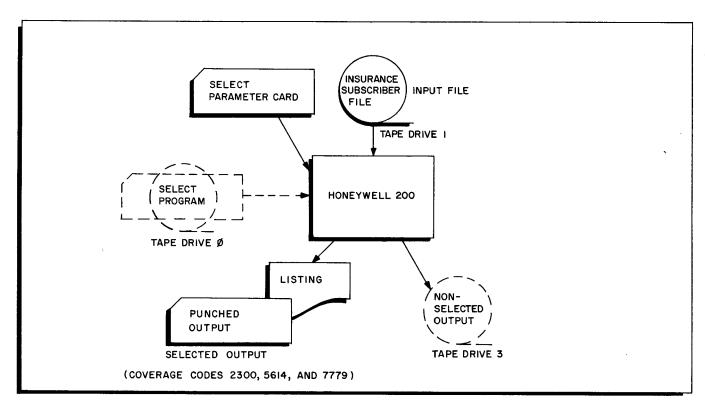


Figure 5-7. Select B Program; Selection by Test with Single Field Containing Multiple Values - Computer Setup

Application 2 - Multiple Fields (OR Condition)

Whenever the contents of more than one key field are being tested, two methods of testing can be performed: independent tests and dependent tests. In independent testing, if any of the key fields fulfill the condition tested for in that field the card is selected; in dependent testing, the contents of all the key fields indicated must satisfy the conditions tested in order for the card to be selected.

As an example of independent testing we might select all of the records in an auto claims file which contain either an "05" in the state code field (columns 25-26) or "DEPT01" in the source field (columns 65-70) or a value higher than 9000 in the limit field (columns 71-74). The auto claims input file is on tape. Both the selected and non-selected records are to be placed on tape along with a listing of the non-selected output.

- 1. Punch a Select B parameter card as shown in Figure 5-8.
- 2. Set up the computer run as shown in Figure 5-9.

EASYTAB - SELECT	Date
	I.D
APPLICATION MULTIPLE FIELDS (INDEPENDENT (OR) COMMITTE	y)Author
SIEILEC	
1 5	
SELECTED NON-SELECTED NO. OF INPUT OUTPUT KEYS	COUNTER SELECT
	12 15
$C = Card$ $C\Delta = Card$ $C\Delta = Card$ 1 To 3 $C = Card$ & Print $CP = Card$ & Print $CP = Card$ & Print $CP = Card$ & Print	
$T\Delta = Tape$ $T\Delta = Tape$ TP = Tape & Print $TP = Tape & Print\Delta P = Print \Delta P = Print$	
Key 1 Source Key 2 Key 3	condition
2 5 62 65 6 71 64 16 19 20 23 24 27	28
Test 1 Test 2 Test 3	A = And O = Or
E 3 0 4 1	
Key 1 Test Constant	7154
33	48
Key 2 Test Constant	
DEPTØ1	64
Key 3 Test Constant	
9 0 0 0	80
TESTS: E = Equal	
H = High L = Low	
1 = First Card 2 = Last Card	
z – Lusi Cara	

Figure 5-8. Select B Program; Selection by Test with Multiple Fields (OR Condition) - Parameter Card

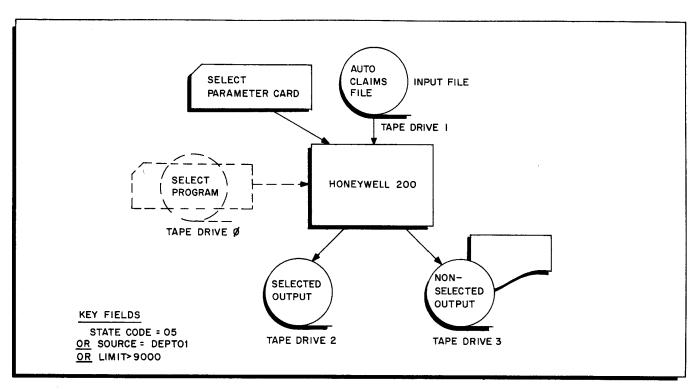


Figure 5-9. Select B Program; Selection by Test with Multiple Fields (OR Condition) - Computer Setup

Application 3 - Multiple Fields (AND Condition)

The dependent test, in which all key fields must satisfy the test which are applied to them, can be used in the following situation:

From an employee statistical file, the records for those employees fulfilling <u>all</u> of the following three requirements are to be selected and listed:

- 1. An income of under 7,000. (Income field columns 60-66.)
- 2. Married with three or more dependents (Status field column 7.)
- 3. Age over 35. (Age field columns 40-41.)

The employee statistical file is on tape; the output is to be only the listing of the selected items.

- 1. Punch a Select B parameter card as shown in Figure 5-10.
- 2. Set up the computer run as shown in Figure 5-11.

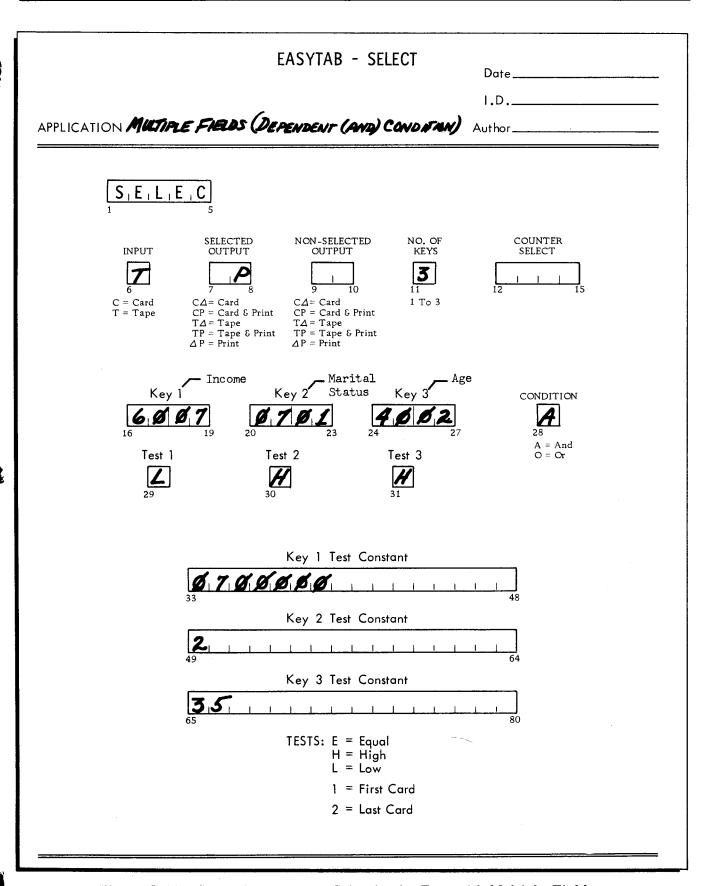


Figure 5-10. Select B Program; Selection by Test with Multiple Fields (AND Condition) - Parameter Card

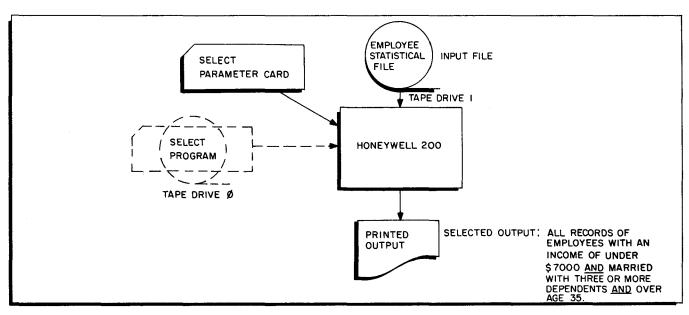


Figure 5-11. Select B Program; Selection by Test with Multiple Fields (AND Condition) - Computer Setup

Application 4 - Editing

Certain pre-editing of cards can be performed by the Select B program during the process of placing the cards on tape. The selection by test function can be used to test up to three fields for blanks, zero or non-zero balances, or certain ranges of values. Any cards failing one or more tests can be deleted as errors.

For example, in a deck of sales transactions the credit field (columns 25-30) should never have a zero balance (+0, -0, or unsigned 0). Errors are to be printed.

- 1. Punch a Select B parameter card as shown in Figure 5-12.
- 2. Set up the computer run as shown in Figure 5-13.

EASYTAB - SELECT	Date
	I.D
APPLICATION SELECTION BY TEST: EDITING	Author
$ \begin{bmatrix} S_1E_1L_1E_1C \end{bmatrix} $	
SELECTED NON-SELECTED NO. OF INPUT OUTPUT OUTPUT KEYS	COUNTER SELECT
	12 15
$C = Card$ $C\Delta = Card$ $C\Delta = Card$ 1 To 3 T = Tape $CP = Card \& Print$ $CP = Card \& Print$	
$T\Delta = Tape$ $T\Delta = Tape$ TP = Tape & Print $TP = Tape & Print\Delta P = Print \Delta P = Print$	
Credit Field	_
Key 1 Key 2 Key 3	CONDITION A card
16 19 20 23 24	meeting any one of the
Test 1 Test 2 Test 3	A = And conditions of to be
E E 30 31	selected as an error
Key 1 Test Constant	
Ø Ø Ø Ø Ø Ø I	
	48
Key 2 Test Constant	
	64
Key 3 Test Constant	
65	80
TESTS: E = Equal H = High	
L = Low 1 = First Card	
2 = Last Card	

Figure 5-12. Select B Program; Selection by Test: Editing - Parameter Card

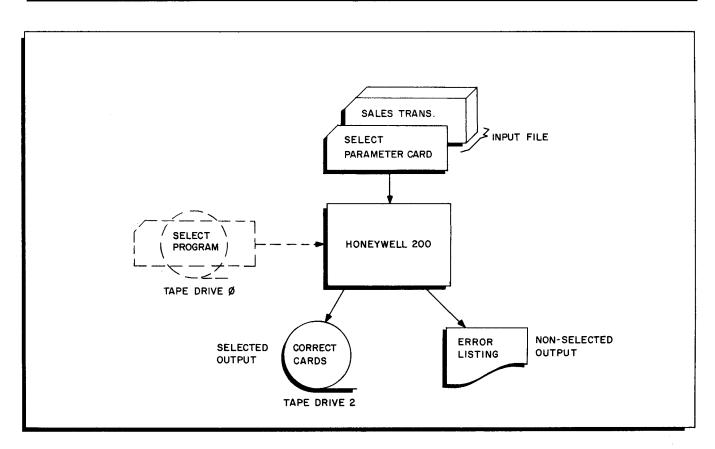
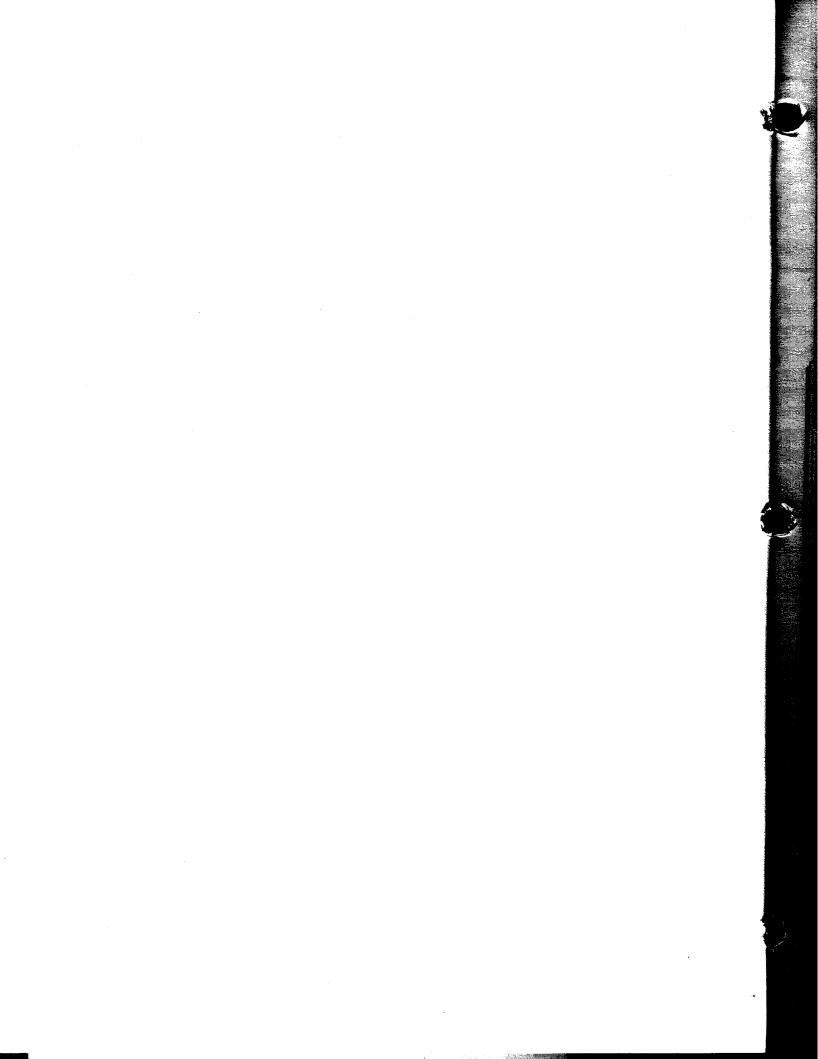


Figure 5-13. Select B Program; Selection by Test: Editing - Computer Setup

	EASYTAB - SEL	
		Date
APPLICATION CHECK	SUEET	1.D
APPLICATION_ STEEN	97667	Author
SIEILIE	SELECTED NON-SELECTED	NO. OF COUNTER This option
INPUT 6	OUTPUT OUTPUT 7 8 9 10	SELECT must be used alone.
T = Tape Card reader/p	$C\Delta = Card$ $CP = Card \& Print$ $TA = Tape$ $TP = Tape \& Print$ $\Delta P = Print$ TAP = Print TAP = Tape & Print TAP = Tape & Print TAP = Tape & Print TAP = Print TAP = Print TAP = Print	Must equal number of boxes filled in below. Counter select: leave blank.
• •	t file can be specified.	
Check beginning position and length of each key; maximum length is 16. Key 1 I and	Key 2 19 20 23 24 Test 2 30 20 21 or E/1	CONDITION A = All conditions must be satisfied. O = One or more conditions must be satisfied.
٢ -	Key 1 Test Const	ant
33		48
constant against	Key 2 Test Const	-
length of corresponding key.		1 1 1 64
_	Key 3 Test Const	ant
65	<u> </u>	80
	TESTS: E = Equal H = High L = Low 1 = First (2 = Last (Card

Figure 5-14. Select B Program Check List





PERIO B PROGRAM

INTRODUCTION

The PERIO (PERipheral Input/Output) B program converts data from one media to another (punched cards to magnetic tape, magnetic tape to punched cards, or magnetic tape to printer), depending upon the setting of the SENSE switches.

The general setup for the program is shown in Figure 6-1.

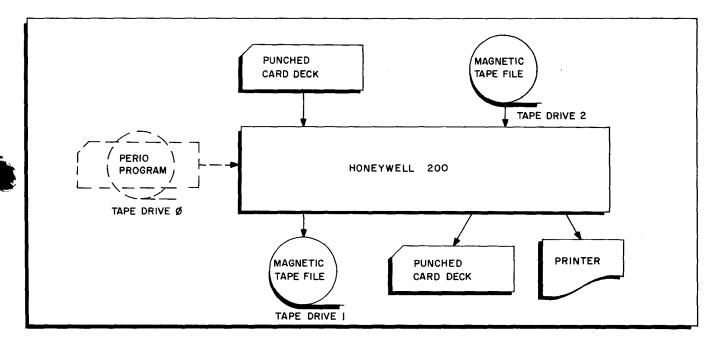


Figure 6-1. The PERIO B Program

A complete coverage of the PERIO B Program and its operating procedures can be found in Section VIII of the Easytab Utility Programs Software Manual, File Number 206.

SPECIFICATIONS

- 1. The input file(s) may be either in the form of punched cards or magnetic tape (records blocked by two). If the input file is on punched cards, the output is on magnetic tape; if the input file is on tape, the output can be either on punched cards or on the printer. In the case of multiple operations, only one file may be on punched cards unless a separate card reader and card punch are available.
- 2. The four SENSE switches can be set to direct one of the following functions or combinations of functions to take place:

- a. Convert punched cards to magnetic tape.
- b. Convert magnetic tape to punched cards.
- c. Print the data from a magnetic tape file.
- d. Convert punched cards to magnetic tape and, at the same time, print the data from another magnetic tape file.
- e. Convert a magnetic tape file to punched cards and, at the same time, print the data from another magnetic tape file.

PUNCHED CARD TO MAGNETIC TAPE CONVERSION

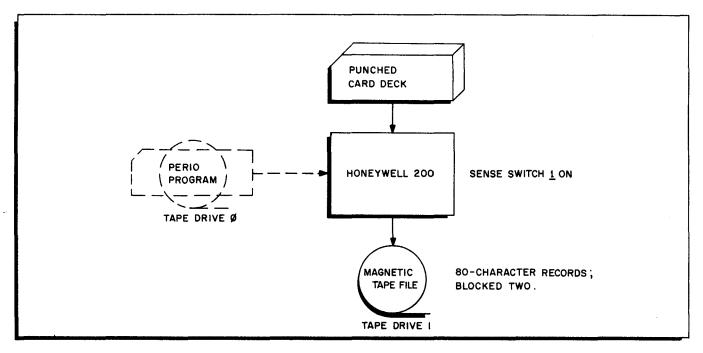


Figure 6-2. PERIO B Program; Punched Card to Magnetic Tape - Setup

Placing a deck of punched cards onto magnetic tape is accomplished via the PERIO B program by setting SENSE switch 1 ON. The cards are written, unchanged, onto the tape in blocks containing two 80-character card images each.

MAGNETIC TAPE TO PUNCHED CARD CONVERSION

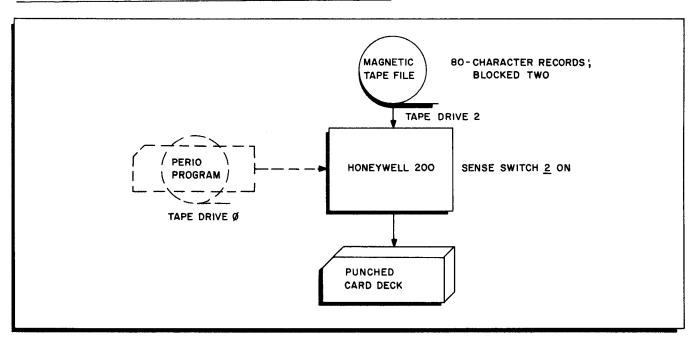


Figure 6-3. PERIO B Program; Magnetic Tape to Punched Card - Setup

Punching out the card images stored on a magnetic tape file onto a deck of cards is accomplished via the PERIO B program by setting SENSE switch 2 ON. The tape to be converted must contain 80-character card images blocked by two.

MAGNETIC TAPE TO PRINTER

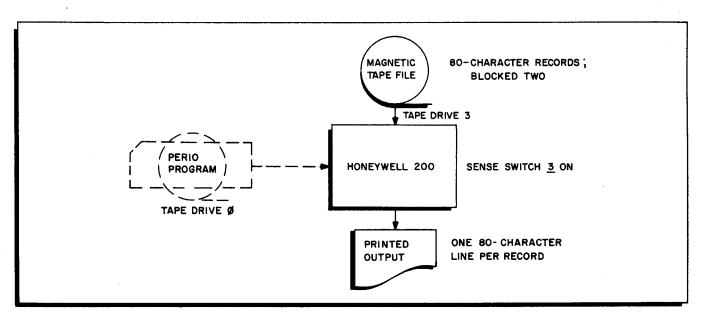


Figure 6-4. PERIO B Program; Magnetic Tape to Printer - Setup

Obtaining a printout of all of the card images stored on a magnetic tape file is accomplished via the PERIO B program by setting SENSE switch 3 ON. An 80-character line of unedited information is printed for each card stored on the tape. The input tape must contain 80-character card images blocked by two.

MULTIPLE OPERATIONS

In previous pages, we have covered the three basic operations of the PERIO B program: card to tape, tape to printer, and tape to card conversion. Each of these three operations is selected by setting one of the SENSE switches to the ON position. In the next several examples you will see that by setting more than one SENSE switch you can cause several of these operations to be performed in one run.

#1 - Card to Tape and Tape to Printer

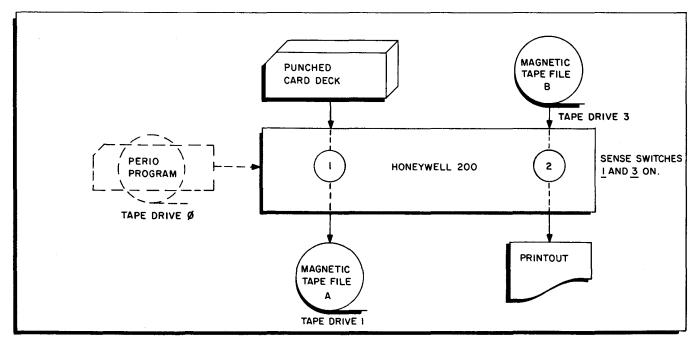


Figure 6-5. PERIO B Program; Multiple Operations #1

The setup shown in Figure 6-5 could be used if you should happen to have both a punched card deck to be converted to tape and another tape file to be printed. By setting SENSE switches 1 and 3 ON, both operations can be performed together.

#2 - Tape to Card and Tape to Printer

d

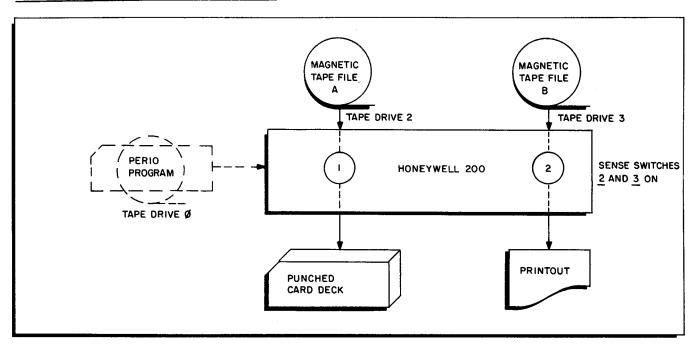
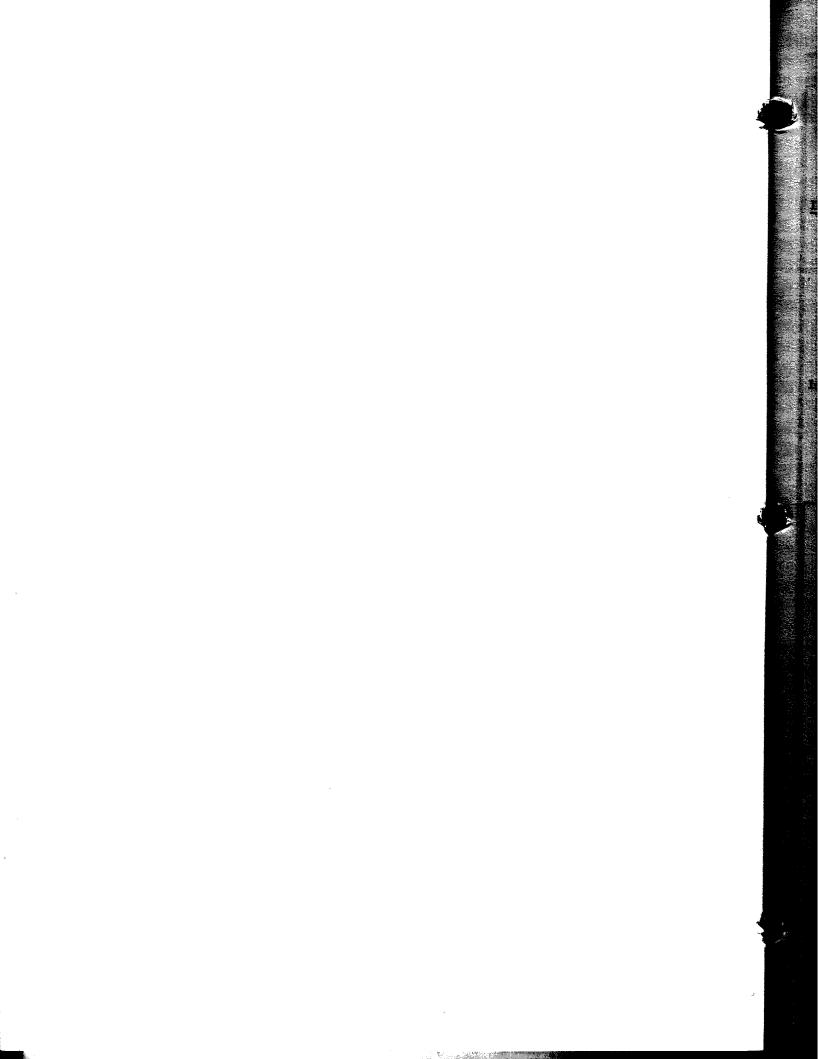


Figure 6-6. PERIO B Program; Multiple Operations #2

The setup in Figure 6-6 can be used whenever you wish to punch out the contents of one tape file and print the contents of another. By setting both SENSE switch 2 and SENSE switch 3 ON, both operations can be performed together.



SECTION VII REPRODUCE B PROGRAM

INTRODUCTION

The Reproduce B program performs all of the functions of the reproducer:

- 1. 80-80 REPRODUCING A direct copy of one or more fields from an input file into the same relative positions on the output file.
- 2. OFFSET REPRODUCING A direct copy of one or more fields of an input file into different relative positions on the output file.
- 3. EMITTING The characters punched in a parameter card following the Reproduce director card will be emitted into corresponding positions in the output file.

In addition, a fourth option can be specified:

4. NUMBERING - The input file is copied onto the output file with the output items being numbered, either consecutively or by some specified increment. This item number is emitted into some selected field in each output item.

The general setup for the program is shown in Figure 7-1.

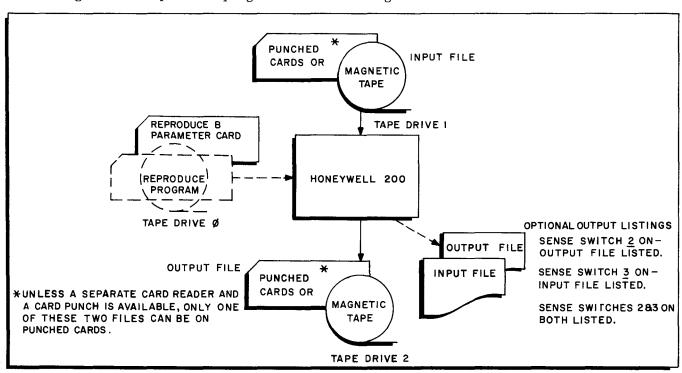


Figure 7-1. The Reproduce B Program

A complete coverage of the Reproduce B program, including the parameter cards and operating procedures, can be found in Section V of the <u>Easytab Utility Programs</u> Software Manual, File Number 206.

SPECIFICATIONS

- 1. There are three possible combinations of input/output media with the Type 214-2 Reader/Punch: the input file can be a punched card deck and the output file magnetic tape, the input file can be magnetic tape and the output file punched cards, or both can be on magnetic tape. Either file can be printed by setting SENSE switch 2 (output) or SENSE switch 3 (input) ON.
- 2. The Reproduce B parameter card is punched according to the function or combination of functions desired:
 - a. 80-80 Reproducing If the entire input card or card image is to be reproduced unchanged onto the output file, one of two methods can be used:
 - Method A: Punch the required information into columns 1-7 of the Reproduce parameter card; leave column 8 blank. Run program with SENSE switch 4 ON.
 - Method B: Punch the required information into columns 1-7; punch a "1" into column 8; punch "0180" into columns 17-20 and columns 49-52. Run program with SENSE switch 4 OFF.
 - b. Combined Reproducing and Offset Reproducing The input card or card image can be subdivided into a maximum of eight fields. The limits of each field are punched into the portion of the director card entitled input fields (columns 17-48). If any portion of the input card is not to be reproduced, its definition is omitted.

The eight corresponding output field keys (columns 49-80) are used to indicate where each of the input fields is to be punched in the output item.

- c. Emitting The emitting of one or more values into the output items can be accomplished by punching a "C" in column 9 and by following the Reproduce parameter card by an emit constant card. The contents of any non-blank columns in the emit constant card will be reproduced into the corresponding positions of each output item. However, these characters will not overwrite any data which would normally be punched in those positions as indicated by the output fields in the director card.
- d. Numbering Columns 10-11 indicate the beginning column position of the numbering field in the output item; columns 12-13 indicate the size of this field; columns 14-16 contain the increment to be added to obtain the number to be punched in each consecutive output item. If 14-16 contain blanks, an increment of 1 is assumed.

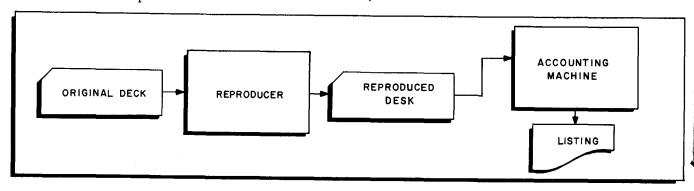


Figure 7-2. Straight 80-80 Reproducing with Listing of Reproduced Deck - Tab Setup

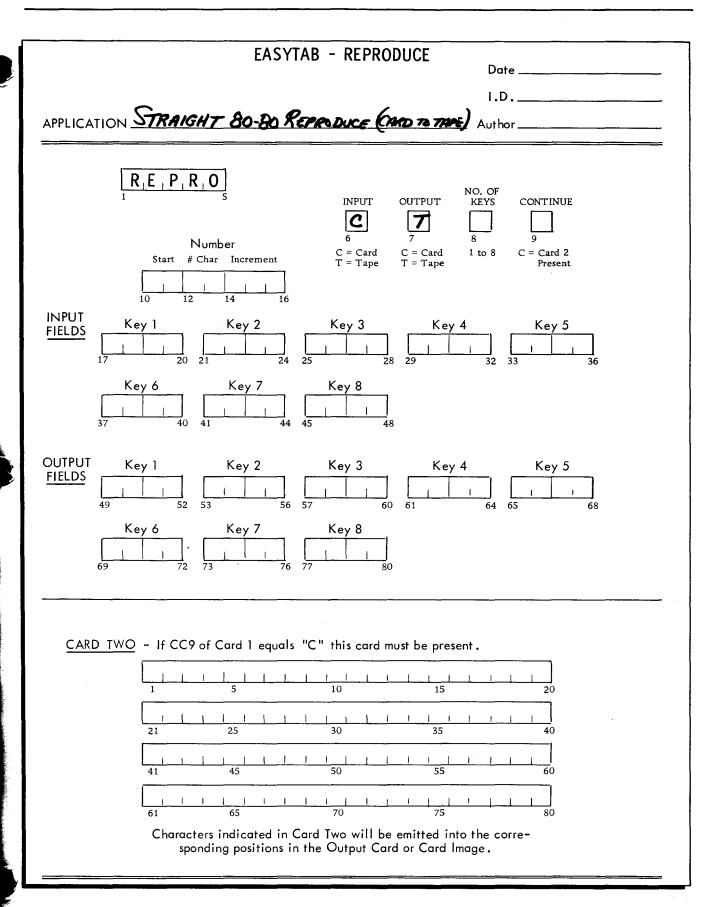


Figure 7-3. Reproduce B Program; Straight 80-80 Reproduce (Card to Tape) - Parameter Card

STRAIGHT 80-80 REPRODUCE (CARD TO TAPE) WITH LISTING

Application

One common procedure in a tab environment is to reproduce a deck of cards as input to succeeding runs. The reproduced deck might then be listed on an accounting machine to obtain a permanent record of the deck. Figure 7-2 shows this operation.

Under the computer system, the card deck might be "reproduced" onto magnetic tape. The resultant tape file can then be used as a fast medium of input to following computer runs. Through the use of the Reproduce B program, this conversion can be performed and a listing of the output file obtained (see Figure 7-4).

Preparation

- 1. Punch a Reproduce B parameter card as shown in Figure 7-3.
- 2. Set up run as shown in Figure 7-4. Set SENSE switches 2 and 4 ON.

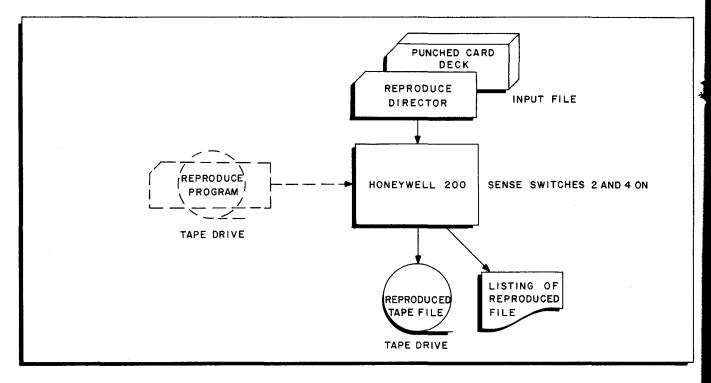


Figure 7-4. Reproduce B Program; Straight 80-80 Reproduce (Card to Tape) with Listing-Computer Setup

REPRODUCING AND OFFSET REPRODUCING - (TAPE TO CARD)

Application

Each month the product master file must be reproduced and listed as shown in Figure 7-5, in order to maintain a tub file of products available.

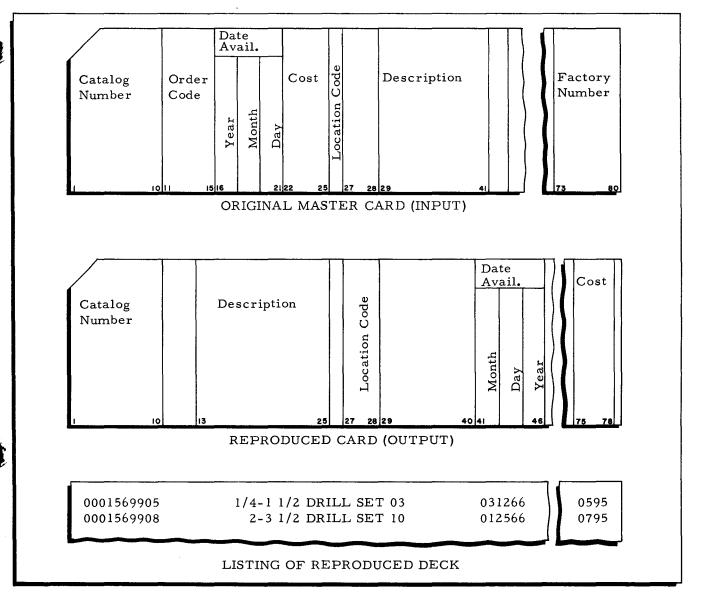


Figure 7-5. Reproduce B Program; Reproducing and Offset Reproducing - Record Layouts

Under the tabulating system the operation involved resembled that shown in Figure 7-2.

Under the computer system, the product master file is on tape. A card deck and a listing identical to those produced under the tabulating system is desired.

Preparation

-5,

ne ugh

ut

- 1. Punch a Reproduce B parameter card as shown in Figure 7-6.
- 2. Set up run as shown in Figure 7-7. Turn SENSE switch 2 ON.

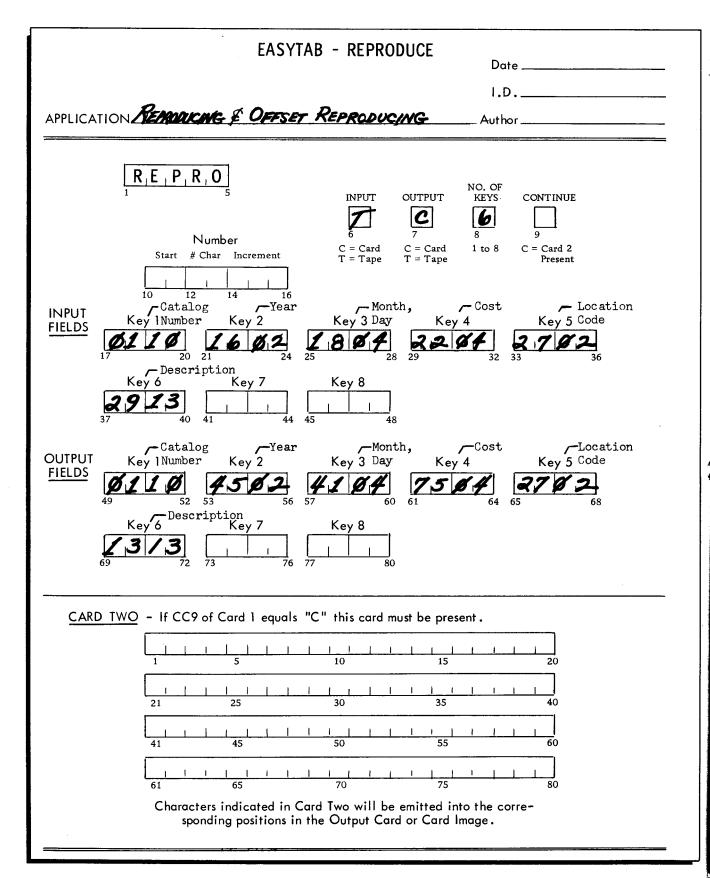


Figure 7-6. Reproduce B Program; Reproducing and Offset Reproducing (Tape to Card) Parameter Card

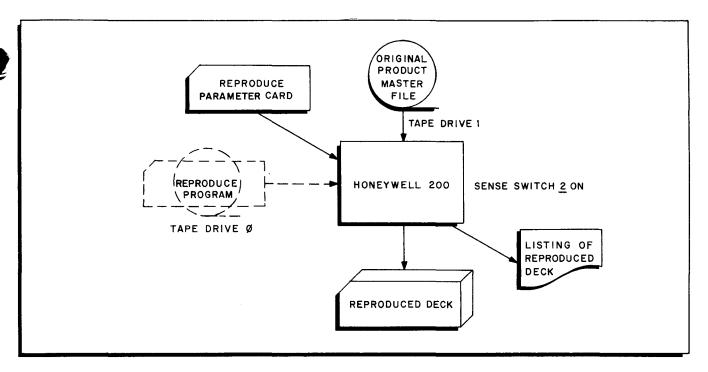


Figure 7-7. Reproduce B Program; Reproducing and Offset Reproducing (Tape to Card) - Computer Setup

STRAIGHT REPRODUCING WITH EMITTING (CARD TO TAPE)

Application

The example on page 7-4 describes an application requiring the 80-80 reproduce function. Assume that in addition to placing the punched cards on tape the current date must be emitted into columns 75-80.

Preparation

In this instance, where emitting must be performed in addition to reproducing, method B (see page 7-2) must be used; under method A the emit card would be ignored.

- 1. Punch a Reproduce parameter card as shown in Figure 7-8.
- 2. Set up the run as shown in Figure 7-9. Set SENSE switch $\underline{2}$ ON to obtain a listing of the reproduced output.

OFFSET REPRODUCING WITH EMITTING (TAPE TO CARD)

Application

The inventory master file must be copied, with the emitted information indicated, as shown in Figure 7-10.

Under the computer system, the inventory master file is on magnetic tape.

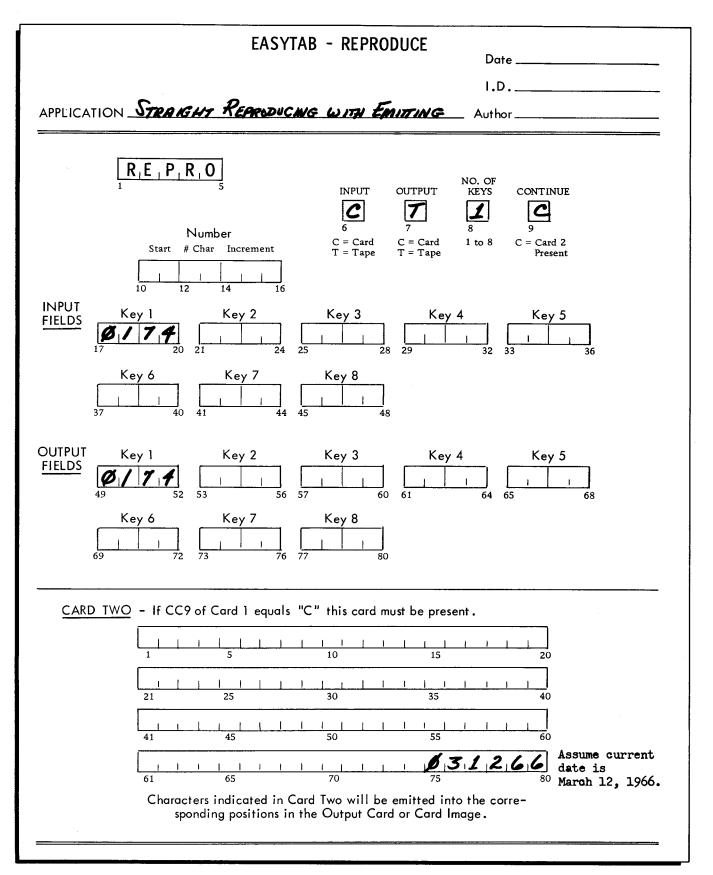


Figure 7-8. Reproduce B Program; Straight Reproducing with Emitting (Card to Tape) Parameter Card

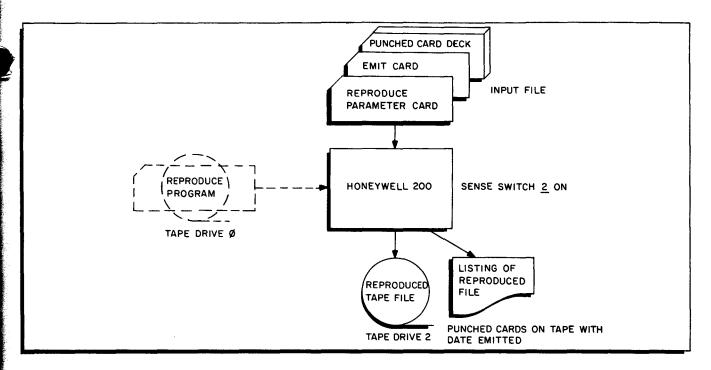


Figure 7-9. Reproduce B Program; Straight Reproducing with Emitting (Card to Tape) - Computer Setup

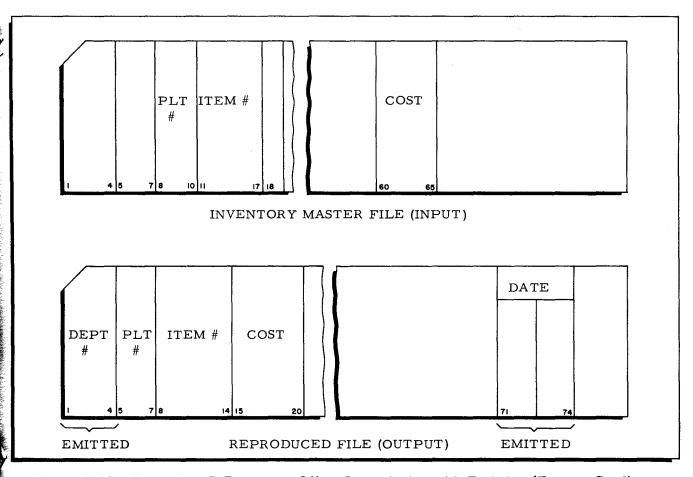


Figure 7-10. Reproduce B Program; Offset Reproducing with Emitting (Tape to Card) - Record Layouts

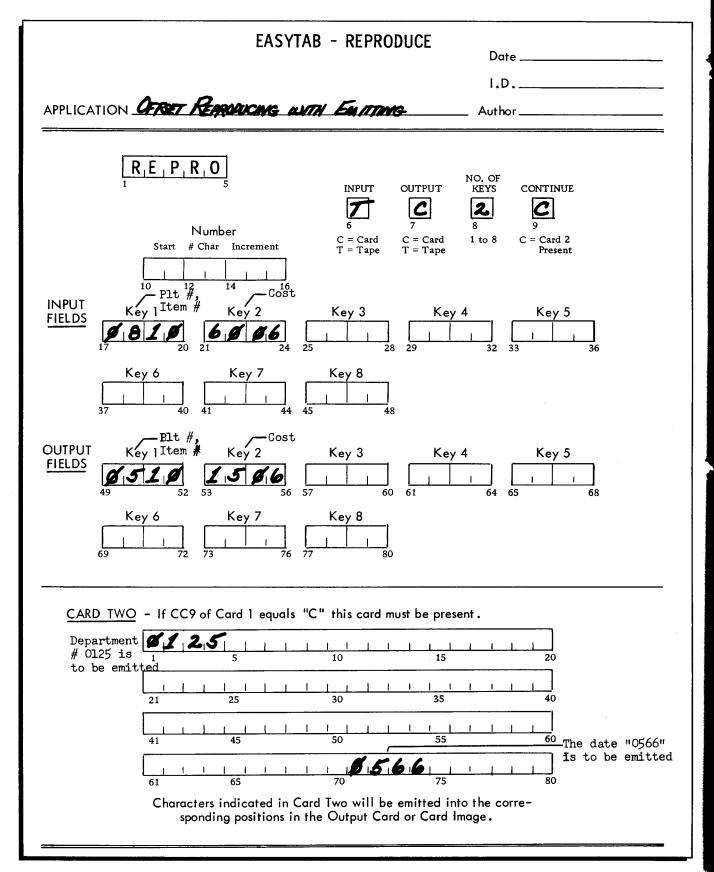


Figure 7-11. Reproduce B Program; Offset Reproducing with Emitting (Card to Tape) Parameter Card

A listing of the input inventory master file is desired.

Preparation

- 1. Punch a Reproduce B parameter card and an emit constant card as shown in Figure 7-11.
- 2. Set up the run as shown in Figure 7-12. Turn SENSE switch $\underline{3}$ ON to obtain a listing of the input file.

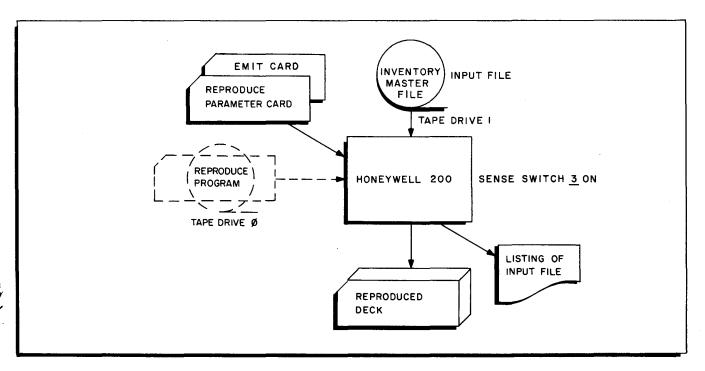


Figure 7-12. Reproduce B Program; Offset Reproducing with Emitting (Tape to Card) - Computer Setup

SEQUENTIAL NUMBERING (CARD TO TAPE)

Application

An input deck of sales transaction cards is to be placed on tape and a sequential transaction number is to be assigned to each item. The transaction number is to be placed into columns 1-5 of each output item.

- 1. Punch a Reproduce B parameter card as shown in Figure 7-13. The increment field (columns 14-16) is filled with "001" whenever consecutive numbering is desired.
- 2. Set up the run as shown in Figure 7-14.

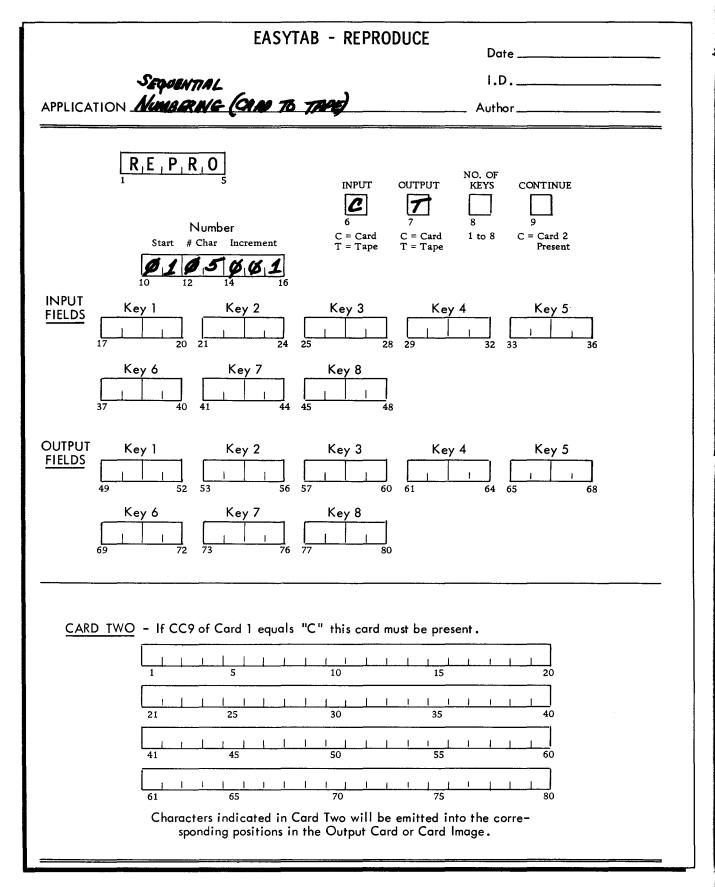


Figure 7-13. Reproduce B Program; Sequential Numbering (Card to Tape) - Parameter Card

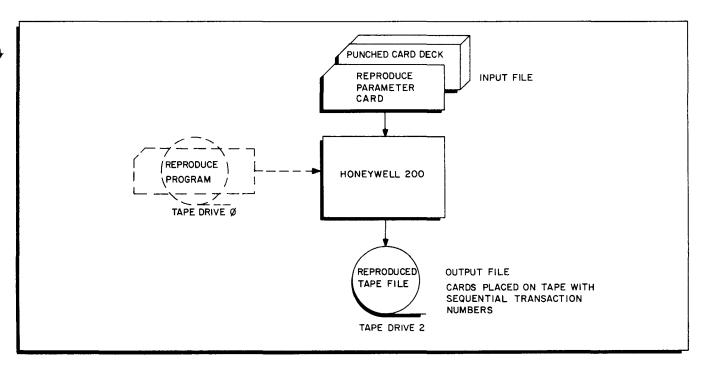


Figure 7-14. Reproduce B Program; Sequential Numbering (Card to Tape) - Computer Setup

EASYTAB - REPRODUCE
I.D
APPLICATION Author Author
Number Start # Char Increment Card reader/punch unit: only one
INPUT Key 1 Key 2 Key 3 Key 4 Key 5 Check beginning 17 20 21 24 25 28 29 32 33 36 length of
Key 6 Key 7 Key 8 each key. Lengths of corresponding keys must be equal (e.g., col. 19-20 =
49 52 53 56 57 60 61 64 65 68 Key 6 Key 7 Key 8 Geographic Control of the contr
CARD TWO - If CC9 of Card 1 equals "C" this card must be present.
1 5 10 15 20 Check that
21 25 30 35 40 constants and key fields specified above do not
41 45 50 55 60 same columns.
61 65 70 75 80
Characters indicated in Card Two will be emitted into the corre- sponding positions in the Output Card or Card Image.

Figure 7-15. Reproduce B Program Check List

SECTION VIII ALTER B PROGRAM

INTRODUCTION

The Alter B program performs those file updating activities, such as filing cards, removing cards, and replacing cards, which are most often accomplished manually in a tab installation. Alter should be used only when a small number of such changes is to be made. The program is capable of performing any or all of these functions during one pass of the tape file being updated. The general setup of the run is shown in Figure 8-1. The programmer indicates which of these operations are to be executed and provides other information to the Alter program through an Alter parameter card and one or more Alter director cards. A complete coverage of these cards and the operational procedures involved can be found in Section VII of the Easytab Utility Programs Software Manual, File Number 206.

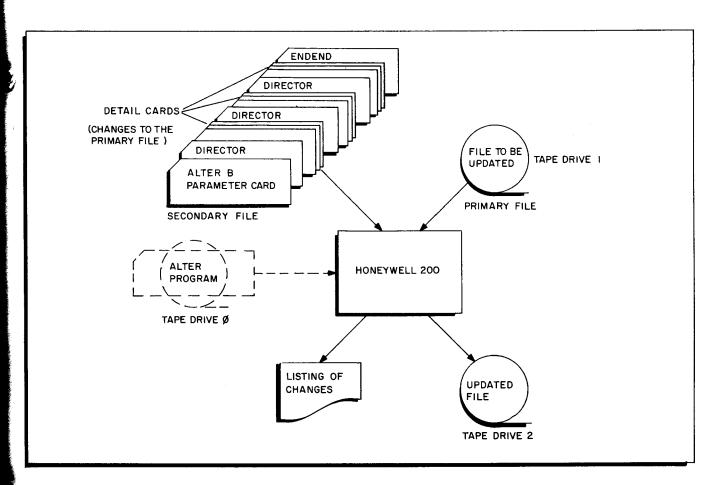


Figure 8-1. The Alter B Program

SPECIFICATIONS

- 1. Both the primary input file (the file being updated) and the secondary input file (the changes to be made to the primary file) must be in the same sequence (either ascending or descending). A maximum of eight key fields is allowed and they must be located in the same relative positions within the records of both files.
- 2. The appropriate Alter B directors must be inserted into the data card deck (secondary file) to indicate whether the data card or group of data cards which follow are to be inserted (INSERT director), deleted (DELETE director), or substituted (REPLACE director).
- 3. An Alter B parameter card, giving certain information about the files such as location of key fields, precedes the card deck and an ENDEND card terminates the card deck.

INSERT

Application

We have a sales master file which must be updated by inserting a new master record for the few new salesmen whom we have added to our staff during the past month. The sales master file is in order by region (major), territory (intermediate), and salesman number (minor), and is in ascending order. The record layout is shown in Figure 8-2.

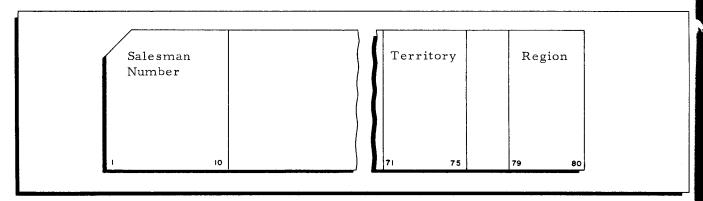


Figure 8-2. Alter B Program; INSERT - Record Layout

- 1. Punch a master card for each salesman hired. Arrange cards in order by key fields (Major: region; intermediate: territory; minor: salesman number).
- 2. Punch an Alter card, an INSERT director, and an ENDEND card (see Figure 8-3).
- 3. Set up run as shown in Figure 8-4.

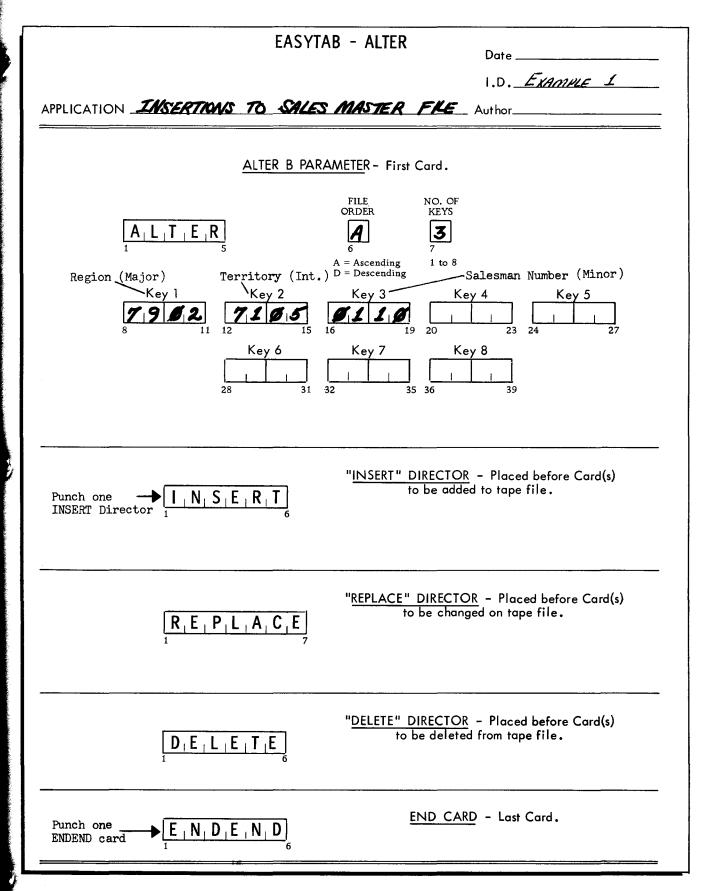


Figure 8-3. Alter B Program; INSERT - Director Cards

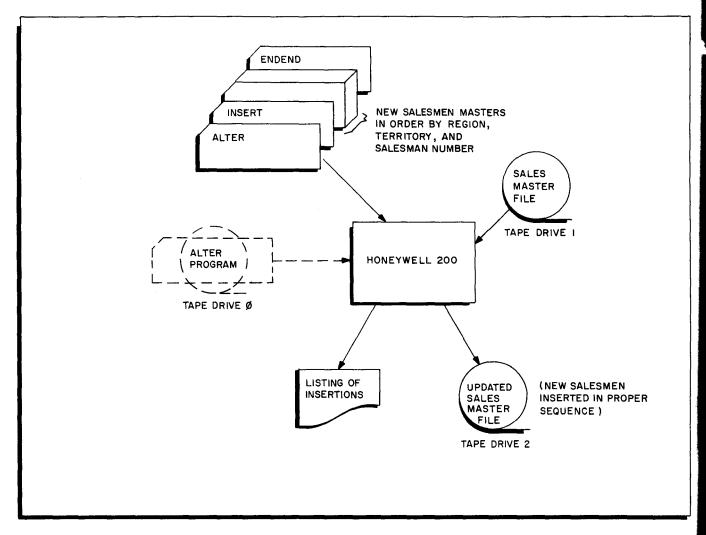


Figure 8-4. Alter B Program; INSERT - Computer Setup

DELETE

Application

We must delete the master records of those few salesmen who have left the company.

- 1. Punch a master card (only key fields need be punched) for each salesman to be deleted. Arrange cards in order by key fields.
- 2. Punch an Alter card, a DELETE director, and an ENDEND card (see Figure 8-5).
- 3. Set up run as shown in Figure 8-6.

EASYTAB - ALTER
APPLICATION DELETIONS FROM SALES MASTER FILE Author
ALTER B PARAMETER - First Card.
FILE NO. OF KEYS A L T E R A = Ascending D = Descending
Key 1 Key 2 Key 3 Key 4 Key 5 7 9 9 2 7 1 6 5 0 1 1 9 10 20 23 24 27 Key 6 Key 7 Key 8 28 31 32 35 36 39
"INSERT" DIRECTOR - Placed before Card(s) to be added to tape file.
"REPLACE" DIRECTOR - Placed before Card(s) to be changed on tape file.
Punch one DELETE Director DIFFICATION DELETE DIRECTOR - Placed before Card(s) to be deleted from tape file.
Punch one ENDEND card - E N D E N D E N D 6

Figure 8-5. Alter B Program; DELETE - Director Cards

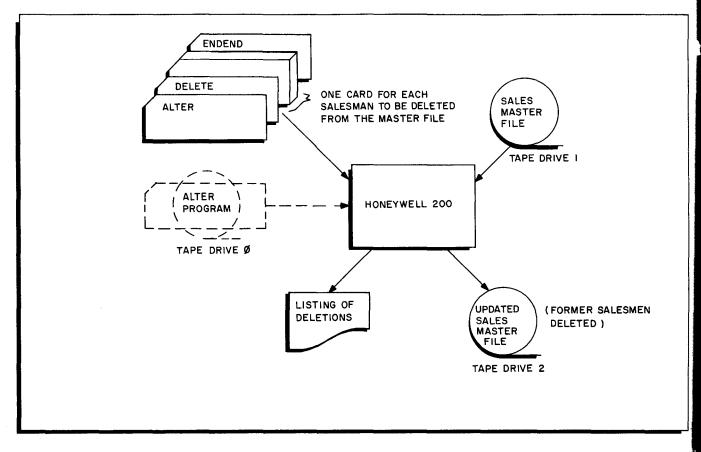


Figure 8-6. Alter B Program; DELETE - Computer Setup

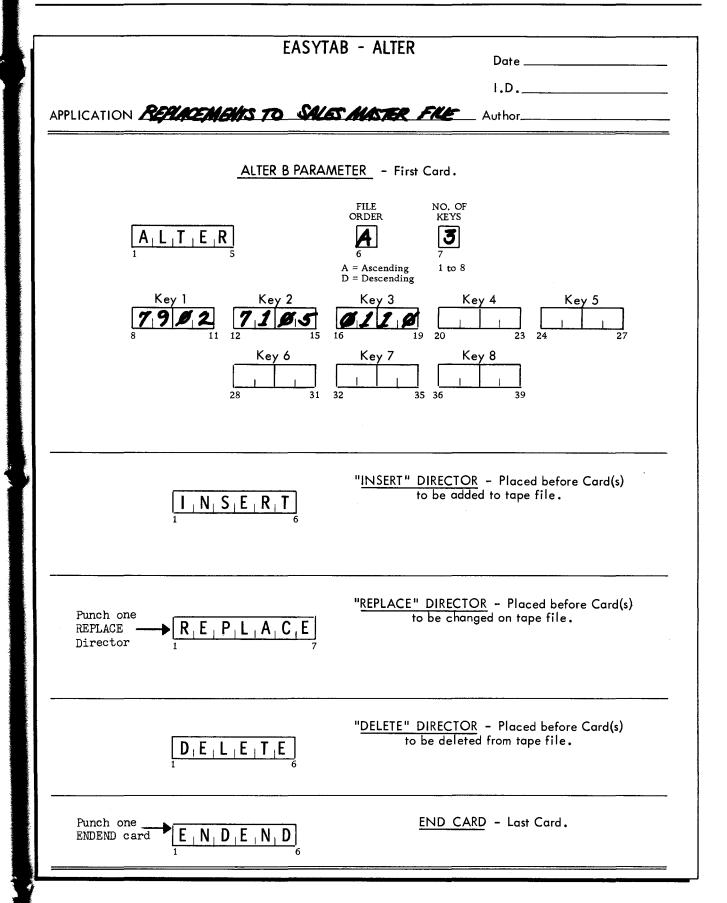
REPLACE

The REPLACE function of the Alter B program is actually a combination of the DELETE and INSERT functions. This can be used whenever particular records within a file are to be replaced with new records containing updated or corrected information, provided that none of the key field data is being changed. That is, since the key data is used to locate the record on tape, the key field data in the input replacement card must agree with the key field data in the tape record to be replaced. If the key field data has been modified, then two operations - DELETE and INSERT - must be performed as explained under Multiple Operations, page 8-8.

Application

The addresses of several of the salesmen must be changed on the Sales Master File.

- 1. Punch a sales master card, duplicating the information contained on the sales master file (with the exception of the address field, which will contain the new address) for each salesman whose address has changed. Arrange cards in order by key fields.
- 2. Punch an Alter card, a REPLACE director, and an ENDEND card (see Figure 8-7).
- 3. Set up run as shown in Figure 8-8.



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Figure 8-7. Alter B Program; REPLACE - Director Cards

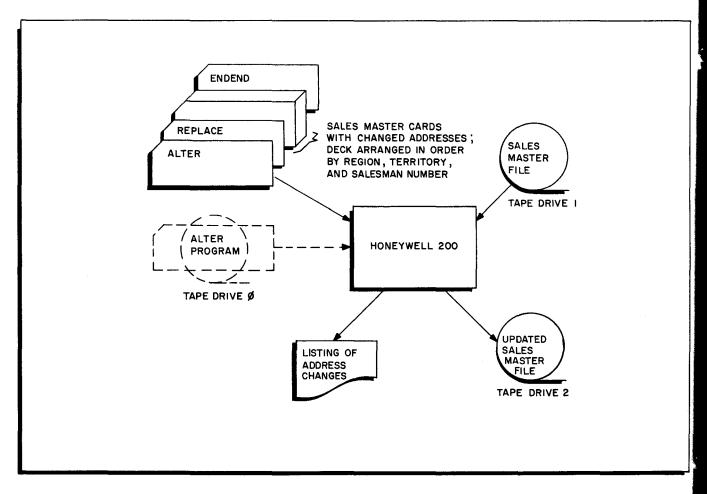


Figure 8-8. Alter B Program; REPLACE Example - Computer Setup

MULTIPLE OPERATIONS

As was pointed out in the previous example, there are situations where record replacement or correction must be accomplished by the use of two or more of the Alter functions. This is particularly true in the case where key field data is being changed.

Application #1

Five of the salesmen have changed regions and/or territories.

Preparation

Since the number of changes is small, the operation can be performed during one pass of the master file.

- 1. Punch a sales master card for each of the five salesmen, using their previous territory and region codes. Only the key field data need be punched. Arrange in order.
- 2. Punch a complete sales master card for each of the salesmen, using their new territory and region codes. Arrange in order.

EASYTAB - ALTER Date
APPLICATION REPLACEMENTS BY DOUTTON/TISERTIAN Author
ALTER B PARAMETER - First Card.
FILE NO. OF KEYS A L T E R A = Ascending 1 to 8 D = Descending
Key 1 Key 2 Key 3 Key 4 Key 5 7 9 6 2 7 1 0 5 16 19 20 23 24 27 Key 6 Key 7 Key 8 28 31 32 35 36 39
Punch as many as needed $\longrightarrow_{1}^{\text{I} \setminus N \setminus S \setminus E \setminus R \setminus T}$ as needed $\longrightarrow_{1}^{\text{IINSERT" DIRECTOR}}$ - Placed before Card(s) to be added to tape file.
"REPLACE" DIRECTOR - Placed before Card(s) to be changed on tape file.
Punch as many as needed $D_{\mid}E_{\mid}L_{\mid}E_{\mid}T_{\mid}E$ of $D_{\mid}E_{\mid}E_{\mid}E_{\mid}E_{\mid}E_{\mid}E_{\mid}E_{\mid}E$
Punch one ENDEND card E N D E N D 6

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Figure 8-9. Alter B Program; Multiple Operations 1 - Director Cards

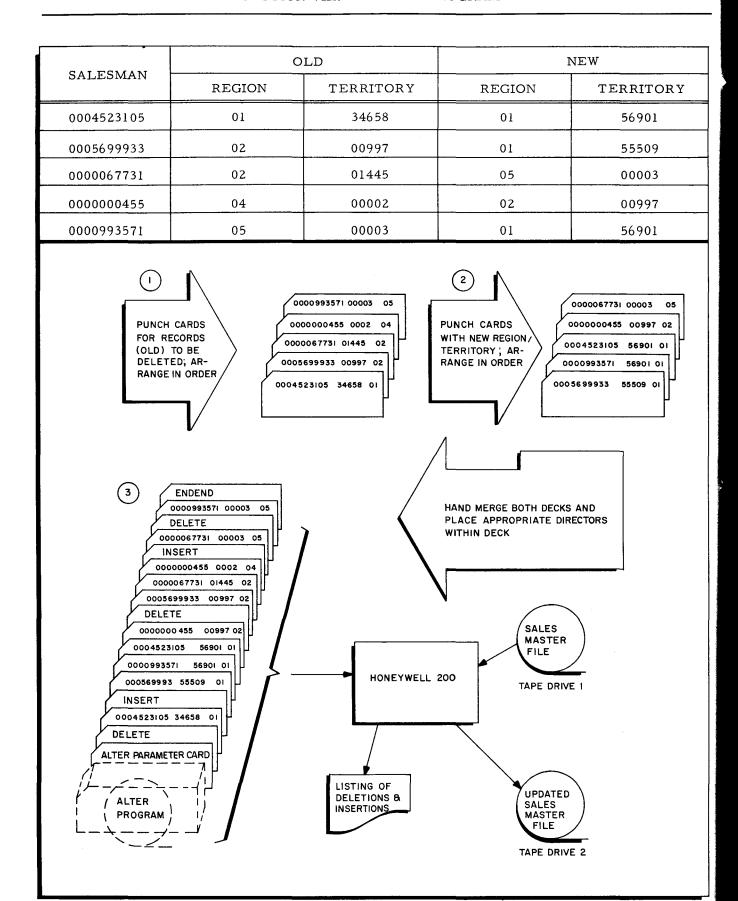


Figure 8-10. Alter B Program; Multiple Operations 1 - Computer Setup

- 3. Combine both sets of cards and arrange them in order by key data. Place a DELETE director in front of each of the cards punched in (1) and an INSERT director in front of each of the cards punched in (2). If two or more cards of the same type are contiguous, a director need only be placed in front of the first.
- 4. Set up the run as shown in Figure 8-10.

Application #2

Two hundred and fifty of the salesmen have changed regions and/or territories.

Preparation

Since the number of changes in this case is large, the updating of the file should be accomplished by two passes of the master file.

- 1. Punch a sales master card for each of the 250 salesmen, using their previous territory and region codes. Only key field data need be punched.
- 2. Punch a complete sales master card for each of the salesmen, using their new territory and region codes.
- 3. Sort each set separately by key field data.
- 4. Place a DELETE director in front of the cards punched in (1) and perform a deletion run. This will eliminate from the file all of the records with the old region and territory code.
- 5. Place an INSERT director in front of the cards punched in (2) and perform an insertion run. This will insert the master records containing the new territory and region codes. The input master file used is the output from (4).

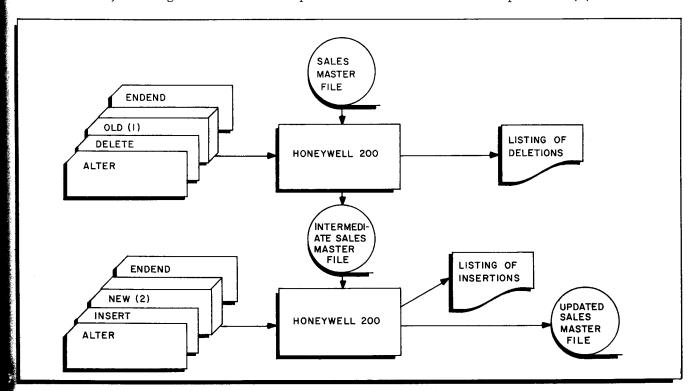


Figure 8-11. Alter B Program; Multiple Operations 2 - Computer Setup

EASYTAB - ALTER	Date
APPLICATION CHECK SHEET	1.D Author
ALTER B PARAMETER - First	Card.
$ \begin{array}{c c} & & & \text{FILE} \\ \hline A \downarrow L \downarrow T \downarrow E \downarrow R \\ \hline 1 & & & \\ \hline A = Ascending \end{array} $	NO. OF KEYS Number of keys must equal number of boxes filled below.
position and length Key 6 Key 7 of each key.	Key 4 Key 5 9 20 23 24 27 Key 8 1 36 39
	DIRECTOR – Placed before Card(s) to be added to tape file.
	DIRECTOR – Placed before Card(s) o be changed on tape file.
D _I E _I L _I E _I T _I E to	DIRECTOR – Placed before Card(s) be deleted from tape file.
$ \begin{bmatrix} E_{\perp} \mathbf{N}_{\perp} \mathbf{D}_{\perp} \mathbf{E}_{\perp} \mathbf{N}_{\perp} \mathbf{D}_{ } \end{bmatrix}_{6} $	END CARD - Last Card.

Figure 8-12. Alter B Program Check List

SECTION IX

SAMPLE EASYTAB APPLICATION

INTRODUCTION

A comprehensive example of the use of the Easytab System is provided by the payroll application which follows. Each week approximately 1,000 employees must be processed, paychecks must be calculated and printed, and various updating and reporting functions must be performed.

Under the tabulating system, the processing consisted of 25 separate runs:

- 6 Sorting operations
- l Emitting operation
- 4 Tabulating and/or summarizing operations
- 4 Calculating operations
- 5 Merging operations
- 1 Match Merge operation
- 3 Listing operations
- 1 Keypunching operation

After the changeover to the computer environment, the processing was accomplished by the following 11 program runs:

- 2 Sorting operations (Sort B)
- 1 Tabulating operation (Total B)
- 1 Correction and Update operation (Alter B)
- 3 Calculating and report generating operations (COBOL B)
- 2 Collate operations (Merge B)
- 1 Card to tape conversion (PERIO B)
- 1 Keypunching operation

CARD AND REPORT FORMATS

In the process of placing the payroll system on the computer the same basic processes and most of the same card and report formats were retained. Due to the powerful processing capabilities of the Series 200 computers, we were able to combine the year-to-date master file (see Figure 9-1) and the deduction master file (see Figure 9-4) into the employee master and deduction file (see Figure 9-5), The combining of these two files resulted in the elimination of several runs.

The following pages contain the card and report formats utilized or produced by both the tabulating and computer systems.

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Figure 9-1. Year-To-Date Payroll Master File (Tabulating System)

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Figure 9-2. Time Cards (Tabulating and Computer Systems)

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Figure 9-3. Batch Total Card (Tabulating and Computer Systems)

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Figure 9-4. Deduction Card (Tabulating System)

O= NO DEDUCTION

Layout Form-80 Column Card I = INDIVIDUAL PLAN 2 = FAMILY PLAN EMPLOYEE EMPLOYEE GROSS FEDERAL STATE FICA MISC NET PAY CREDIT NAME EARNINGS TAX YTD TAX YTD YTD YTD YTD CLOCK

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_____ For Program __

Title _

Prepared By ____

Figure 9-5. Combined Year-To-Date Master and Deduction File (Computer System)

Layout Form - 80 Column Card

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Figure 9-6. Pay Check Master (Tabulating and Computer Systems)

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Figure 9-7. Cancelled Check Card (Tabulating and Computer Systems)

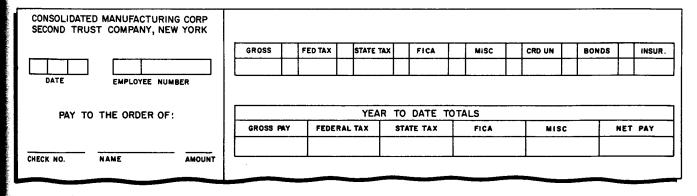


Figure 9-8. Format for Payroll Check (Tabulating and Computer Systems)

Print Positions:	FIRST L	INE	SECOND LI	NE
	Date	04-11	Check No.	04-12
	Employee #	16-26	Name	15-25
	Gross Pay	40-46	Net Amount	30-38
	Fed. Tax	49-55	YTD Gross Pay	40-47
	State Tax	58-64	YTD Fed. Tax	50-57
	FICA	67-71	YTD State Tax	60-66
	Misc.	73-77	YTD FICA	70-76
	Cred. Union	79-84	YTD Misc.	80-86
	Bonds	86-91	YTD Net Pay	90-97
	Insurance	93-97		

				WEEKL	Y PAYROLL E	EMPLOYE	EE REG	ISTER				
					AUGUST	12, 1966						
EMPLOYEE NUMBER	EMP.	CHECK NUMBER	GROSS PAY	FED TAX	STATE TAX	FICA	MISC	CRD UN	BONDS	HEALTH	LIFE	NET PAY
xxx xxxxxxx	х хх	xxxxxxxx	xxx.xx	xxx.xx	XX. XX	xx. xx		xxx.xx	xx.xx	XX. XX	x. xx	XXX. XX

Figure 9-9. Payroll Register Format (Tabulating and Computer Systems)

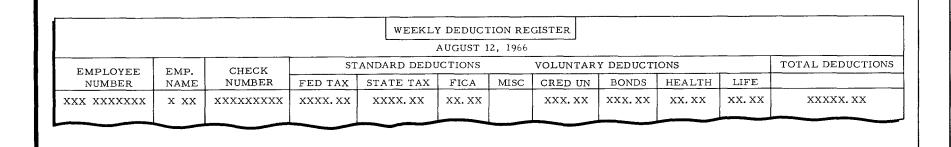


Figure 9-10. Payroll Deduction Register Format (Tabulating and Computer Systems)

THE TABULATING SYSTEM

The systems flowchart for the application as performed on tabulating equipment is shown in Figures 9-11A and 9-11B.

Preprocessing of the Year-to-Date Payroll Master File

- The year-to-date payroll master file (card layout Figure 9-1) is sorted on FICA year-to-date amount (columns 41-46). Those cards which contain an amount equal to or above the FICA limit for the year are separated.
- Those cards containing a FICA amount which equals or exceeds the limit are punched with an emitted "X" control punch over column 46. They are then combined with the other master cards.
- The combined year-to-date master cards are sorted back in order by employee number (columns 1-10).

Payroll Processing

- Time cards (card layout Figure 9-2) are punched from the time sheet data. Only columns 1-26 and columns 77-80 are punched. Batch total cards (Figure 9-3) are also punched at this time for each department.
- The batch cards are placed behind the time cards and both are sorted on employee number (columns 1-10).
- The cards are listed and balanced according to the batch card totals for each department. If any department groups are out of balance, a check is made with the original data, corrections are made, and the corrected cards are inserted back into the deck.
- The cards are sorted on column 80 to separate the time cards from the batch cards.

 The batch cards are discarded.
- The time cards are then passed through the electronic calculating punch and gross pay is calculated (regular hours X regular rate) + (O/T hours X O/T rate). The result is punched in the gross pay field (columns 27-32).
- The calculated time cards are merged with the deduction file. Unmatched deduction masters represent absent employees and are held aside to be later merged back into the file. The deduction card format is shown in Figure 9-4.
- T10 Pass 1 Federal, state, and miscellaneous taxes are calculated and punched into the time cards. Taxes are calculated by multiplying the gross pay amount (columns 27-32) by the tax percentages punched in the deduction card.
- Tll Pass 2 Credit union deductions, bond deductions, health insurance premium, and life insurance premiums are gangpunched from the deduction masters into the time cards.
- T12 The cards are sorted on column 80 to separate the deduction masters from the time cards.
- T13 The deduction masters are merged with the unmatched masters from T9.
- The preprocessed year-to-date payroll masters are match-merged with the time cards.
- The final calculation pass is made. The FICA amount is calculated for those employees who have not yet reached the deduction limit (no emitted "X" control punch in column 46), and the net pay is calculated for all employees by adding all of the

- deductions and subtracting the total from the gross pay amount. The net pay result is punched in columns 71-76 of the time cards.
- Using the combined deck of year-to-date masters and calculated time cards as input, the payroll checks are printed (see Figure 9-8) and pay check masters are summary punched (see Figure 9-6). Sequential check numbers are assigned.
- T17 Using the same deck as input a second time, a summary cutting operation produces new year-to-date masters and a payroll summary report.
- The pay check masters from T16 are listed and totaled for a payroll register report (see Figure 9-9).
- The masters are tabulated a second time to produce a deduction register report (see Figure 9-10).
- The new year-to-date masters from T17 are merged with the unmatched masters from T14 to create the updated year-to-date payroll master file.
- T21 As the cancelled checks are returned from the bank, a cancelled check card (see Figure 9-7) is punched for each. At the end of each week, these cards are sorted by check number.
- The sorted cancelled check cards are then match-merged with the outstanding pay check masters from previous weeks. Unmatched cancelled check cards are listed as errors since these indicate cancelled checks for which there are no records (pay check masters) of checks being issued. Unmatched pay check masters represent those checks still outstanding and are listed for a outstanding check report.

 The matched output is held for later reference.
- T23 Listing of unmatched cancelled check cards as errors.
- T24 Listing of unmatched pay check masters for the outstanding check report.
- The unmatched pay check masters are merged with the current pay check masters from T19, creating a new outstanding pay check deck.

THE COMPUTER SYSTEM

The systems flowchart for the application following the changeover to the computer is shown in Figure 9-12. Following this flowchart are the setup, parameter cards, etc., for each of the runs,

Payroll Processing

- C1 The time cards and batch total cards are keypunched and verified.
- C2 The Sort B program is used to sort the time cards and batch total cards by employee number (columns 1-10) and to place them on tape (see Figures 9-13 and 9-14).
- C3 The sorted time card and batch total card tape is then processed by the Total B program and a balance control listing is produced (see Figures 9-15 and 9-16).
- In the case of any department groups out of balance, corrections are keypunched, arranged in order with the appropriate directors inserted, and reentered via the Alter B program (see Figures 9-18 and 9-19).
- The corrected and sorted time card tape is then processed, along with a combined employee year-to-date master and deduction file (see Figure 9-5), by a COBOL compiled program. The program is written to calculate the gross pay, taxes, deductions, and net pay and produces both the payroll checks and the master tape (see Figures 9-20, 9-21, and 9-22).

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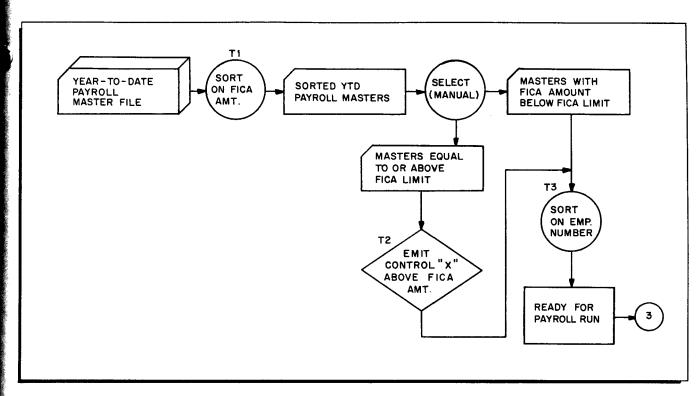


Figure 9-11A. Tabulating System: Preprocessing of Year-to-Date File

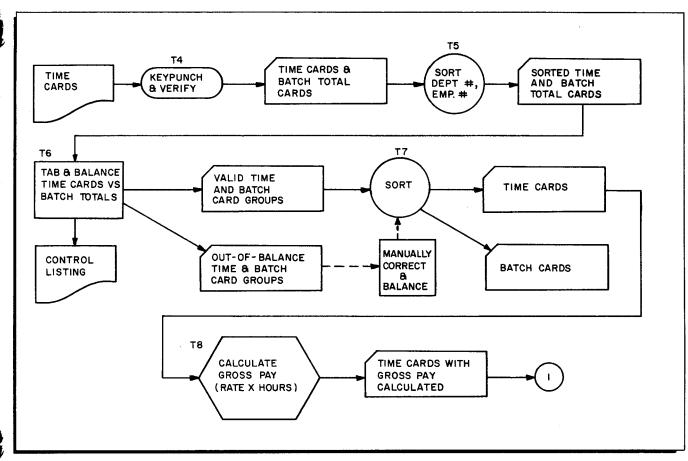


Figure 9-11B. Tabulating System: Payroll Processing

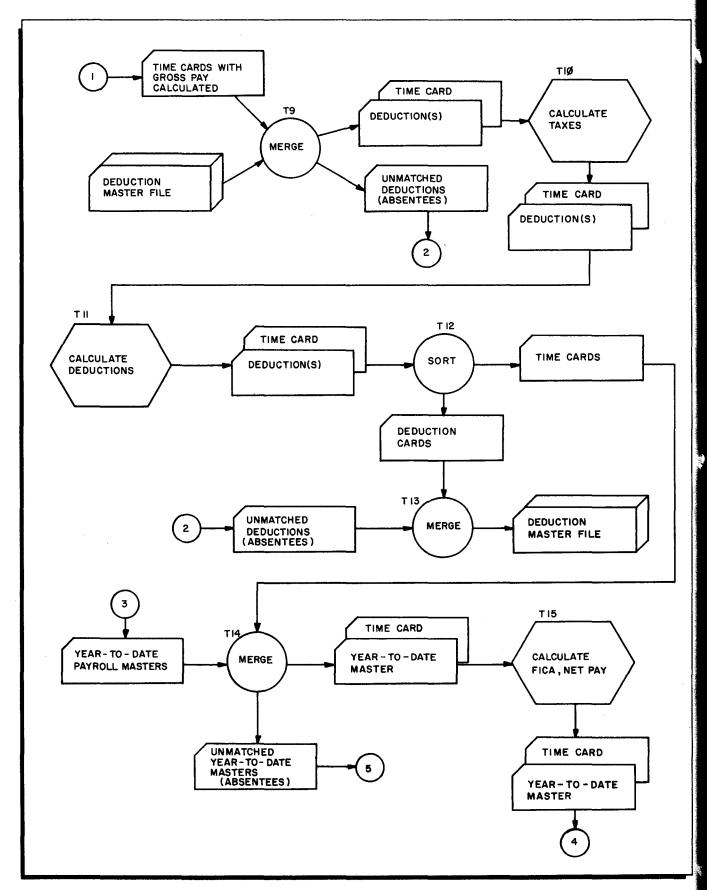


Figure 9-11B (cont). Tabulating System: Payroll Processing

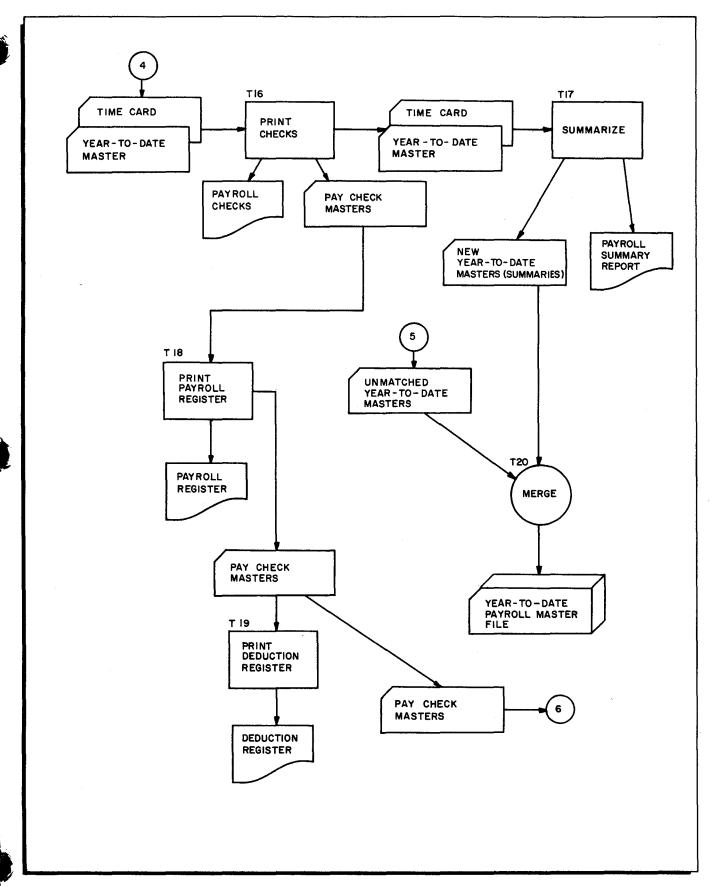


Figure 9-11B (cont). Tabulating System: Payroll Processing

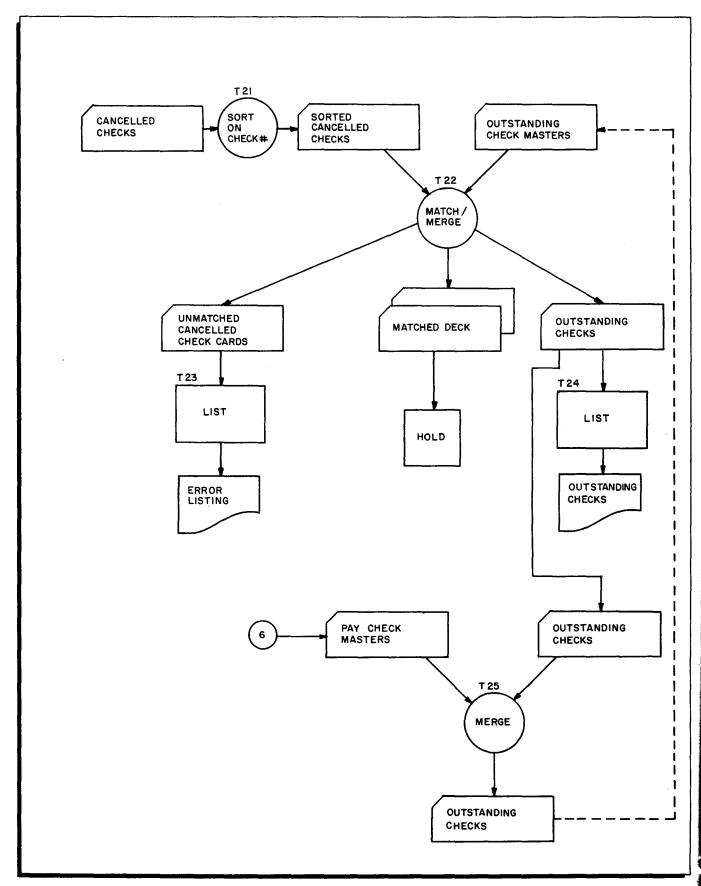


Figure 9-11B (cont). Tabulating System: Payroll Processing

- C6 The paycheck master tape file and the employee master and deduction file are then input to a second COBOL program which updates the employee year-to-date totals, producing an updated employee year-to-date file, and prints the payroll register listing (see Figures 9-23, 9-24, and 9-25).
- C7 The paycheck master file is then input to a third COBOL program which has been written to calculate the total deductions for each employee, the total deductions for each department, and print the deduction register (see Figures 9-26, 9-27, and 9-28).
- C8 The cancelled check cards punched from the incoming cancelled checks from the bank are sorted according to check number ty the Sort B program and are placed on tape (see Figures 9-29 and 9-30).
- C9 The sorted cancelled check cards are then match-merged against the previously outstanding checks of prior payrolls and an output listing (error listing) of the unmatched cancelled check cards, and an output deck of the checks still outstanding are produced (see Figures 9-31 and 9-32).
- C10 These outstanding checks are then placed on tape by PERIO B and the tape is printed to produce a listing of those checks still outstanding from previous payrolls (see Figure 9-33).
- Cll This previous outstanding check tape is merged with the current paycheck masters producing a currently outstanding check tape (see Figures 9-34 and 9-35).

OPERATING PROCEDURES

Once all of the individual utility programs have been selected, their parameter cards punched, and the three COBOL programs written and compiled, a permanent loading deck can be set up as follows:

- 1. The program decks of those utility routines used more than once (viz., Sort B and Merge B) are reproduced.
- 2. All of the program decks are then arranged in order of execution and the parameter cards are inserted at the appropriate points. The resultant deck is illustrated by the solid lines in Figure 9-36.

Loading the Programs from Cards

If the programs are to be loaded from cards via the card reader during the execution of the runs, the procedures is as follows:

- 1. Obtain those cards (or card decks) which change from payroll to payroll (e.g., the weekly time and batch total cards) and insert them into the appropriate positions in the deck. These cards are indicated by the broken lines in Figure 9-36.
 - NOTE: Two card groups (viz., the corrections input to run C4 and the unmatched previously outstanding check cards input to run C10) are not available until the runs immediately preceding are executed.
- 2. If the Type 214-2 Reader/Punch is being used, the deck must be divided into three parts, each of which must be loaded separately, since both runs C5 and C9 produce punched card output. If a separate card reader and card punch are available, the entire deck can be placed into the card reader.

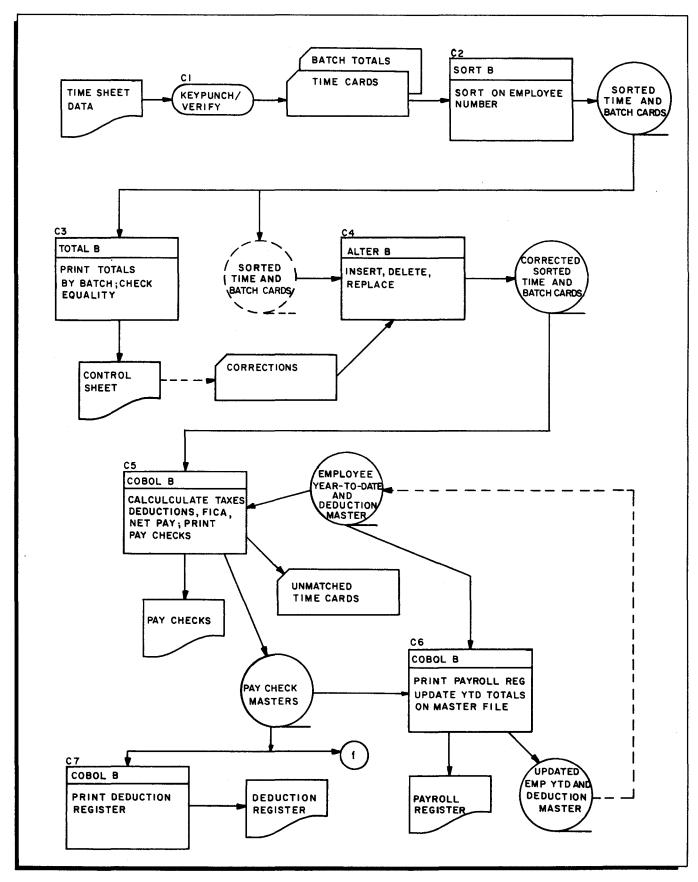


Figure 9-12. Computer System: Payroll Processing

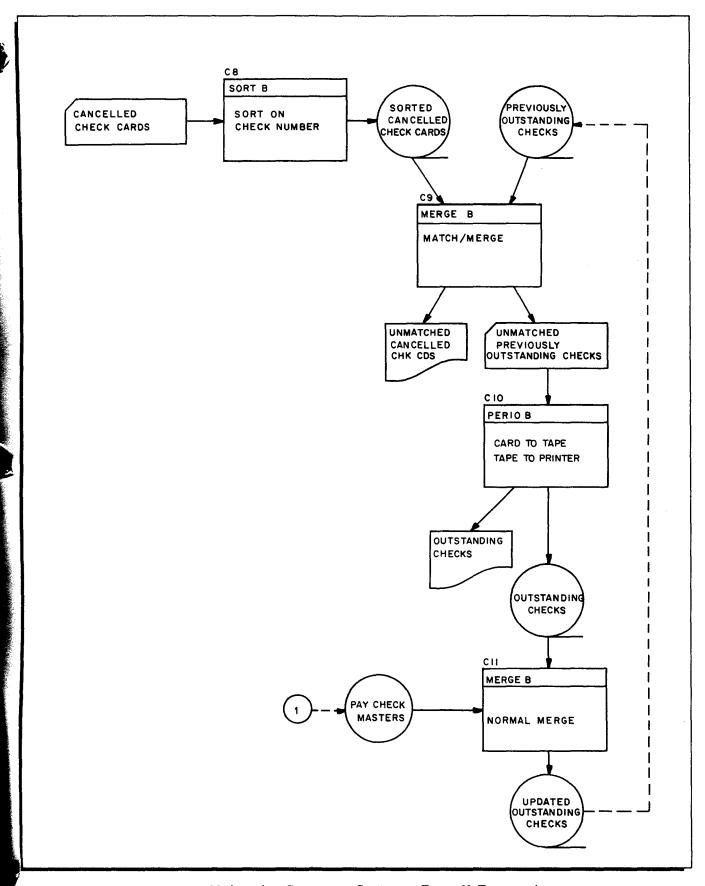


Figure 9-12 (cont). Computer System: Payroll Processing

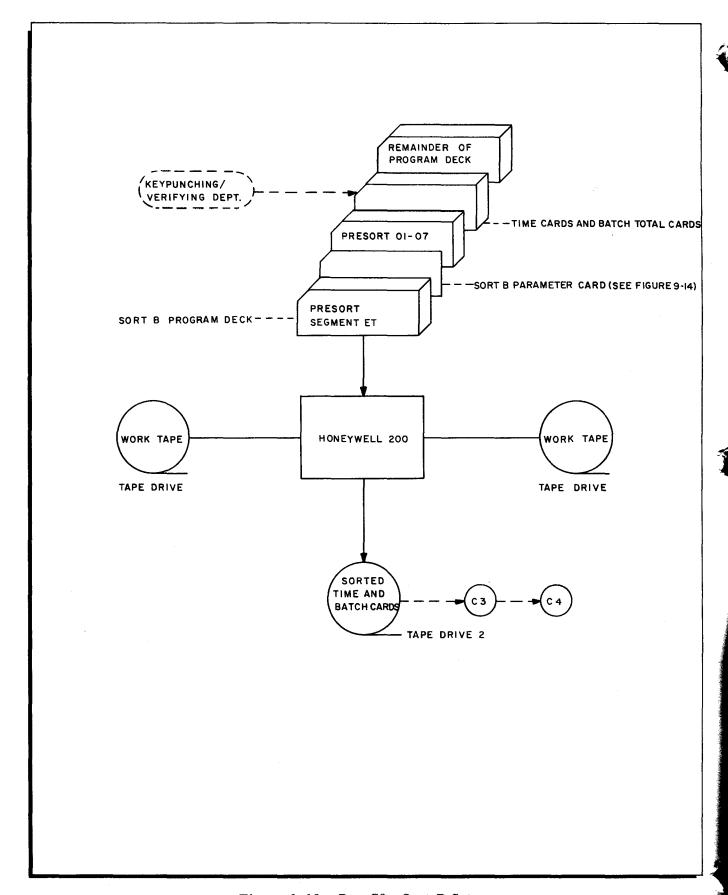


Figure 9-13. Run C2: Sort B Setup

EASYTAB - SORT B
APPLICATION SORT OF TIME & BATCH TOTAL CARDS Author
S O R T B INPUT ATH TAPE TAPE OPTION (1) SEQUENCE C C C C C C C C C
NO. OF REELS MACHINE OF INPUT SIZE BLOCKING ② BLOCKING ② BLOCKING ② 10 11 15 16 17 18 1 Thru 9 $\Delta = 8K$ $\Delta \Delta = 02$ $\Delta \Delta = 02$
Employee Number (Blanks in clock # field of batch total cards will cause them to fall behind each department group) Key l Key 2 Key 3 Key 4 D J D
Key 5 Key 6 Key 7 Key 8 40 43 45 48 50 53 55 58
Input Reel Identification 61 70
Output Reel Identification S - T / M E - C D S 71
Input tape (s) may contain no more than 40,000 items, Blocked 2, in order to use Tape 1 as a work tape.

Tape input and output of Sort B are assumed to be blocked 2, within an 8K machine. If blocking factor is other than 2, the factor must be entered in the appropriate input and/or output box.

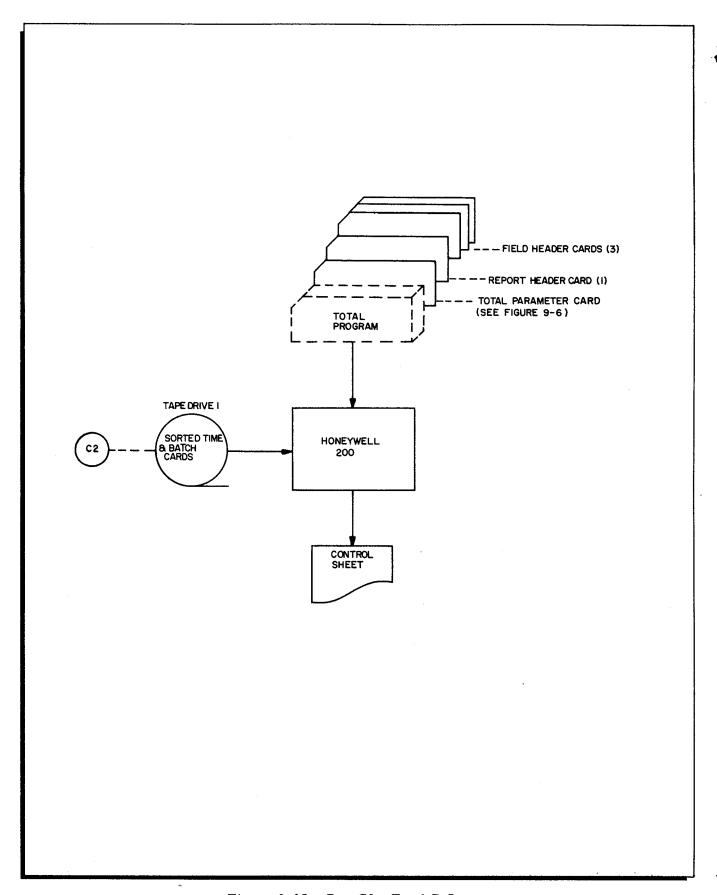


Figure 9-15. Run C3: Total B Setup

EASYTAB - TOTA	L Date
APPLICATION BALANCING OF TIME CARDS	I.D. <u>C3</u> Author
NO. OF ACCUMU- INPUT CONTROL KEYS LATIONS FUNC 7 C = Card 1 To 4 1 To 7 1 T = T = Tape Col 80 - causes break on batch CONTROL KEYS	List $0 = \text{No Header}$ 1 to 4 = No of Header Cards
Key 1 Key 2 Key 2 Key 2 Key 3 Key 2 Column 80 not pri	Key 3 Key 4 41 42 43
1/8/2 44 47 48 48 51 52 Reg Hrs (Batch cards)	eld 3 Field 4 Solution S So
 Indicates the highest accumulation key field used. Print positions 117-120 of the first line of a Report He Each key may not exceed ten characters. Total number of print positions may not exceed 36 che The print positions for the accumulations are fixed as Field 1 = 37 to 48; Field 2 = 49 to 60; Field 3 = Field 5 = 85 to 96; Field 6 = 97 to 108; Field 7 = 	aracters. follows: 61 to 72; Field 4 = 73 to 84;

Figure 9-16. Run C3: Total B Parameter Card

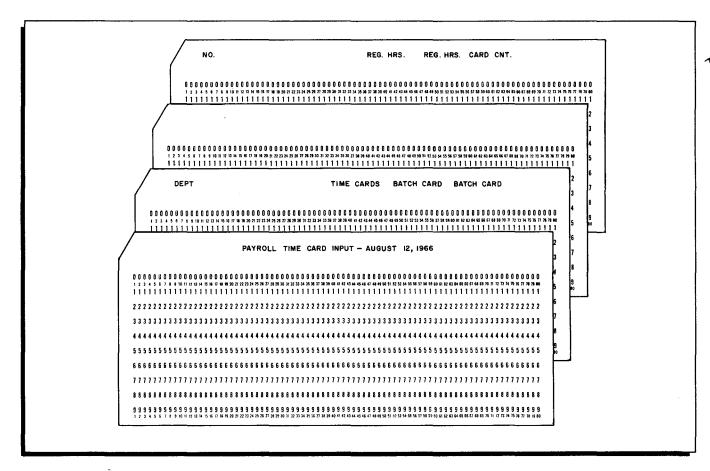


Figure 9-17. Run C3: Total B Report Header and Field Header Cards

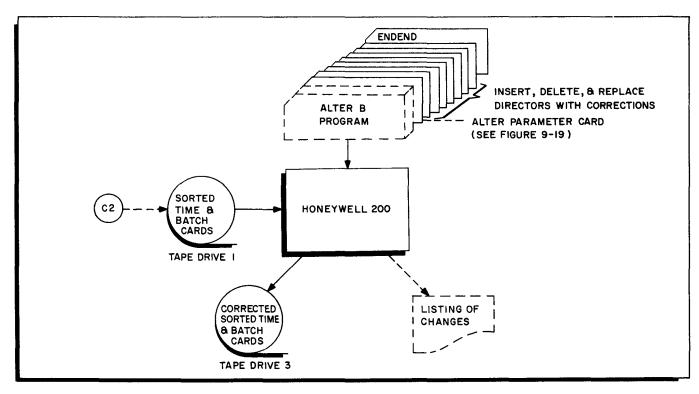


Figure 9-18. Run C4: Alter B Setup

EASYTAB - ALTER	-
APPLICATION CORRECT TIME CARDS Author	- - =
ALTER PARAMETER CARD - First Card.	
FILE NO. OF ORDER KEYS A = Ascending 1 to 8	
New 1 Key 2 Key 3 Key 4 Key 5	
	-
"INSERT" DIRECTOR - Placed before Card(s) to be added to tape file.	
"REPLACE" DIRECTOR - Placed before Card(s) to be changed on tape file.	-
"DELETE" DIRECTOR - Placed before Card(s) to be deleted from tape file.	_
END CARD - Last Card.	

Figure 9-19. Run C4: Alter B Parameter Card

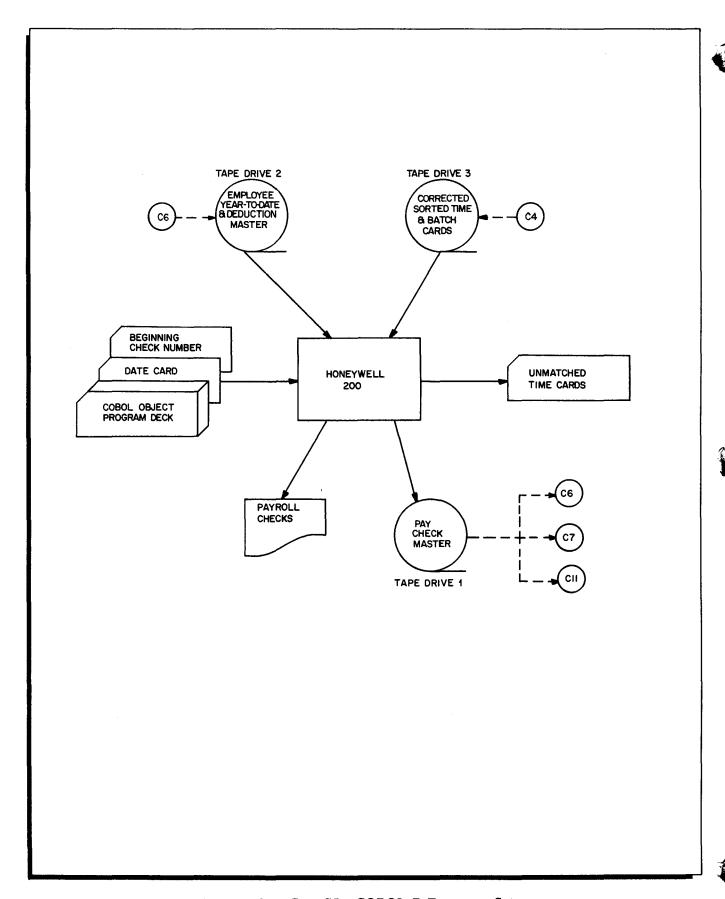


Figure 9-20. Run C5: COBOL B Program Setup

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Figure 9-21. Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

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øø	9 Ø	l	02	I.T.C	TR.	P,I	C T U	I,R,E,	1,5,9	9V99	?										of records in a block (1 to 9 EASYTAB STANDARD IS
Øø	9 5		02	ITO	H.T.	PI	CTL	I R E	1,5,9	9 V9											BLOCKED 2.
Ø 1	ØØ		Ø2	ITC	AMT		S.T.U	RE	1-5												NON-TAPE-FILE - Linethru (Do not use) "Block con-
Ø 1	Ø5		Ø3	, I.T.G	RSS	,P,I	C,T,L	I,R,E,	1,5, 9	7(4)	99		4-1-1-1			1 1 1 1 1		1 1.1			tains 72 records".
Ø 1	1 Ø		Ø3	LTF	EDT	PJI	C T U	R,E	1,S, 9	(4.)	199.					1 .1 .11				1.4.1.1.1.1	(2) TAPE FILE - Fill in
Ø 1	1 5		Ø3	1.T.S	XIX	PI	C T U	RE	I S	9 (4.).\	199.						- 1 1 1				"STANDARD" or "OMITTED" Label.
Ø 1	2 Ø		Ø3	LTF	ICA	Pl	C,T,U	,R,E	15	7.9.V.9.9				1.1.1.1.				1 1 1			NON-TAPE-FILE - Fill in
Ø 1	2 5		Ø3.	LTM	113C	PI	CTL	I,R,E,	I,S,	79V99),•						- 1 1 1	1 11		Andread 1 1 1 1	"OMITTED".
g 1	3 Ø		Ø3	1,T,C	RUN	PI	,c _, T ,u	ŖĘ,	1,S,	7(3)	199.										(3) TAPE FILE - If label is
Ø 1	3 5		Ø3	ITE	NDS	,P,I	CTL	J.R.E.	15	(E)	/99.				1 1 1 1						TAPE FILE - If label is "STANDARD" fill in 10 character name that is in
Ø1	40		Ø3	ITH	LTH	P,I	C,T,U	RE.	1.5	79 V99) <u>. </u>										the header label. If label
Øi	4 5	Γ	Ø.3.	, I,T,L	I.F.E.	PI	C,T,L	J.R.E.	1,5	9.9.V.9.) . •										is "OMITTED", line thru, (Do not use) this line.
Ø 1	5 Ø		Ø3	1.T.N	ET.	PJ	C,T,U	R.E.	1,S,	9 (4.)	199.			1 1 1							NON-TAPE-FILES - Line
Ø 1	5 5		Ø.2.	1.T.D	ATE.	P,I	CTL	I,R,E,	1 S . 9	7.(4.)											thru (Do not use) this line.
Ø 1	6 ø					,P,I	U,T,Q	RE.	I,S,												ALL FILES - Fill in 6
Ø 1	6 5		L			PI	CTL	J.R.E.	I.S.							المسلمان			1		character record name.
Ø 1	7 ø	l	L			,P ,1	C.T.U	,R,E,	i.s.												ALL FILES - Fill in Level
Øı	7 5		[J.R.E.													No. (02 to 05) Fill in 6 character field name.
Ø 1	8 Ø	·						RE.							L			1 1 1			Field descriptions must be
Ø1	\rightarrow							R,E							1 1 1 1			1 1 .		1.1.1.1.1.1.1	provided by the program- mer.
Ø 1								RE.													NOTE: Statements which are
	9 5							J.R.E.													not used should be lined
1 2 3 4	5 6 7		12	16	20	24		28	32	36	40	44	48	52	56	60	J64	68		73 8	thru.

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS





REV. NO. SECURCE S. A B B B B B B B B B										EA	SYTAB (CODING	FORM	2				CODED	INCHING INST.	
	PROGRA	м_	C	AL	CTX	RU	IN C	25	P	ROGRAMM	1ER			DAT	E		REV. NO.	PUNCH CARD F	ORM NO.	PAGE 3 OF
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	Øoe	5 5						PICT	URE	1.5 9 .0	(.3.)									7~
	80	7 Ø						PICT	URE				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	44	S	E FI	GURF 9-	5 FOR		
Solo	 	-						.P. I.C.T	U.R.E.	.i.s. A	(10).									
	1 1 1 1 1	77	1.			IMGE	RSS.	.P.1.C.T	U.R.E.	1.s. 9.	(5) V 9	9			7	HIS F	ILE.			Character file name.
		+						PICT	U.R.E.	1.S. 9.	*									TAPE FILE - Fill in number
B B S S B CARE CAN C	ØØ	ø			Ø2	IMST	XX	PICT	URE	15 9	(4)V9	9.				1 1 1 1				of records in a block (1 to 9 EASYTAB STANDARD IS
	$\overline{}$	-					ICA	PICT	URE	1.5. 9										BLOCKED 2.
	Ø1	ø				IMM	S.C.	PICT	URE	1.S. 9	(4) V9	9								
	Ø 1 (7 5	1.	_		IMNE	T	.P. I.C.1	U.R.E.	1.5. 9 .	(5)V9	9								tains 72 records".
	Ø 1 1	ø	1			IMDP	ND	PICT	U.R.E.	1.5. 9.	7									TAPE FILE - Fill in
	Ø1	1 5				IMCF	RUN	PICT	URE	1.5 9	9.V.9.9	· •			- 					"STANDARD" or
	Ø 1	zø				IMBN	NDS.	PICT	URE								· · · · · · ·			
B 1 3 5 5 5 5 5 5 5 5 5	Ø1	2 5			Ø2.	IMHO	DE.	PILCI	U.R.E.		•									"OMITTED".
	Ø 1	3 Ø			Ø2	IML	D.E.	PICT	URE	1.5 9	•		1.4							TAPE FILE - It label is
8 1 4 8 8 2 IMCDE PICTURE I.S. X	01	3 5				FILL	ER	P.I.C.1	T,U,R,E,	ıs X	(6).						1.1.1.111			"STANDARD" fill in 10
B 4 5 PICTURE IS S Onto use) this line. B 5 5 PICTURE IS Onto use) this line. B 6 5 PICTURE IS Onto use) this line. B 7 6 PICTURE IS Onto use) this line. B 7 6 PICTURE IS Onto use) this line. C C C C C C C C C C C	 	-11				IMC	DE .	-1			•						. L. d de-de-de-d			the header label. If label
B S B P C T U R E I S B B P C T U R E	Ø	4 5					133						1111.							is "OMITTED", line thru,
thru (Do not use) this line.	0 1	5 Ø		L_L.,										1.1.1.1.			 	4. 4. 4. 4. 4. 4. 4. 4. 		
\$1 6 8 PICTURE IS ALL FILES - Fill in 6 Character record name. (3)	 	-				1									-1-1-1					thru (Do not use) this line.
Character record name. (5) ALL FILES - Fill in Level No. (92 to 95) Fill in 6 character feld name. No. (92 to 95) Fill in 6 character field name. PICTURE IS No. (92 to 95) Fill in 6 character field name. PICTURE IS No. (92 to 95) Fill in 6 character field name. PICTURE IS No. (92 to 95) Fill in 6 character field name. No. (92 to 95) Fill in 6 character record name. No. (92 to 95) Fill in Level No. (92 to 95) Fill in 6 character record name.		-									-1-1-1-									
S PICTURE IS ALL FILES - Fill in Level No. (92 to 95) Fill in 6 Character field name. S S S S S S S S S	f- f-f-f	-												<u> </u>						character record name.
PICTURE IS No. (92 to 95) Fill in 6 character field name, Field lass provided by the programmer. PICTURE IS No. (92 to 95) Fill in 6 character field name, Field descriptions must be provided by the programmer. PICTURE IS NOTE: Statements which are not used should be lined thru.	 	-+-						~ 							***					All Files a Fill in Lovel
g 1 8 g PICTURE IS g 1 9 g PICTURE IS p 1 CTURE IS NOTE: Statements which are not used should be lined thru.	1 1 1 1 1 1	+											1.1.1.1.						 	No. (02 to 05) Fill in 6
provided by the programmer.	1 1 1 1 1	+		ш.								A		1 1 1 1				1.1.1.1.1.		- character field name. Field descriptions must be
PICTURE 1S PICTURE 1S NOTE: Statements which are not used should be lined thru.					 -	 							- 	1 1 1.1		ــــــــــــــــــــــــــــــــــــــ	-1-1-1-1-			provided by the program-
0 195 PICTURE IS				A 1								 	1 1 1 1 1			<u> </u>	+1111	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 		7
┣╋╉╣╣┩╊╄╙╙╚┢┷┪╚┪┪╚┉╵╵╙╙┸┩╘┈╚┩╽╽╽┧╽ ┪┸┸┸╂┸╟╫╻	\Box	_	1	ш.		1												 	*	
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Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

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SEQUENCE		В	1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									· · · · ·			IDENTI	ITV			
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0010	F.D.	PCM-	F BLC							A									①		
0020		1	LABEL		E _, C _, O _, R _, C					حبت	سب	ببي							②		
Ø Ø 3 Ø	1	1	V, A, L, U, E	. 0,	F, JD,E	E,N,T, I,i	F, I, C, A	4, T, I ,O, N	ι, Ι,S, ·	<u>"PAY".</u>	CHK-	<u>wst"</u>	•						3		
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Ø Ø 5 Ø	Ø 1	OPCM	1-R .																4)		
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0065	1 * * *	Ø.3.	OPDEP	J- 3 V	PICTU		ıs 9	(3).			سللل							L	(5)		
 	+	Ø.3	OPCLK	<u> </u>				(7)					F/F F//	URE!	2.6	E40		نسسا			GEND
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 	++++	Ø2	-1111111	<u> </u>	PICTI	J.R.E. 1	15.74	\(3). \(9).	·					LAY	997	<u>9</u>	 		AL	L FILES	- Fill in 6
ØØBØ	+	1	OPCH.K	-	,,,,,,,,		<u> </u>	, (, 7, /, 4	سست				41\$ F	146.			+				file name.
Ø Ø 8 5	+	Ø2.	1,1,1,00,00,00		PICTL	1.1.1.1	ı,s, X	1.4.7.					4.4.4.4				1	A	_	f records	– Fill in number in a block (1 to 9,
Ø Ø 9 Ø		Ø2 .	OPCAN	,,,,,,	-1°-		 3												· E	ASYTAB LOCKED	STANDARD IS
Ø Ø 9 5	4	Ø3 .	OPGRS	75	PICTL		1,5, 9		199.								1	لبب	_		E-FILE - Linethru
Ø 1 Ø Ø	4	Ø3 .	OPFED	<u> </u>	P, I, C, T, L		15.9		199.						ســــــــــــــــــــــــــــــــــــــ			سب	7	Do not us ains 72 re	se) "Block con-
0 1 0 5		Ø3	O.P.S.T.T	اللج	PLICTL	J.R.E.	1.57		199.		المسلمل المسلسا	سبب					4		Ţ.		ecoros .
Ø 1 1 Ø	1	Ø3.	OPFIC		LCTL	J,R,E,	1,5, ,9	9,9,V,9,9									1		TA	PE FILE	- Fill in
Ø 1 1 5		øз	OPMIS		PICTL	JRE	1,5, 9	79.V.99												STANDA	RD" or D" Label.
Ø 1 2 Ø		Ø3	OPCRU		PICTL	J _. R _. E		79.9V9					<u> </u>		المالم المالم				N	IN-TAP	E-FILE - Fill in
Ø 1 2 5		Ø3	OPBND	<u>)S</u> ,	PICTL	J.R.E.	1,5, 9	79,9V,9	9				11. 1 1						- 11	OMITTE	
Ø 1 3 Ø	1	ø3	OPHLT	(H.)	PICTL	RE,	ı,s, , 9	79.V99).•										TΑ		③ - If label is
Ø 1 3 5	Τ	Ø.3.	OPLIF	Ε	P,I,C,T,L	J R E	ı,s, 9	19.V99											พ	STANDA	RD" fill in 10
0 1 4 0	T	Ø.3.	OPNET		PICTU	RE.	ı,s, 9	7.(4.).Y	99										ti	ne heade:	name that is in r label . If label
Ø 1 4 5		Ø3	OPDAT	Ε	PILCITI	JRE		7(4).													TED", line thru, se) this line.
Ø 1 5 Ø	1	<u> </u>			2 I C T U		I.S	I VI VILLE			1 . 1 . 1 . 1				1.11		1 1 1 1 1	4-4-4-	•		-FILES - Line
Ø 1 5 5					P, I,C,T,L			111.								 				nru (Do n	ot use) this line.
Ø 1 6 Ø					2,1,C,T,U								<u> </u>				+		A 1	,	4) - Fill in 6
Ø 1 6 5	1	 	····		PICT											££				haracter	record name.
	+	 							1 1 1 1	<u> </u>			1	-4-4-		 					<u> </u>
Ø 1 7 Ø Ø 1 7 5	+	 -	 		PICTU PICTU				<u> </u>	LLL							+		$\overline{}$	lo. (Ø2 to	- Fill in Level o Ø5) Fill in 6
	+	+	 		P,1,C,T,U										<u> </u>		+		c	haracter	field name . riptions must be
Ø 1 8 Ø	+	 			PLICTU												+		pı	rovided b	riptions must be by the program-
ø 1 8 5	+	+	 		P,I,C,T,L												+	ш	m	er.	
Ø 1 9 Ø	$+ \cdots$				41.31.4												 		NOTE	: Statem	ents which are
Ø 1 9 5	$+\cdots$	+	 		PICTL	+	15	444		4	4		4		+		1	لب	not thru		uld be lined
1 2 3 4 5 6	7	12	16 20	0	7.4	28	32	36	40	44	48	52	56	60	64	68	73	80			

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS





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										E	EASYTAB	CODIN	g form	2					CODED]
			^1	, ,	TX	5/1		05											PUNCH			PAGE 5 OF
PRO	RAN	1	LA	<u>, , , , , , , , , , , , , , , , , , , </u>	./^	ΚU	'N	<u>C5</u>	P	ROGRAN	MMER			DAT	E		REV	NO	CARD FOI	RM NO.		
SEQL	ENC	E	A	В																IDEN	TITY	}
PAGE		_	-	_														,		1000		1
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10			F.D.	<u>oc</u>	HK-	<i>F</i> , B,L,Q	c.K.	حجمه	ֈ.T;^, 1- _! N	٠		R.D.S.								سب		. O
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	Ø 4		 	1		D, A, T, A,	RF	C,O,R,E)I.S.	O.C.H.I	K - 1	OCHK	- 2							1		$\widecheck{\mathfrak{A}}$
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_ e	Ø 8	ø	1	Ø		FILLE	<u>R.</u>	P, I,C,T	UR,E	is.	<u>x (13.)</u>	•								<u> </u>		Character file name.
le	ø 8	5	l	Ø	2	OCGRS	S.	PILCI	LU.R.E.	I.S.	z(4)	99								Ι		TAPE FILE - Fill in number
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	ø 9	-	1	g		OCFED	7	تتتت	TURE	بالسلسلسل	z(4).	99		1-1-1-	تسسيد		T . T'.		Titi	1		BLOCKED 2.
			+				-		1-1-1-1	************	<u>-, </u>	<u> Vilia</u>										NON-TAPE-FILE - Line thru
	1 0		+	. 2	15	FILLE	-	P, I, C, 1		.I.S.	*******			سسب								(Do not use) "Block con- tains 72 records",
-	1 0	5	<u> </u>	Ø		<u>ocs.t.t</u>	۰.	P,1,C,1	LURE.	,I,S,	<u>z(4).</u>	99								سبل		2
9	111	g	1	Ø	2	FILLE	R	P_I_C_T	,U,R,E,	ıs.	X,X, •									ب با		TAPE FILE - Fill in
9	1 1	5	1	Ø	2.	OC.F.I.C	Α.	P.1.C.1	LU,R,E,	1,5	ZZ.ZZ	•								l		"STANDARD" or "OMITTED" Label.
11	1 2	+-+	1	Ø		FILLE	R	PICT	LURE.	1.5				1 1 - 1 - 1	·							NON-TAPE-FILE - Fill in
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1	1 3	Ø	+	. 0		*, *, -, -, -,	R	P,1,C,1	ruRE,	1,1,1,1	<u>X </u>	سست						11.11				TAPE FILE - If label is
	1 3	5	1	. 0		OCCRU	<u>IN</u>	P,1 ,C,1	r _{,U,R,E,}	J.S.	ZZZ.Z	<u>z</u>								1		"STANDARD" fill in 100 character name that is in
وا	1 4	ø	1	, Ø	(2	FILLE	R	PJICT	URE	IS.	χ., , , ,									L.,		the header label. If label
1	1 4	5		. 0	12	OCBND	2	P. I.C.1	TURE	15	ZZZ.Z	Z.										is "OMITTED", line thru, (Do not use) this line.
++	1 5	+-+	1	. 0		FILLE	_		URE		Y			· · · · · · ·		1. 1. 1. 1.		1 1 1 1 1		 		NON-TAPE-FILES - Line
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-	1 5	1	1				<u> </u>	P, I,C,1			ZZ.ZZ	••••		4444						 		•
- 1 - 1	1 6	++		. 12	2	FILLE	K_	P,1,C,T	URE	,I,S,	<u>X (23)</u>	•										ALL FILES - Fill in 6 character record name.
	1 6	5						PICT	FURE.	,I,S					4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			1 1 1.1		سبب		(5)
	1 1 7	ø	1	.				PJEJ	U.R.E.	,۱٫۵,۱٫										1		ALL FILES - Fill in Level
- 1	117	11								1.5												No. (92 to 95) Fill in 6
-+-+	11	11	1	+		- 				1.1.1.1										1		character field name. Field descriptions must be
	1 1 8		1-1-						URE.											1		provided by the program-
$\neg \neg$	1 1 8	T	+	╌				P,1,0,1	I,U,R,E,	1,5,_						4.4.4.4				+		mer.
Ш	1 9	ø	1	4				P,16,7	PRE.	برعبد												NOTE: Statements which are
Ш,	1 9	5	<u> </u>					P.I.C.1	LURE,	is							4-4-4-4	4 4 4 4	4-1-1-1	<u> </u>		not used should be lined thru.
1 2	4 5	6	7 8	12		16 20)	24	28	32	36	40	44	48	52	56	60	64	68	73	80	

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

		SYTAB CODING FOR	W 2			PUN	CHING INST.	PAGE 6 OF
PROGRAM CALCTX RUN	L_C5 PROGRAMM	1ER	DATE	F	REV. NO	CARD FOR	RM NO.	PAGEOF
SEQUENCE O A B							IDENTITY]
1 2 3 4 5 6 7 8 12 16 20	24 28 32	36 40 44	48 52	56 60	64	68	73 80	4
	K CONTALNS R	RECORDS.	 					10
0020	RECORDS ARE		<u> </u>	<u> </u>			<u> </u>	2
Ø Ø 3 Ø , , , , V,A,L,U,E,	QF LOF NT. 1 FLGAT	110 H 15		<u> </u>				.[3]
Ø Ø 4 Ø D,A,T,A, R	E,C,O,R,D, 1,S,	<u></u>			I. I. I. I. I. I.	1L.L.L		4
		<u> </u>			1.1.1.1.1	<u> </u>	<u> </u>	
	 					L-L-L-L	<u> </u>	
0 0 5 0 0 1 OCHK-2.			1 . 		 			4
		 	 					
0060 FILLER		(3)		<u> </u>		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		5
0 0 6 5 O.C.H.K.N	PICTURE IS 9	(9.)		<u> </u>			1-1-1-1-1-1-1	LEGEND
070 02 FILLER	PICTURE IS XX	<u>(</u>	1-4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1					1
Ø 0 7 5 , Ø2 OCNAME	P, I, C, T, U, R, E, I, S, A	SA(9).						ALL FILES - Fill in 6
ØØ8Ø . Ø2 FILLER	P, I, C, T, U, R, E, I, S, X, ((14).	<u> </u>					Character file name.
0 0 8 5 0CAMT	PICTURE IS	(****.	 	<u> </u>		L.L.L.		TAPE FILE - Fill in number of records in a block (1 to 9)
	PICTURE IS X.	· <u></u>		LIN	£.2			EASYTAB STANDARD IS
Ø Ø 9 5 Ø 2 OC-GR	P,I,C,T,U,R,E, ,I,S, , Z, ((5), 99			PAY			BLOCKED 2.
Ø 1 Ø Ø Ø DE FILLER	P.I.C.T.U.R.E. I.S. XX	(.		C H &	ĘÇĶ			NON-TAPE-FILE - Line thru (Do not use) "Block con-
0 1 0 5 02 OC-FED	P.I.C.T.U.R.E. I.S	(5.).99	 					tains 72 records".
Ø1118 Ø2 FILLER	P,I,C,T,U,R,E, ,I,S, ,X,X	((2) TAPE FILE - Fill in
Ø 1 1 5 Ø 2 OC-ST	_ P.I.C.T.U.R.E. I.S. Z .((4).99.		1 1 1 1 1 1			1 1 1 1 1 1 1	"STANDARD" or "OMITTED" Label.
Ø12Ø Ø2 FILLER	P,I,C,T,U,R,E, ,I,S, 'X')	ξΧ		<u> </u>	1 1 1 1 1 1			NON-TAPE-FILE - Fill in
	PICTURE IS Z.	(4).99.						"OMITTED".
Ø 13 Ø Ø2 FILLER	PICTURE IS XX	(X						(3) TAPE FILE - If label is
Ø 1 3 5 Ø2 OC-MSC	PICTURE IS Z	(4).99.						"STANDARD" fill in 10 character name that is in
Ø140 Ø2 FILLER	PICTURE IS 🞝	(X		11111				the header label. If label
0 1 4 5 02 OC-NET	PICTURE IS Z	(5).99						is "OMITTED", line thru, (Do not use) this line.
8 158 82 FILLER	PICTURE IS X	(2.3.)					1	NON-TAPE-FILES - Line
0 1 5 5	P.I.C.T.U.R.E. I.S.							thru (Do not use) this line.
Ø 1 6 Ø	PICTURE IS							ALL FILES - Fill in 6
0 1 6 5	PICTURE IS							character record name.
Ø 1 7 Ø	, P,I,C,T,U,R,E, ,I,S, , ,							(5) ALL FILES - Fill in Level
Ø 1 7 5	PICTURE IS							No. (02 to 05) Fill in 6 character field name.
9 1 8 9	PICTURE, IS.							Field descriptions must be
Ø 1 8 5	P.I.C.T.U.R.E. I.S.							provided by the program- mer.
	PICTURE, IS.							NOTE: Statements which are
	P.I.C.T.U.R.E. I.S.	<u> </u>			J. J. J. A. S. J.			not used should be lined
1 2 3 4 5 6 7 8 12 16 20	24 28 32	36 40 44	48 52	56 60	64	68	73 80	thru.

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS



EASYTAB CODING FORM 2																	
PROGRAM CALCTX - RUN C5						F A C	CVTAD (2001110	FORM	2						CHING INST.	4
PROGRAMMER						EAS	STIAB (LODING	FORM	2					1 · · · + ·		
SCOURSE A B	C	ALCTX	- RUN	C.5							_						PAGE OF
	FROGRAM				PR	OGRAMMI	ER			DAT	E		REV.	NO	CARD FOR	IM NO.	4
		В	-													IDENTITY	
		12	16 20	24	2.8	32	36	40	44	48	52	56	60	64	68	73 80	1
00 2 0 0 0 0 0 0 0 0	0010 F	OERR	F BLOC	K_CON	T.A.I.N.	SR	EGOR	05									h
			LABEL	RECOR	DS AF								1				12
	$\overline{\mathbf{H}}$		V-A-1-11-F		FNTL					1 1 1 1							19
0 0 0 0 0 0 0 0 0 0		' 						1.101.1							<u> </u>		1~
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		18,0,0,0,0			<u> </u>	<u> </u>	L		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				1111	114.14	- 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	1
	┞ ┥ ┩┼┼┼┼						1 -1 -1 -1				1.1.1.1.					1.1.1.1.	1
	} 						 -					L. L			1 1 1 1 1 1	11111	1
	0050	U.E.R	K-K.														149
	++++++			ببيد			6005					5					_
		. , (0.2.	F.I.L.L.E.K				'80')'•										_(5)
			 	PICT	URE	IS											LEGEND
			 	P,I,C,T	U _, R _, E _,	ı,s								MAT			1 ①
	075			P_1,C,T,	U.R.E.	I S	 				FIGU	RE 9	-2)				ALL FILES - Fill in 6
	0080			P, I, C, T	URE	ı,s											Character file name.
	0085			P,I,C,T	U _I R _I E,	I _. S											
		L		PICT	U.R.E.	I S										<u> </u>	EASYTAB STANDARD IS
	Ø Ø 9 5			PICT	URE	i,s, ,											
	0100			PICT	U.R.E.	I,S,											(Do not use) "Block con-
	0105			PILCT	U.R.E.	1,5, ,											
	F-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1																1 TAPE FILE - Fill in
	 						1.1.1.	<u> </u>	111		1		_	.11	1 1, 1 1 1	1	I "STANDARD" or
							1.1.1.1								-1		
	I -1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		 														"OMITTED".
### ### ### ### #### #### ############	 								<u> </u>			1.1.1.1		1.4.4.1		1.	
Rotater name that is in the header label. If label is "OMITIED", line thru, (Do not use) this line.			+									4					"STANDARD" fill in 10
B 45 PICTURE S S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S PICTURE S NOTE: Statements which are not used should be lined thru.																	
B 15 B PICTURE 15 B 15 B PICTURE 15 B 16 B PICTURE 15 B 16 B PICTURE 15 B 17 B PICTURE 15 B 17 B PICTURE 15 B 18 B PICTURE 15	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		+						1 1 1 1							 	is "OMITTED", line thru,
### thru (Do not use) this line. ### (A) ### (B) ###																	1 ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
## ALL FILES - Fill in 6 character record name. ## IF ILES - Fill in 6 character record name. ## IF ILES - Fill in 6 character record name. ## IF ILES - Fill in 6 character record name. ## IF ILES - Fill in Level ## IF ILES - Fill in Level *# No. (02 to 05) Fill in 6 character field name. ## IF ILES - Fill in Level *# No. (02 to 05) Fill in 6 character field name. ## IF ILES - Fill in 6 character record name. ## IF ILES - Fill in 6 character record name. ## No. (02 to 05) Fill in 6 character field name. ## IF ILES - Fill in 6 character record name. ## No. (02 to 05) Fill in 6 character field name. ## IF ILES - Fill in 6 character record name. ## No. (02 to 05) Fill in 6 character field name. ## No. (02 to 05) Fill in 6 character record name. ## No. (02 to 05) Fill in 6 c	F-1-1-1-1-1-1-1-1											11.1.1					
Character record name.																	
B 1 6 5 F C T F E S B 1 7 Ø F C T F E S B 1 7 Ø F C T F E S B 1 7 Ø F C T F E S B 1 8 Ø F C T F E S B 1 8 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 9 Ø F C T F E S B 1 1 1 1 1 B 1 1 1 1 B 1 1 1 B 1 1 1 B 1 1 1 B 1 1 B 1 1 B 1 1 B 1 1 B 1 1 B	Ø 1 6 Ø		 	PICT	U.R.E.	,I ,S,											
ALL FILES - Fill in Level	Ø 1 6 5			PICT	URE	15											
Character field name. Field descriptions must be provided by the programmer. PICTURE IS PICTURE IS NOTE: Statements which are not used should be lined thru.	Ø 1 7 Ø		<u> </u>	PICT	U,R,E,	.I.S						J.,					ALL FILES - Fill in Level
Field descriptions must be provided by the programmer.	Ø 1 7 5			PICT	URE	1,5,						1_1_1_1			1111	1	No. (Ø2 to Ø5) Fill in 6 character field nome.
PICTURE IS PICTURE IS NOTE: Statements which are not used should be lined thru.	Ø 1 8 Ø			РІСТ	URE,	ى رىل						<u> </u>		1 1 1 1			Field descriptions must be
Ø 1 9 Ø PICTURE IS NOTE: Statements which are not used should be lined thru.																<u> </u>	
0 195 PICTURE IS						.i .s											NOTE: Statements which are
The state of the s	1111	· · · · · · · · · · · · · · · · · · ·															not used should be lined
		12	16 20				36	40	44	48	52	56	60	64	68	73 81	fhru.

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

					PUN	CHING INST				
Hor	1e3	well	l	COBOL PROGRAMMING FORM	CODED					
ELECTRON	IC DATA	PROCESSIN	-	LCTV PUNCC	PUNCH			PAGE	8	_
PROGRA	AM		LA	LCTX - RUN C5 PROGRAMMER DATE REV. NO.	CARD FOR	M NO.				
SEQUE		A	В			IDENTIT	Υ			
PAGE L		?	12	16 20 24 28 32 36 40 44 48 52 56 60 64 6						
1121314	1310			STORAGE SECTION.		,,,				
		HOKA	11146.	SIDRAGE, SECULONO.	لسبب					
		40	04-5	Pleaser to O(c) MALES IN TERM	1					
		Ø.1.	DAILE	PICTURE IS 9(6) VALUE IS ZERO.						
		Ø1.	CHKN	PICTURE IS 9(9) VALUE IS ZERO. PICTURE IS X (10) VALUE IS "999999999".						
		Ø۱	N.INE	PICTURE 15 X (10) VALUE 15 "777777777".						
<u> </u>		Ø.1.	SAV.I	PICTURE IS 9.(4) V99.	1.1.1.1					
		-					ш.			
		Ø1.		ABLE.						
				FILLER PICTURE IS V999 VALUE IS .195.		1.1.1.1.1				
للسل			Ø2_	FILLER PICTURE IS V9.99 VALUE IS .1.72.						
			ø2 .	FILLER PICTURE IS V999 VALUE IS .156.	1 1 . 1 . 1					
			Ø2.	FILLER PICTURE IS 1999 VALUE IS . 139.]			
			Ø.2.	FILLER PICTURE IS V999 VALUE IS						
	[T	Ø2	FILLER PICTURE IS V999 VALUE IS 097.			, ,			
			Ø2	FILLER PICTURE IS V999 VALUE IS .079.						
		1					"1			
		1111	5.	 	 					
		1	62	FILLER PICTURE IS V999 VALUE IS ZERO.	1.411	1 111				
1		+	P	11.10.000.000.000.000.000.000.000.000.0	11.1.1					
		Ø1.	TRI 1	PENFEINES TAXTADIF			``			
 			02	REDEFINES TAXTABLE.						
		+	P.S		11-1-1	1-1-1-1				
 		Ø1	STAV	PICTURE IS V99 VALUE IS .O.S.	1.1.1.1	1 1 1 1				
\vdash		<i>9</i> .1	3,1,7,1	1 FILCTORE, 13, 177, VALUE, 13, 103.						
			1 1 1 1 1	UT DICTURE LC ARRYDA VALUE LC AZA CA		111111	띡			
		Ø.1.	PIMI	IT PICTURE 1.5 999,499 VALUE 15 174.00.		1.1.1.1				
			بيبا	 						
		Ø1.	F, I,C,A	1-V, PICTURE IS 19999 VALUE IS .0358.						
		ــــــــــــــــــــــــــــــــــــــ	بسب							
		Ø1.	F, I,CA	-1. PICTURE IS 99V99 VALUE IS ZERO.	1.1.1					
		1	1	1						
		Ø1.	FICA	-2 PICTURE IS 999499 VALUE IS ZERO.						
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			L		سلك الساد					
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		 	*							
1 2 3 4	5 6	7 8	1.2	16 20 24 28 32 36 40 44 48 52 56 60 64 6	8	73	80			

Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS



																			- 1	PUN	CHING I	NST,	
He	nes		11					C	OBOL	PROG	SRAMM	ING F	DRM						٥	ODED			
ELECTRO	IIC DAT	we	ING	_															-	UNCH	\top	\top	
PROGR	AM		ALCT	<u>X ~ ጾ</u>	<u>RUN</u>	<u> </u>	F	ROGRA	AMMER	·			DA	TE			REV.	NO	_ [-	ARD FOR	M NO.		•
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PAGE		¥ ^																			IDEN	4TITY	′
1 2 3 4	5 6		12	16	20	24	28	3z	36	-	40	44	48	52	56	60	ŀ	64	68		73		80
		Ø1.	HLTH	ITAB.	LE																		
		<u> </u>	Ø2.	FILL		PICT	LURE,	15	99 V	99	VALL	1F \	S. ZE	PO						• • •			
	• • •	+	Ø.2	FILL	E D			18	997	190	VAL	<u>, E 1</u>	5 47	.5ø.						•••			
		++-			LEN.		I'O'VE	1,3,	16.43		<u> </u>	<u> </u>	<u> </u>	· '2'A' •									
		1	Ø2.	FILL			TURE.			77.	. V.A L.(U.E.	<u> </u>	/,8,.									
		Ø1.					HLT			يب		ينبب	ــــــــــــــــــــــــــــــــــــــ										
			Ø2.	H.RA.	TE, C	SCC MI	RS 3	TIM	NES.	PIC	<u>TURE</u>	<u> </u>	<u> </u>	99					щ.				
					-1-1-1				4.4.4.											لبب		111	
[]	Ø1.	LIFE	TABL	LE																		
	1		Ø.2			PIC	TURE	.1.5	99v	99	VALI	JF. N	SZF	RQ.						1			
		† **	Ø2.	FILL	FR	Pic	TURE	is	99 V	99	VAL	JF 1	S Ø3	75									
~+	~~	1	Ø2		IED	DICT	LURE	10	90 \	99	VAL.	75	S 47	25		<u> </u>							
		ne a								. 1. 4.	<u>, ۲, 7, C, C</u>	٠, ١	3. V.	اه، حرب،								щ.	_
┷┼	 	Ø.1.	TBL3				LIFE										•••						
			Ø2.	LKA	TE, C	CCM	RS. 3.	1.11	NES.	BIC	TUR	<u>E. 15</u>	99.V	199.								111	_
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Figure 9-21 (cont). Run C5: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

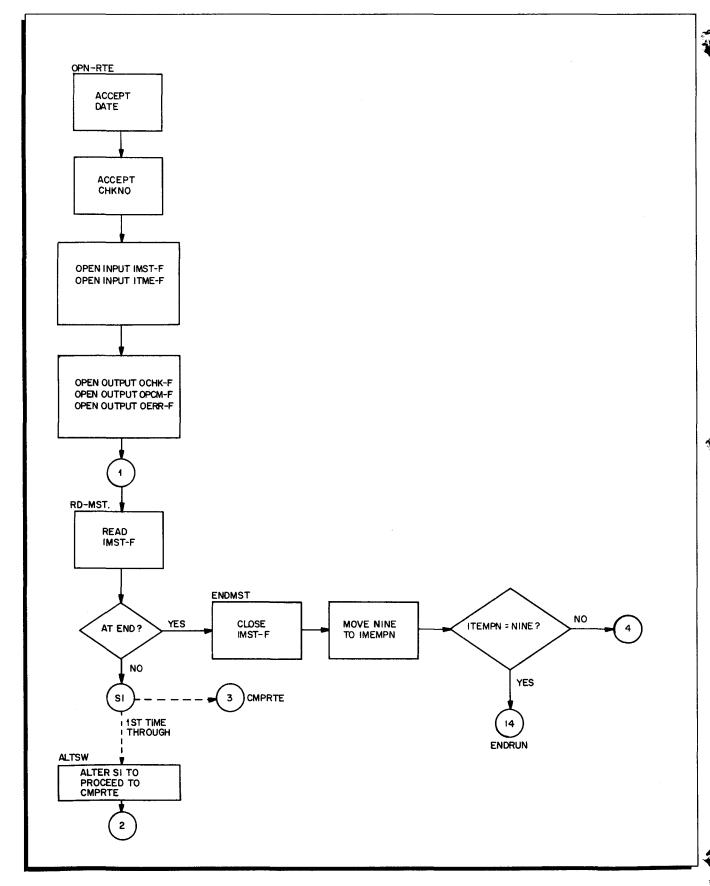


Figure 9-22. Run C5: COBOL PROCEDURE DIVISION Flow Chart

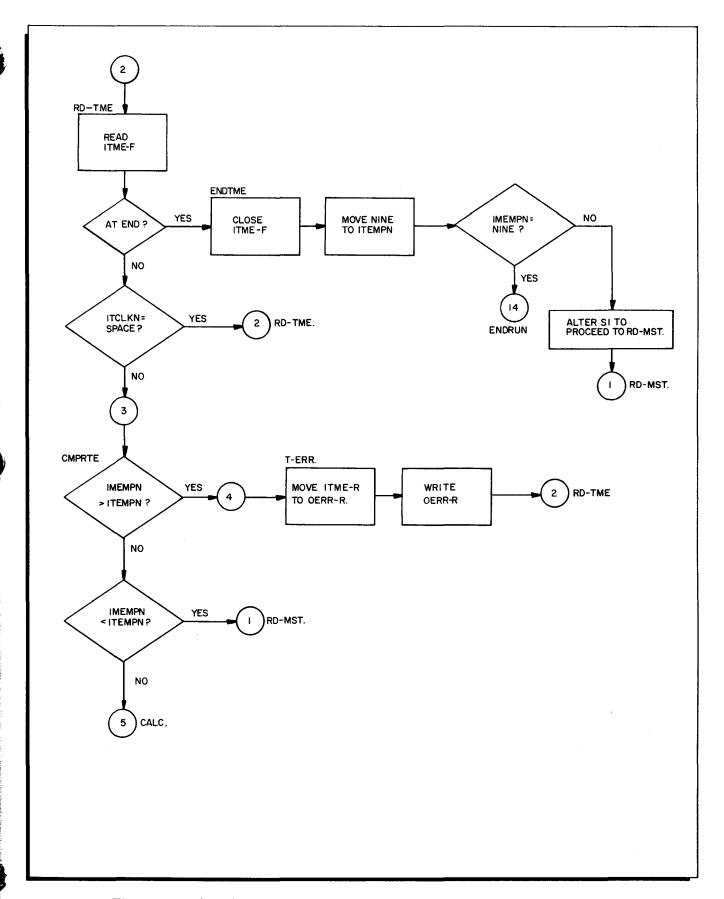


Figure 9-22 (cont). Run C5: COBOL PROCEDURE DIVISION Flow Chart

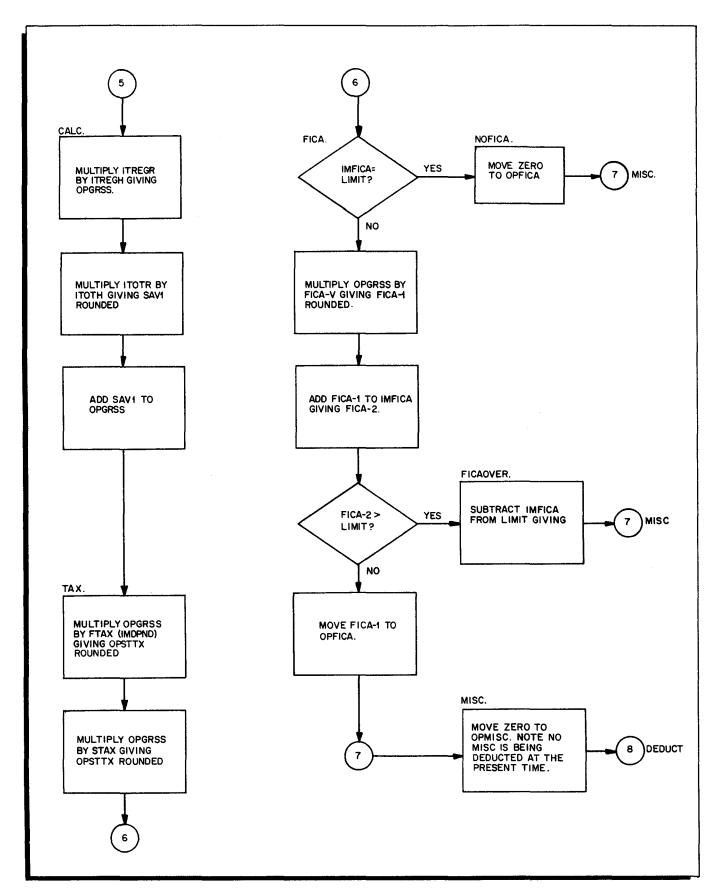


Figure 9-22 (cont). Run C5: COBOL PROCEDURE DIVISION Flow Chart

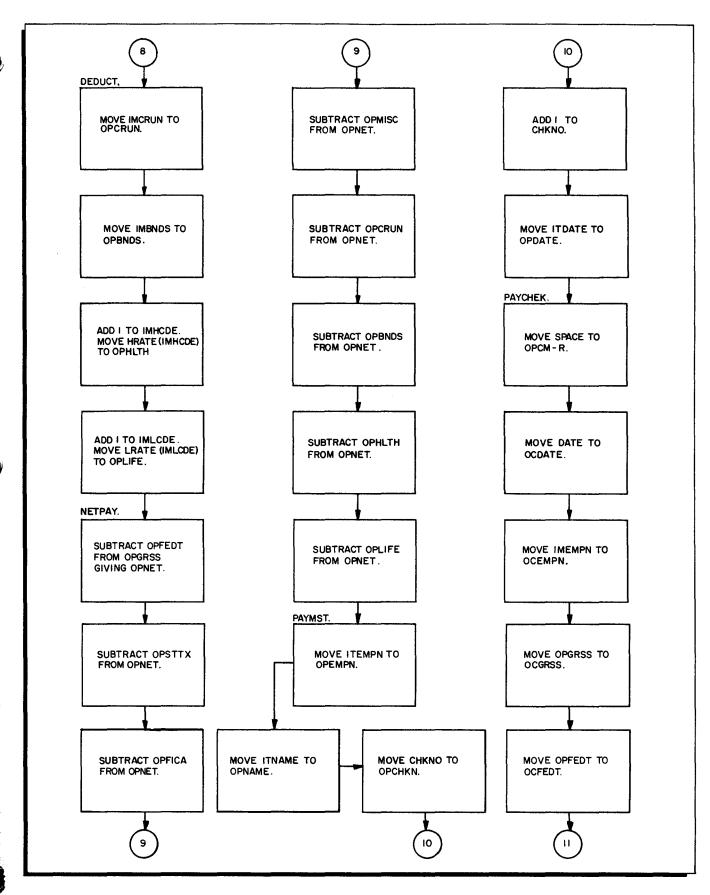


Figure 9-22 (cont). Run C5: COBOL PROCEDURE DIVISION Flow Chart

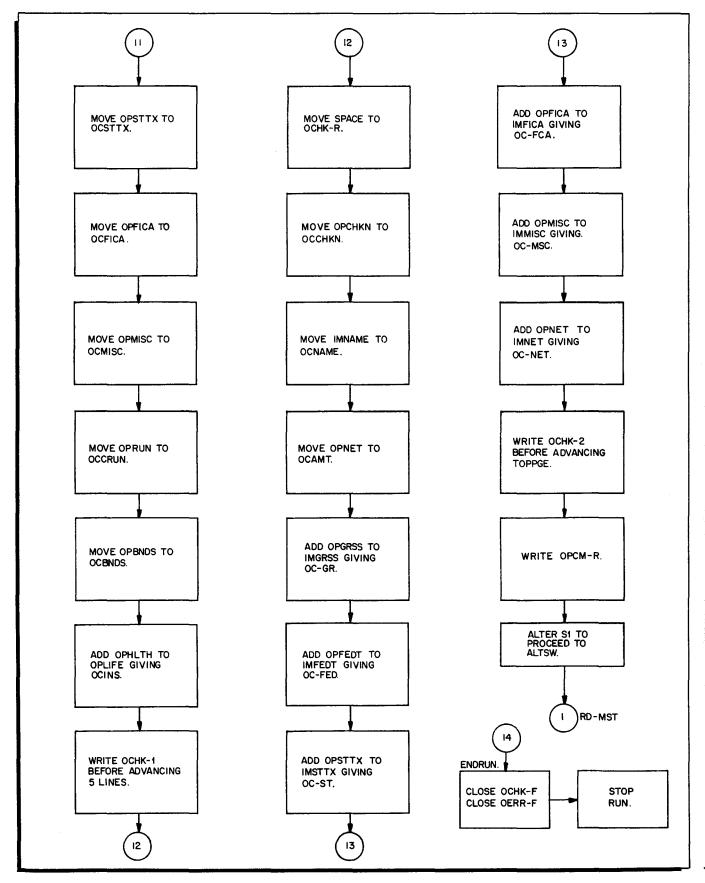


Figure 9-22 (cont). Run C5: COBOL PROCEDURE DIVISION Flow Chart

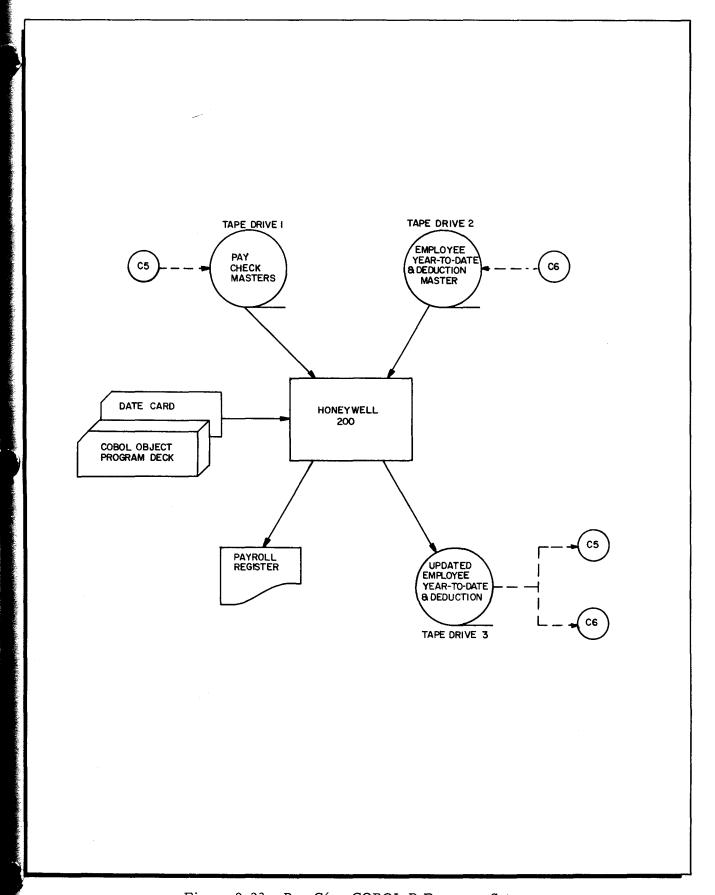


Figure 9-23. Run C6: COBOL B Program Setup

	Ioneywell EASYTAB CODING FORM 1													PUN	CHING INST.						
Ho	n	e;	yv	vel	L					LAS	י טחווי	CODING	rokm						CODED	\bot	1
ELECTRO	W1C	DAT	A P8	OCE\$5:N	•	n Ms	7 6	UNC	6										PUNCH		PAGEOF
PROGI			_			7	<u></u>	VIVE	PRO	DGRAMM	ER			DA1	<u> </u>		REV	. NO	CARD FOR	RM NO.	4
SEQUI			UOZT A	A	В															IDENTITY	
		5 6			12	16	20	24	28	32	36	40	44	40	52	56	60	64	68	73	<u> </u>
010	0	10		I D E N	T, I, F, I	CAT	1,0,N	D, I, V, I,	5, 1, 0, N, 1			4								<u> </u>	
0 1 0	0 2	2 0	P	P,R,O,G	R, A,M, -	I D	UPP	MS.T.												<u> </u>	Fill in 6 character
010				4, U, T, H	O,R,.,	T. E	LL.IO	T.T.							1.1.1.1					<u> </u>	program name.
0 1 0	ماره	10	D	D, A, T, E	- ,W,R ,1	T,T,E	N, • ,														
010	0	5 0	R	R,E,M,A	R, K, S,	C,O,	BOL.	B PR	J.G.RAN	A TO	U.P.DA	T.E.	TD.	TO, T.A.	S. 8.]
$\Pi\Pi$	Т	П	П	1.4.1	PRIN		AY.R.o.	LL R	EGUS T	ER.						1 4 1 1					1
Ш	T	П	Т		1	Ι															
Ш	T	П	П																	1	1
0 1 0	٥	5 0	E	E,N,V, I	R.O.N.N	ENT.	.D.I.V.	1,5,1,0,1	N.•												1
010	_	$\overline{}$			I,G,U,F	1		E GT, 1,0												1	Fill in program documentation
\Box	_	3 0	-				U,T,E,R			20.										1	documentation
010	-	-	$\overline{}$				U.T.E.R.			2.0	,M, E,M, C	DRY (1,22	2.8c.	H A P A (CTER	 -		 	1
	Ť	Ť	Ť		WITH			PTIO		12101	711, 241, 40	51531-1-13	-1.121-1	1 1 -1 -1	0.01 10.	(AVINDA)	<u> </u>	± <u>3.61 []</u>		 	1
HHH	1	\dagger			1,11	10.0				1.1.1.									<u> </u>	 	1
0 1 0	٦,	,,	ے	- 	I,A,L,-	N,AM.	Fe	S.E.N.S.I	ES.W.1	T C U			4,T,U,S,	.I.S						 	1
010			۲	3,F,E,C	S,E,N,S	1	W.1.T.C.			,,, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	.1 <u>0,1</u> 51.S.	بريند. .S.W.2	<u>, , , , , , , , , , , , , , , , , , , </u>	113	S,W, 1	1-1-1-1				 	If using special names -
010	_					 	W.I.T.C.			, A, T, U, S		,5,W,2								 	put period (.) at end of last special name .
010			+				W.I.T.C.			.A.T.U.S		.s,w,4				11,11	111			 	1
<u> </u>	+	Ť	+		PAGE				U,IX, 13,1	12,1,0,2	, ,,, ₃ ,	3,44,4					1.1.1.				4
┠╂╂┨	╅	H	+		17,4,0,0	<u> </u>		P.U.C.										-1-1-1-		 	1
H+1	+	Н	+			+							****			4,4,1,1				 	
0 1 0	+	4 0	Η.		 																
	1	77				1		C,T,1,0,1	Nø				 -							 	-
	+	5 0	HF	, I ,L,E	- ,C,O,N									-444-						 	Fill in 6 character file names.
0 1 0	_	-	+		S,E,L,E	1	<u>o.p.R.e.</u>	<u></u>	5,5,1,G,1	۱, ,T,O,	,P,R,1,N	I,T,E,R,								}	4
010	_	71	+		S.E.L.S	C.T.			9,9,1,6,1	LIO	CAR.	10.0	4,€,H, a,							 	Fill in 6 character tape use. "A input" or "Output"
010	_	-	1		S ₁ E ₁ E ₁ E				9,5,1,G,1		CAR.		('D'E'B'	<u> </u>		ــــــــــــــــــــــــــــــــــــــ				 	A mpoi or corpor
0 1 0	-	-	Н		S,E,L,E		OMST		5,5,1,G,1	(, ,T,O,	OUTF	 	A.P.E.	<u> 3. · · </u>	ــــــــــــــــــــــــــــــــــــــ						Fill in tape unit assign-
010	_	-1-1	Н		S _. E _. L _. E		LMST		5,5,1,G,1	حتنيت		- TUS		<u> 2</u>						 	ments, Numbers 1 thru 3.
0 1 0	2	1 0	4		S _{,E,L,E}	C,T.	1.P.CM	- E A	5,5,1,G,1	I, ,T,O,	1,1/1	<u> </u>	APE.	<u>.l</u>							4
]	4	4	4		 	ــــــــــــــــــــــــــــــــــــــ	بلبب														4
\Box	\perp	Ц	Ш		 	1															_
ШЦ	1	Ц	Ш		1		باللبال	سبب							1.1.1.1						
Ш	4	Ц	Ш									ــــــــــــــــــــــــــــــــــــــ								<u> </u>	NOTE: Statements which are
010	2	2 0		D, A, T, A	<u> </u>	/ 1,S,1,	O,N,•							السلطيان						 	not used should be lined thru.
0 1 0	2	3 0	LF	FLI,L,E	S,E,C	<u>.o.ı.</u>	N,• , ,							4-4-4							
ШП		Γ	\prod		<u> </u>																
1 2 3	4	5 6	7 0	•	12	15	20	24	28	32	36	40	44	40	92	54	60	64	68	73 (•

Figure 9-24. Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

							E	EASYTAI	B CODII	NG FOR	M 2					PUN	CHING INST.	2
PROGRAM	UPDI	MST	RU	N	Ç6	Р	ROGRAN	MER			D <i>A</i>	ATE		RE	v. no	CARD FOR	IM NO.	PAGE
SEQUENCE	S A	В				•											IDENTITY	
PAGE LINE	, •	12	16	20	24	28	32	36	40	144	[48	52	56	60	64	68	73 80	
0010	F.D. J	MST-	F BL	о,с,к	, C,O,N,	T, A, I , N	s. 2	,R ,E ,C ,C	D,R,D,S									\mathbf{h}
0 0 2 0	1		LABE	L R	E,C,O,R,I							_		4 4 4 4				$(\widetilde{2})$
Ø Ø 3 Ø			V,A,L,U,	E, 0),F, ,I,D,I	E,N,T, 1	,F, I,C,	1,0,1,T,A	N, ,I,S,	"EMI	PMST-	DED,	3					$leve{\mathfrak{I}}$
0 0 4 0			D,A,T,A,	,R,E	CORD	_I_S,	IMS.	T- R.			1.1.4.4				L. L. L			<u> </u>
															L_1_1_	I. I I I - I. I		
		1											4-4-4-4					1
Ø Ø 5 Ø	Ø 1	IMST	-R.														-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	()
		ــــــــــــــــــــــــــــــــــــــ						بب										
Ø 0 6 Ø	\downarrow	ØZ.	IMEM	PN	PI CT	J _R E	1.5. S	((0)	سست					بنب				(3)
Ø 0 6 5	1	Ø2.	FILLE	ER.	PICTL		,1,5, ,)	<u>(, (, 7,0,)</u>)			سب						LEGEND
Ø 0 7 Ø		<u> </u>			P,1,C,7(I.S.									حنبب		(1)
0 7 5	1	 -			,P,I,C(T,L									ببب				ALL FILES - Fill in 6
0080	+	 	 		P. I.C. X	· ·									щ.	ــــــــــــــــــــــــــــــــــــــ		Character file name.
0085	+		 		P,I,C,T,	1		 .										TAPE FILE - Fill in number of records in a block (1 to 9)
Ø Ø 9 Ø		 -	 	 -	PICT	.,				1 1 1			-1111					EASYTAB STANDARD IS BLOCKED 2.
ø ø 9 5	+		<u> </u>	ш.	P, I,C,T,	7								ىىيى				NON-TAPE-FILE - Line thru
Ø 1 Ø Ø Ø 1 Ø 5	+	 			,P,1,C,T,U	<i>T</i>												(Do not use) "Block con- tains 72 records".
	+			—	P,I,C,T									1111			-1.1111	(D)
Ø 1 1 Ø	+	-		ш.	P.I.C.7		1.5.							A	111			TAPE FILE - Fill in "STANDARD" or
Ø 1 1 5 Ø 1 2 Ø	+	 	 		<u>,P,1,C,†,ι</u> ,P,1,C,τ\ι				 .			4.444		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 				"OMITTED" Label.
Ø 1 2 5	+		 		PICT													NON-TAPE-FILE - Fill in "OMITTED".
Ø 1 3 Ø	+				PICT!	1		- 1 - 1 - 1 -			-1		 			 		(3)
Ø 1 3 5	1		 		P,I ,C,T,													TAPE FILE - If label is "STANDARD" fill in 10
0140	1		 		PICTL	7							11.1-1-				111111	character name that is in the header label. If label
Ø 1 4 5	1	 	1		PILCT	7		411	1,1,1	1 1 1 1	11	<u> </u>			L.1. 1 . 1	<u> </u>	 	is "OMITTED", line thru, (Do not use) this line.
Ø 1 5 Ø	1	1			PICT				-444	1111				1111			1 1 1 1 1 1 1	NON-TAPE-FILES - Line
Ø 1 5 5		1			PICT						1111							thru (Do not use) this line.
Ø 1 6 Ø					PICT													(4) ALL FILES - Fill in 6
Ø 1 6 5	1		T		PICT													character record name.
Ø 1 7 Ø					PIETL	T												(5) ALL FILES - Fill in Level
Ø 1 7 5	1				PICT			- 										No. (Ø2 to Ø5) Fill in 6 character field name.
Ø 1 8 Ø	1				PICTL								1111	1 1 1 1				Field descriptions must be
ø 1 8 5					P,I,C,T	7	I,S,			.1.1.1						L.1. 1. 1. 1. 1		provided by the program- mer.
Ø 1 9 Ø	T	L			,P,1 & T	JRE,	, یک ا											NOTE: Statements which are
Ø 1 9 5			L		PICT													not used should be lined
1 2 3 4 5 6	7 8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	73 80	

Figure 9-24 (cont). Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

		EASYTAB CODING	FORM 2		ICHING INST.	
		ENSTINE COUNTY	TORM 2	CODED		3
PROGRAM_UPDMST	RUN C6	PROGRAMMER	DATE	REV. NO CARD FO	RM NO.	PAGEOF
SEQUENCE C A B			······································		IDENTITY	
1 2 3 4 5 6 7 8 12	16 20 24	28 32 36 40	44 48 52 56 60	64 68	73 80	
0010 F.D. OMST-	E BLOCK CON	TAINS 2 RECORDS	<u> </u>	1_1_1	<u> </u>	\bigcirc
0020	LABEL RECOR	DS ARE STANDARD,			1,,,,,,,	$(\widetilde{2})$
Ø Ø 3 Ø	V,A,L,U,E, ,O,F, ,I,D,	E,N,T, I,F, I,C, A,T, I,O,N, ,I,S, ,(EMPMST - DED"			(3)
8848	D,A,T,A, ,R,E,C,O,R,D,	is OMST-R.				(4)
		1 + 1 + + 1 + 1 + 1 + 1 + 1 + 1				1
						1
0 0 5 0 0 1 OMST	-R					(4)
						1
0060 02	OMEMPN PICT	0.R.E. 1.S			1	5
Ø 0 6 5 , Ø3 ,	OMDEPT PICT	U.R.E. I.S. 9.(3).				LEGEND
070 03	MCLKN PICT	U.R.E. I.S. 7 (7).				(1)
0075 02.	OMNAME PICT	U.R.EI.S. A (10)				_
0 0 8 0 02	OMGRSS PICT	U.R.E. I.S. 9 (5) V99				ALL FILES - Fill in 6 Character file name.
	OMFEDT PICT	U.R.E. I.S. 9 (5) V99			1	TAPE FILE - Fill in number
Ø Ø 9 Ø Ø 2	MSTTX PICT	URE IS 9(4) V99.				of records in a block (1 to 9) EASYTAB STANDARD IS
	MELCA PICT	URE IS 9 (4) V99 .				BLOCKED 2.
	OMM I.S.C. P.I.C.T.					NON-TAPE-FILE - Line thru (Do not use) "Block con-
	OMNET PICT	U.R.EI.S9 (.5.).V.9.9				tains 72 records".
	OM.D.P.N.D. P.I.C.T.					(2) TAPE FILE - Fill in
0115 02	014.004.44	URE IS 999V99.			1	"STANDARD" or "OMITTED" Label.
B 1 2 B 02	OMBNOS PICT				1	NON-TAPE-FILE - Fill in
	OMHCDE PICT				1	"OMITTED".
Ø 1 3 Ø Ø 2	OMLCDE PICT	URE IS 9.		· · · · · · · · · · · · · · · · · · ·	 	③ TAPE FILE - If label is
	FILLER PICT				 	"STANDARD" fill in 10
	OMCDE PICT				1	character name that is in the header label. If label
Ø 1 4 5		U.R.E. I.S.	<u> </u>	• • • • • • • • • • • • • • • • • • •		is "OMITTED", line thru, (Do not use) this line,
Ø 1 5 Ø		U.R.E. ,I.S. , , , , , , , , , , ,		 	†	NON-TAPE-FILES - Line
0 1 5 5		U.R.E. ,I.S. , , , , , , , , , , , , , , , , , ,			 	thru (Do not use) this line.
Ø 1 6 Ø		U.R.E. ,I.S. , , , , , , , , , ,			1 1 1 1 1 1 1 1 1 1 1 1 1	(4) ALL_FILES - Fill in 6
Ø 1 6 5		URE IS			1	character record name.
9170	$P \cup C \cup C$		**************************************	 	 	(5) ALL FILES - Fill in Level
Ø 1 7 5		URE IS			 	No. (072 to 105) Fill in 6
Ø 1 8 Ø		URE, IS			 	character field name. Field descriptions must be
0 1 8 5	PICT			 	 	provided by the program-
Ø 19 Ø	PICT				† * * * * * * * * * * * * * * * * * * *	
0 195		JRE. IS		· • • • • • • • • • • • • • • • • • • •	1	NOTE: Statements which are not used should be lined
	16 20 24	···	44 48 52 56 60	64 68	73 80	thru.

Figure 9-24 (cont). Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

																PU	NCHING INST.	1
							EΑ	SYTAB	CODING	G FORM	2					CODED		1
								-								PUNCH	- - - - - - - - 	PAGE 4 OF
PROGRAM	UPD	MST	RU	N	C6	Р	ROGRAMN	/FR			DAT	F		RF\	/, NO	CARD FO	DRM NO	PAGE OF
SEQUENCE	S A	8	1				- CONTAINI								7, 110		T	4
PAGE LINE	<u>۾</u> ۾	B															IDENTITY	
1 2 3 4 5 6	7 8	12	16 2	0	24	28	32	36	40	44	48	52	56	60	64	68	73 6	-
0010	FD 1	PCM-	F BL	оск	CO	N, T, A, I ,N	ı,s, 2 , ,	R E C O I	RDS.	_	_							h
0020	1		LABE				RE S									 	1	2
Ø Ø 3 Ø	 	+	+ + - + - + - + - + - + - + - + - + - +							"PAYC	W. V	CT V					1 1 1 1 1 1 1 1	1 ⊻
		+	V, A, L, U,				I,F, I,C,A,		1,5,	PAIL	<u> </u>	19.1"						<u> 1</u> 3
8848	1	1	D, A, T, A,	RE	,C,O,R	D _. IS,	TPCM	<u>- K</u>										J @
									4.1.1.1					المسالة				_}
	1	1	1, , , ,														1	
Ø Ø 5 Ø	Øi	LPCM	1-R.											200				Ta .
	1	1.3.5	1		• • • •		++++	_4_4			1 1 1 1 1 1 1							1
 	+	Ø.2.	1.PEM	DN								114.1			11.1		 	t _
Ø 0 6 Ø	+					URL	153	201	عصب						111	سيسب	 	_[5)
Ø 0 6 5	 	Ø3	I.P.D.E.		PIC	T _, U _, R _, E _,		<u>(,3,),.,</u>								سيب	 	LEGEND
Ø 0 7 Ø	1	Ø3 .	I.P.C.L.	KN	PILC	T _, U _, R _, E _,	15. 9 .	(7).									1, , , , , , ,	1
Ø 0 7 5	T	Ø2.	IPNA	ME.	P, 1,C,	T,U,R,E,	is A	(3)									T	T
0080	1	02	IPCH	KN	PIC	T.U.R.E.	1.5. 9	(9).									1	ALL FILES - Fill in 6 Character file name.
Ø Ø 8 5	+	Ø2	FILL	 -		TURE		(4).		_ A . A		1 1 1 1		1 1 1			1111111	TAPE FILE - Fill in number
 	1	1	1				15 9	<u> </u>	~~~								 	of records in a block (1 to 9)
0090	4	Ø2 .	1.PGR		بتبنين	T _, U _, R _, E _,		(4) y								بينين	 	EASYTAB STANDARD IS BLOCKED 2.
Ø Ø 9 5	1	Ø2.	I P.F.E.	D.T.	PIC	T,U,R,E,	1.5.9.	(4.) Y	9.9				<u> </u>		1.1.1.		1111111	NON-TAPE-FILE - Line thru
0 1 9 0	1	Ø2 .	LPST	TX.	P, I,C	TURE	_i,s, _ 9 ,	(4).	99								<u> </u>	(Do not use) "Block con-
Ø 1 Ø 5	Ι	02	LPELO	2.A	PIC	T.U.R.E.	.1.s9.	9. V. 9.9.	•									tains 72 records".
0110	1	Ø2	LPMI	S.C	PIC	THRE	1 5 90	9 V 9 9			AL., L.					 	1	(2) TAPE FILE - Fill in
Ø 1 1 5	1-1-1-1	Ø2	IPCR		بتبت	TURE		99,09	<u></u>		1.1.1.1.					L.J.,J.,J.,J.,J.,J.	 	"STANDARD" or
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+	-			ىتىن				-	ــــــــــــــــــــــــــــــــــــــ				+			 	"OMITTED" Label.
8128		Ø2.	I.P.B.N.			T _U RE		9949								سيست	 	NON-TAPE-FILE - Fill in "OMITTED".
Ø 1 2 5		Ø2 .	I.P.H.L.	<u>r.H.</u>	PIC	T,U,R,E,		<u>9,49,9,</u>								سبب		J (3)
	1	02	1.P.L.1.1	F.E.	PILC	T,U,R,E,	1.5. 9	9 V 99	•								1	TAPE FILE - If label is
Ø 1 3 5	1	Ø2	I PNE	τ	PIC	T.U.R.E.	15 9	(4) V	99.									"STANDARD" fill in 10
0140	 	02	IPDA-	۲F		TURE.	1.5. 9	(4).				11.11					 	character name that is in the header label. If label
 	+	P.S.	1,7,0,1	<u> </u>				<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		_ L							+++++	is "OMITTED", line thru,
Ø 1 4 5							15							ىبىد			 	(Do not use) this line.
Ø 1 5 Ø					PIC	T _, U _, R _, E _,	ب بارگران											NON-TAPE-FILES - Line thru (Do not use) this line.
Ø 1 5 5		ــــــــــــــــــــــــــــــــــــــ			PIC	T,U,R,E,	,I,S											(4)
Ø 16 Ø	1	1	1		PIC	TURE.	,1 ,S, , ,										1	ALL FILES - Fill in 6
Ø 1 6 5	1				PIC	T,U,R,E,	I S			1 1 1 1 1								character record name.
$\Pi\Pi\Pi$	1	T	 										11-1-1				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- (S)
 	+		 			TURE.		ىبىد			ببب						+ • • • • • • • • • • • • • • • • • • •	ALL FILES - Fill in Level No. (02 to 05) Fill in 6
Ø 1 7 5		 -	 		PIC	T,U,R,E,	15										+	character field name.
Ø 18Ø					P.16	TURE,	ىيىنى كىلى											Field descriptions must be provided by the program-
Ø 1 8 5		. بــــــــــــــــــــــــــــــــــــ	<u> </u>		P,I,C	T _. U,R,E,	ا داد	بيري				<u> </u>					1,,,,,,	mer.
Ø 1 9 Ø					PICT	LNSE'	l.s.											NOTE: Statements which are
Ø 1 9 5	+	 	 			TURE.						1.1.1					 	not used should be lined
1 2 3 4 5 6	1	12	1,6	20	24	28	132	36	40	144	48	52	136	60	64	1-1-1-1-1	73	thru.
1,1,1,1,1,1,1	<u> </u>	T.,,	<u> 1:° </u>						1.0		1	1-4	12	1-0	100		<u> </u>	<u> </u>

Figure 9-24 (cont). Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

				FACVEAR		10 5004						PUN	CHING INST.	\Box	
				EASYTAB	CODIN	NG FURN	1 2					CODED		4	_
PROGRAM UPDMST	RUN C6		_ PROGRA	MMER			DAT	Έ.		REV.	NO.	PUNCH CARD FO	RM NO	P	AGE 5 OF
SEQUENCE S A B													IDENTITY		
1 2 3 4 5 6 7 8 12	16 20	24 28	32	36	40	44	48	52	56	60	64	68	73	80	
0010 F.D. OPRG	<u>- Е всос</u>	ĸ, , c, o, n, t, a,	1-N-S	REGO	R.D.S.	1			1,1,1,1						
0020	L,A,B,E,L,	R E C O R D S	A.R.E.	OMIT	TED.								<u> </u>	_2	
0030	V,A,L,U,E,	O,F, ,I,D,E,N,	Ŧ _Ŧ Ŧŗ Ŧ ŗŧ	, ∧, ⊤,⊤, ∧,	, ,T ,S,								 	(3)	
0040	D,A,T,A, R,	E,C,O,R,D, ,I,	s, <u>0,P</u> R	<u> </u>									 	4	
 														_	
														니	
ØØ5ØØ1 OPR(9-R.												 	4	
										ــــــــــــــــــــــــــــــــــــــ	щ.			4_	
0060 02	FILLER	P,I,C,T,U,R,	E, IS	<u>.X.</u>	000	ىب							 	பு⊚்	
Ø 0 6 5 Ø.2	OPEMPN	_,P,1,C,T,U,R,		<u>,9, (,3,),B</u>	7.(.7.)	•					1.11		 	4	LEGEND
Ø 0 7 Ø Ø 2	FILLER	P,I,C,T,U,R,	E, IS,	χ									+	니	1)
Ø 0 7 5 Ø 2 . Ø 2	OPNAME	P, I,C,T,U,R,	<u>E, I,S,</u>	'XBXX'									 	4 .	ALL FILES - Fill in 6
	PLLLER	PICTUR	E, IS, E IS	<u>, X,X,X, ,</u>	1		1 1 1	1111					 	4	Character file name. TAPE FILE - Fill in number
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FILLER			<u>9(9).</u> X(4).				1					+	4	of records in a block (1 to 9)
	OPGRSS	PICTUR	E, ,I,S, E IS		99			.4.44.					+	4	EASYTAB STANDARD IS BLOCKED 2.
Ø 1 Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø	FILLER	PICTUR	E IS	<u>,८,५५,७,</u> ४८२३	,7,7,.,								 	<u></u>	NON-TAPE-FILE - Line thru
Ø 1 Ø 5 Ø2	OPFEDI	PICTUR	<u>E, 1,5,</u> E IS	2(4).	99.			4.44.4		1111			 	4	(Do not use) "Block con- tains 72 records".
Ø 1 1 Ø Ø 2	FILLER	PICTUR	E IS	x (5)				-llll			1.1.1.		 	Η.	2
Ø 1 1 5 Ø 2	OPSTIX	PICTUR	<u>-, ,1,3,</u> F 16	Z(4).	99.					1.1.1.1			11111	┨ :	TAPE FILE - Fill in "STANDARD" or
Ø 1 2 Ø Ø 2	FILLER	PICTUR	E IS	XXX	, <i>6</i> , <i>6</i> , • ,		4-4-4-4		<u></u>	1 1 1		- 1 . 1 . 1 	 	٦,	"OMITTED" Label.
Ø 1 2 5 Ø2	OPFICA	PICTUR		ZZ.99				1 1 1 1			1 1 1 1 . 1 .			-	NON-TAPE-FILE - Fill in "OMITTED".
Ø 1 3 Ø Ø 2	FILLER	PICTUR	E IS	XX.	·•··			1 1 1 1	41					┦.	·3
Ø 1 3 5 Ø 2	OPMISC	PICTUR	E IS	ZZ.99				1 1 1 1	1	1.1.1	1 1 1 1	-1-1-1-1	1-1-1-1-1-1-1	┤ '	TAPE FILE - If label is "STANDARD" fill in 10
Ø 1 4 0 Ø 2	FILLER	PICTUR	EI.S.	XXX.	1-1 1			_ 					1.1.1.1.1.1.1.1		character name that is in the header label. If label
Ø 1 4 5 Ø 2	OPCRUN	PICTUR	E IS	ZZZ.9	9.	A		-11. 1 1			±++			7	is "OMITTED", line thru, (Do not use) this line.
Ø 1 5 Ø Ø 2	FILLER	PICTUR	E1.S.	XXX.										一 ,	NON-TAPE-FILES - Line
Ø 1 5 5 Ø2	O.P.B.N.D.S.	P.I.C.T.U.R.	E. i.S.	ZZZ.9	9								1	, T	thru (Do not use) this line.
Ø 1 6 Ø Ø 2	FILLER	PICTUR	E, is,	XX										Π,	ALL FILES - Fill in 6
ø 1 6 5 Ø2	OPHLTH	PICTUR		ZZ.99	, , ,										character record name.
Ø 1 7 Ø Ø.2	FILLER	P.I.C.T.U.R.I	E, ,1,S,	XX										Ι,	(5) ALL FILES - Fill in Level
Ø 1 7 5 Ø 2	OPLIFE	PICTUR		ZZ.99) 		111		1.1.1		1.1.1.1		1	1	No. (92 to 95) Fill in 6 character field name.
g 1 8 g g2	FILLER	PICTURI	E, J.S.	XX	1.1.4.1				1 1 1 .)				I	1	Field descriptions must be
Ø 1 8 5 , Ø2	OPNET	P,I,C,T,U,R,	E, I,S,	Z(4).	9,9,.,										provided by the program- mer.
Ø 1 9 Ø Ø Z	FILLER	ристики	E, IS.	X (12)	. •									NO	TE: Statements which are
Ø 1 9 5		PICTUR	E, I,S		1.1.1.1							1 1 1 1 1			not used should be lined hru.
1 2 3 4 5 6 7 8 12	16 20	24 28	32	36	40	44	48	52	56	60	64	68	73	80	·HU,

Figure 9-24 (cont). Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

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Ho	ney	ywel	1					CORC	L PROC	SRAMM	ING FO	RM					c	DDED			
		A PROCESSIO	2 4 4 2	- ·		~ .											P	UNCH			PAGE 6 OF
PROGR			DMS	1 1	KON	<u>C6</u>	PRO	OGRAMM	ER			DAT	E		RE'	v. no	c	ARD FORM	NO.		
SEQUE	NCE	S A	В														•		IDEN	ITITY	
PAGE		7	<u> </u>	<u> </u>																	
1 2 3 4	1 5 6		12	16	20	24		32	36	40	44	48	52	56	60	64	68	73	·	80	
		WOR	KING.	- 570	RAGE	SECT	ION.				<u> </u>				1.1.4.4						
			1	<u> </u>					1 1 4 1												
]	Ø١	DATE	E PL	C.T.U.R	E IS	.x.(.6.2	A.V. (.)	LUE.	. I.SS	SPACE										
			1			711 •1. •1	1 11-13-1	-1.1.1.F.	1.27 - 1	1:1-1	1.1.1.1	-1-1-1-4-		1				•		LL	
		Ø1.	197	GIN D	10 T 11	RE. IS	· · ·	/	16	SPAC			1111	1 1 1-1					1 1 1		1
		<u> </u>	150.1	3 M . L	1,0,1,0,	KE. IS	3, ,^, ,\	M, L,U,E	13	,5,F,A(<u>، رقاقی ،</u>							· · · · · ·			4
			1									1 1 1 1									4
		Ø1	L'I'W	CNT	P. I.C.T.	U,R,E,	<u>15, .9.9</u>	<u> </u>	U.E.	LS, ZE	<u>:,</u> Ro,.,			سبب		بب					
			1										4-4-4								
	1	بيل	<u>L</u> .	1		1 1 1 1		1 1 1 1 1													
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++			 	+				1.1.1.1	1_1_1_		1111			1111							1
		+	+	$+ \cdots$													1.1.1				-
		4	1	++													111		111		4
			4	4									, , , ,								4
		سبنا		ــــــــــــــــــــــــــــــــــــــ													1.1.1				1
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		1	+	+	<u> </u>				 									* ' ' †	1.1.1.		1
-+		1111	$+ \cdots$	1								1.1.1									1
			$+ \cdots$	+															1-1-1		1
		H		 																	
			\perp	1							4							للبيا			
1 2 3	4 5 6	7 8	12	16	20	24	ZB	32	36	40	44	48	52	56	60	64	68	7:	3	80	•

Figure 9-24 (cont). Run C6: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

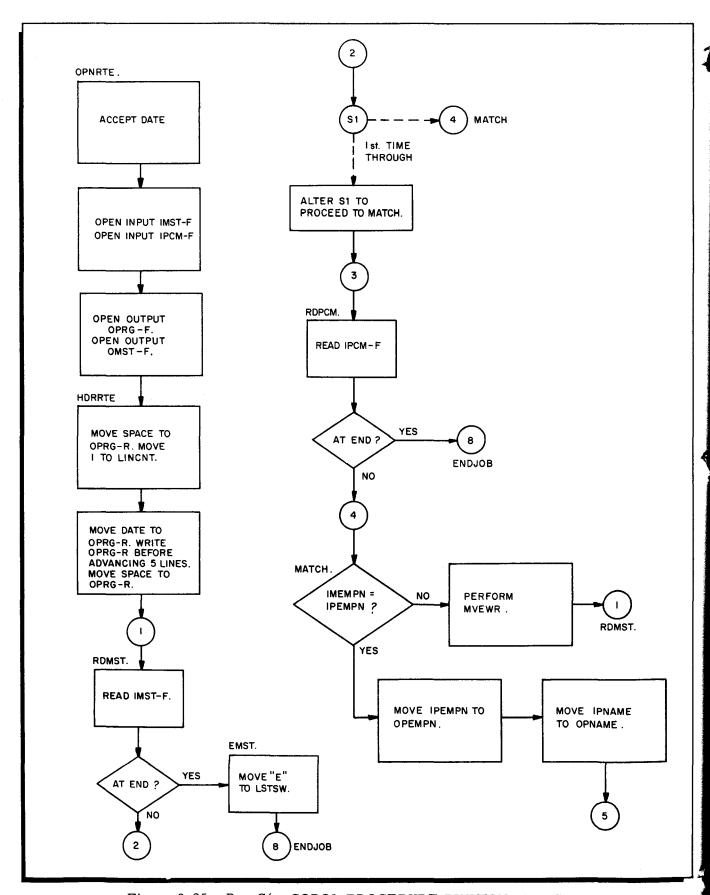


Figure 9-25. Run C6: COBOL PROCEDURE DIVISION Flow Chart

851 - 1 12 H3427

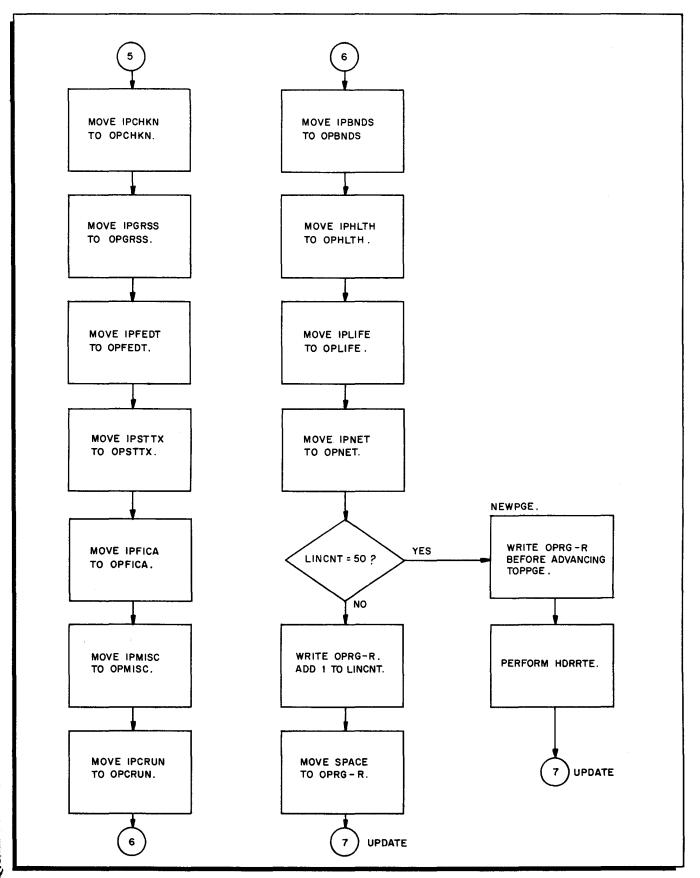


Figure 9-25 (cont). Run C6: COBOL PROCEDURE DIVISION Flow Chart

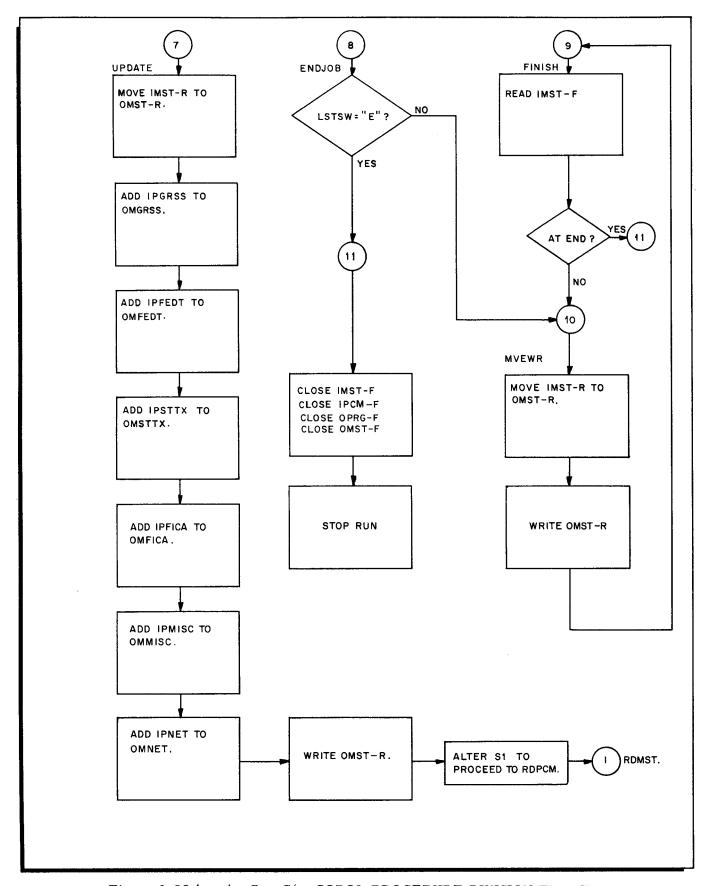


Figure 9-25 (cont). Run C6: COBOL PROCEDURE DIVISION Flow Chart

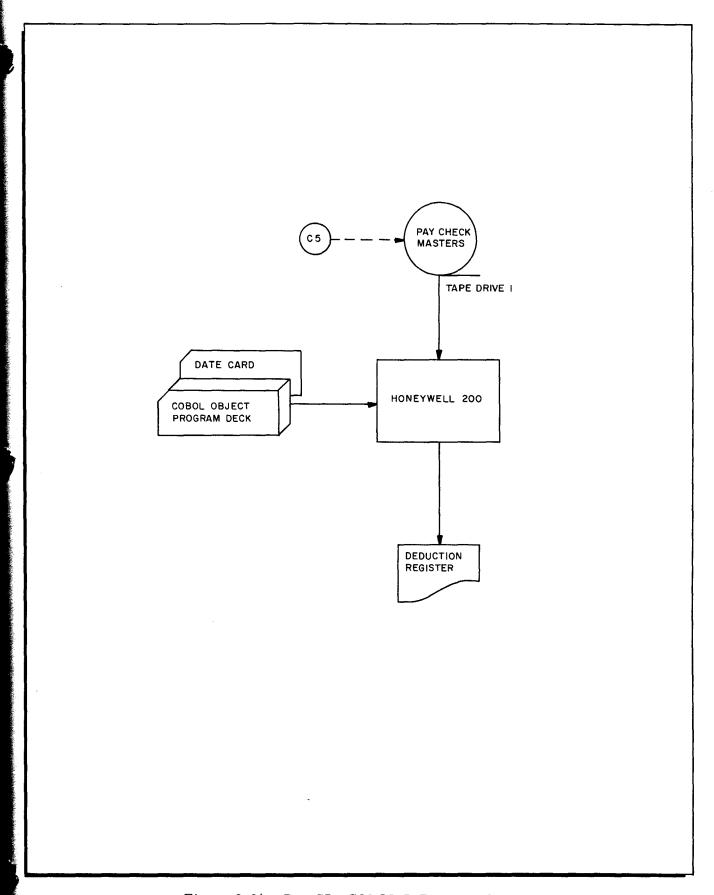


Figure 9-26. Run C7: COBOL B Program Setup

**	**					EA:	SYTAB	CODING	FORM	1						ICHING INST.	
Honeyw	ell														CODED		
PROGRAM	DE	DRE	G R	UN C7	7 _{PR}	OGRAMM	1ER			DAT	E		REV.	NO.	PUNCH CARD FOR	BM NO.	PAGE OF
SEQUENCE S A															- CARD FOI	IDENTITY	
1 2 3 4 5 6 7 8	12	-	16 20	24	28	32	36	40	44	40	52	56	60	64	68	73 80	
010010 1	D, E, N T	, I, F, I	C, A, T, 1, 0, 1	N, D.I.V.	1, S, 1, O, N,	•										[<i>.</i>	
010020 P	R,O,GR	AM -	D. D.	D.RE.G.									·			· · · · · · · · · · · · · · · · · · ·	Fill in 6 character
	U,T,HC	· · · · · · · · · · · · · · · · · · ·	T ELL														program name.
	A,T,E	31.15.1	T, T, E, N, • .								1111					1	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	E,M, A R		COBOL	PRO	RAM	TO PF	ZINT	DEDI	J.C.T. I .C	N RE	GIST	FR.	II.I.			 	
	<u> </u>	7,7,3,0	,CD, <u>D</u> O,	·	2, 13, 13, 11 1	1,0, ,1,	<u> </u>	, <i>D</i> , C, <i>D</i> , C	٠, ٠, ١, ١, ١	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,0,1,3,1	, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		L	****	 	
<u> </u>				<u> </u>					, , , , , , , , , , , , , , , , , , , 	1-1-1-						1	
} 			• • • • •	1 1 1 1 1 1 1 1 1			,							L_L_L_		 	1
} 				 												 	†
			E,N,T, ,D,													 	Fill in program
 	1		A,T, 1,O,N,													 	documentation
			O,M,P,U,T,I			1,2,0,•		• • • •		1000		***				 	
0100900,			0,М,Р,U,Т,I			1,2,0	,M,E,M,C	O,R,Y, ,	S, I, Z, E,	1,228	,8, ,c,⊦	I, A, R, A, C	T,E,R,S			 	
}		H,T,I)	E,D,1,T,	-,0,P,T,1,0)'N'''								ш.			 	4
 					سب											 	-
	P,E,C I	,A,L,-	N,A,M,E,S,	, , S,E,N,S	5,E,-,S,W,	I ,T,C,H,	ار0, 1,	N, ,S,T,	A,T,U,S,	,1,5, ,9	5,W, 1, ,						If using special names -
010110	s	E,N,S	E,- ,S,W, I,	Г,С,Н, ,2,	,O,N, ,S,	T,A,T,U,	5 <u>, 1,5,</u>	,S,W,2,	1.1.1.1.1.	4.4.4.4.							put period (.) at end of
010120	s	E,N,S	E,- ,S,W, 1,1	г,С,Н, ,3,	,O,N, ,S,	T,A,T,U,5	5 <u>, 1,5</u>	,S,W,3,									last special name.
010130		****	E,- ,S,W,1,		,O,N, ,S,	T,A,T,U,	S <u>, I,S,</u>	,S,W,4					ــــــــــــــــــــــــــــــــــــــ				
	F	PAGE	1,5, TO	PPGE	•												
											1.1.1.1.			I. I. I.			
								1.1.1.1.									
0 1 0 1 4 0 1	N, P, U 1	r,- ,o,u	T,P,U,T, ,	5,E,C,T,1,0	D,N,e , , ,												
010150 F.	I,L,E	C,0,N	T,R,O,L,														Fill in 6 character
010160		S,E,L,E		E,D,-,F, ,	4,S,S,1,G,	N, ,T,O,	,P,R,1,t	N,T,E,R,									file names.
0 1 0 1 7 0		-E-E	٠, ٠,٠		1,5,5)L.G.	N. TO	-CAR	0,-,P;O,F	V.C.P.								Fill in 6 character tape use.
010180		ELE	⊶ 7∖		15316	N 10	CARI	D. R.E.	A,D,E,R,								"Δ Input" or "Output"
010190			с.т \.Р.(CM-F	4,S,S,1,G,	NT.O.		2115	r.A.P.E.	1							Eill in hann unih ansien
010200		15,6,5	5.75~		-5.5,1.G		<u></u>	1.	-4-P-E-								Fill in tape unit assign- ments, Numbers 1 thru 3.
010210			~T. T.	''	,,0,0,1,0,	···			MAPP-	 _	11.1.1	1.1.4.4			<u> </u>		i
1444444		1-1-1-	<u> </u>		1,0,0,1			<u> </u>	*** '-'	<u> </u>		1. 1. 1. 1		1111			
 		•••		L.I.I.I.I						1.1.1			· · · · · · · · · · · · · · · · · · ·		1.1.1.11.	 	1
 												111			11111		1
┞╏╏┡╏╏																 	
 																+	NOTE: Statements which are not used should be lined thru.
			1,5,1,0,N,	•				1.1.1.1								+	
010230 F.	I,L,E	,S,E,C	T,1,0,N,•,									1 1 1 1 1				+	-
+++++++						4	+	+		+	+	+				 	-
1 2 3 4 5 6 7 8	12	2	16 20	24	28	32	36	40	44	48	52	56	60	64	68	73 80	<u> </u>

Figure 9-27. Run C7: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

																PUN	ICHING INST.	<u></u>
							E/	ASYTAB	CODIN	G FORM	2					CODED		1
			5		_											PUNCH		1 PAGE 2 OF
PROGRAM_	_DED	KEG	RUN	C	7	PR	OGRAMI	MER			DAT	E		REV.	. NO	CARD FO	RM NO.	
SEQUENCE	S A	В															IDENTITY	1
PAGE LINE	7 0	12	16 2		24	20	32	36	40	44	48	52	36	60	64	68	73 •	
0 0 1 0		PCM-			,C,O,N,T			R E C O		_					·/	'		1 0
0020			LABE		E,C,O,R,E			TAND						1.1.1.1		 		1 ⊆
Ø Ø 3 Ø			T							# DAY		45-11	- 	سسيد			 	<u>.</u> @
	1	+	V, A, L, U, I		F, ,1,D,E	,N,T, 1,1	LICA	T,1,0,N,	J.S.	", P.A.Y.	CWK-L	<u>иэд</u> ,					 	_[3
0 0 4 0	+	+	D, A, T, A,	R.E.	C,O,R,D	ıs, İ	PCM	<u>K</u>										40
								حبب										4
							بيب										1	
Ø Ø 5 Ø	Øı	1.PCM	1-R.														1	1
	1		1														[T
0060	T	Ø2 .	IPDP.	TN.	P,I,C,T,L	J.R.E. I	s 9	(3)										3
0065	1	Ø2 .	IPCLI	KN	PICTU	REI		(7).										LEGEND
Ø 0 7 Ø	11.1.1	Ø2	1 PNA	ME	PICTL		5 A	(3).					1-1-1				 	1
0075	1 1 1 1 1	Ø2	I PCH	1 7 1	P. I.C.T.L			(9).			<u> </u>						 	1 0
0080	+	Ø2		-0	1:1:1:1:		~~~\ <u>`</u>	(4).								 	 	ALL FILES - Fill in 6 Character file name.
	1				P, 1, C, T, L),R,E, ,I	_SA	1 1 1 1	00								 	TAPE FILE - Fill in number
0085	+	Ø2 .	I.P.GR		PIICT	J.R.E.	<u> </u>		<u>99</u>								 	of records in a block (1 to 9)
øø9ø		Ø2.	IPFE	DT	PICTL	J.R.E.	ı <u>s</u> 9		99.									EASYTAB STANDARD IS BLOCKED 2.
Ø Ø 9 5		Ø2.	I.PST	[X]	PICTL	RE.	ı,s, ,9	(4)V	<u>99</u>				1				 	NON-TAPE-FILE - Line thru
Ø 1 9 Ø		Ø2 .	I.PEL	<u>. A2</u>	P, I, C, T, L	RE	ı <u>s</u> 9	<u>9v99</u>									 	(Do not use) "Block con-
Ø 1 Ø 5	ببل	Ø2 .	LPM LS	SC I	PICTL	J,R,E,	i,s, , ?	9.V99.	• • • • •									tains 72 records".
9119	1	Ø2.	IPCR	ו, אנט	P, I, C, T, L	JR,E	ı,s, 9	99.49	9								1	TAPE FILE - Fill in
Ø 1 1 5		Ø2.	IPBNI	DS	PICTL	IRE	ı s. 9	99.V9	9.									"STANDARD" or "OMITTED" Label.
Ø 1 2 Ø		Ø2	IPHLI	ГН	PICTL	RE		9 499	_		<u> </u>			 				NON-TAPE-FILE - Fill in
Ø 1 2 5		Ø2	IPLI		PICTL) R E		9199	•			111.1		1			1	"OMITTED".
Ø 1 3 Ø		Ø2	IPNE	-	PICTL			(4) V				1.1.1.1		* 1. 1. * -			 	3
		Ø2	1 PDA		P.I.C.T.L			(4).	<u> </u>				1.1.1.1.1				 	TAPE FILE - If label is "STANDARD" fill in 10
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<u> </u>	H.F.WA					7.47.									 	character name that is in
Ø 1 4 Ø		+	 		P,1,C,T,L				بيب								 	the header label. If label is "OMITTED", line thru,
Ø 1 4 5			<u> </u>	السلم	P, I, C, T, L	J.R.E. I	L <mark>S</mark>		سعب	سبب							 	(Do not use) this line.
Ø 1 5 Ø	4			لــــــــــــــــــــــــــــــــــــــ	PICTL	JRE.	ا ال	لللاسلمة	ىلىل	ببيب							 	NON-TAPE-FILES - Line thru (Do not use) this line.
Ø 1 5 5	4			أرب	P, I, C, T, t	J.R.E.	ıs.	ببين	ىبى								<u> </u>	(4)
g 1 6 g				السا	P,I,C,T,L	I,R,E, ,I	I S										<u> </u>	ALL FILES - Fill in 6
Ø 1 6 5		L.,			PICT	JRE,	I S										<u> </u>	character record name.
Ø 1 7 Ø		l	1		PJETL	J.R.E.	l.s.											ALL FILES - Fill in Level
Ø 1 7 5					PICT													No. (92 to 95) Fill in 6
Ø 1 8 Ø		1			PIICTL												 	character field name. Field descriptions must be
g 1 8 5		 -	 		E'I'C'L'		1.5. 1.5.									<u></u>	1-1-1-1-1-1-1	provided by the program-
		 -	 														 	mer.
Ø 1 9 Ø			 		РІСТИ			4 . 444		لخنا							 	NOTE: Statements which are not used should be lined
Ø 1 9 5		 	 		PICT		-+			4		+	+	+	+	+	 	thru.
1 2 3 4 5 6	7 8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	73 6	9

Figure 9-27 (cont). Run C7: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

EASYTAB CODING FORM 2

DATA RECORD IS ODED-R, TOTLIN.

PROGRAMMER.

LABEL RECORDS ARE OMITTED

DEDREG

0010 FD ODED- R

PROGRAM

SEQUENCE

RUN C7

+	++					4
1	Ш					
و ا ر	ø	Ø 1	ODED	- R .		(4)
1	\sqcap	1			1	Y
1	ø	1	Ø2.	ODDPTN PICTURE IS 999.		.
+	++			**************************************	 	(5)
7	5 5				 	LEGEND
+	Ø			ODCLKN PICTURE IS 9 (7).	 	①
1	7 5		Ø2.	FILLER PICTURE IS X(5).		ALL FILES - Fill in 6
7 2	3 ø			ODNAME, P.I.C.T.U.R.E. I.S. X.B.XX.	1	Character file name.
9/1	3 5		Ø2.	FILLER PICTURE IS X(5).	I	TAPE FILE - Fill in number
ء آ و	ø		Ø2.	ODCHKN PICTURE IS 9(10).		of records in a block (1 to 9) EASYTAB STANDARD IS
+	5	1		FILLER PICTURE IS X(5).	 	BLOCKED 2.
т	ø	1.1.4		ODFEDT PICTURE IS Z(4).99.	 	NON-TAPE-FILE - Line thru (Do not use) "Block con-
+	5			FILLER PICTURE IS X(3).	 	tains 72 records".
+	++				 	2
4	Ø				 	TAPE FILE - Fill in "STANDARD" or
_	5			FILLER PICTURE IS X(3).		"OMITTED" Label.
+	Ø			ODFICA PICTURE IS ZZ.99.		NON-TAPE-FILE - Fill in
Ч	2 5			FILLER PICTURE IS X (3).	 	"OMITTED".
1	ø			ODMISC PICTURE IS ZZ.99.		TAPE FILE - If label is
ı	3 5	1	Ø2 .	FILLER PICTURE IS X(3).		"STANDARD" fill in 10 character name that is in
ıĮ	ø		Ø2 .	ODCRUN PICTURE IS ZZZ.99.		the header label. If label
, ,	\$ 5		Ø2.	FILLER PICTURE IS X(3).		is "OMITTED", line thru, (Do not use) this line.
,	ø			ODBNDS PICTURE IS ZZZ.99.	1	NON-TAPE-FILES - Line
+	5 5			FILLER PICTURE IS X(3).	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	thru (Do not use) this line.
1	5 Ø			ODHLTH PICTURE IS ZZ.99.	 	(4) ALL FILES - Fill in 6
+	5 5			FILLER PICTURE IS X(3).	 	character record name.
+	++				 	(5)
+	7 Ø			ODLIFE PICTURE, IS ZZ.99.	 	ALL FILES - Fill in Level No. (02 to 05) Fill in 6
4	7 5		Ø2.	FILLER PICTURE IS X(3).		character field name.
4	B Ø	+		OPTOTE PICTURE IS Z(5).99.		Field descriptions must be provided by the program-
1	B 5		Ø2 .	FILLER PICTURE IS XX.		mer.
1	9 Ø			PICTURE IS		NOTE: Statements which are
1	9 5			P.I.C.T.U.R.E. I.S.		not used should be lined thru.
ग	5 6 3	8	12	16 20 24 28 32 36 40 44 48 52 56 60 64 66	73 80	1 Thru.
T.	:		27 /-	ant) Dun C7. COROL Cadina IDENTIFICATION ENVIRONMENT a	ATAG bac	DIVISIONS
r	ıgι	ire y-	21 (C	ont). Run C7: COBOL Coding - IDENTIFICATION, ENVIRONMENT, a	ing DATA	DIATOINO

PUNCHING INST.

IDENTITY

3

													T
			FACVEAR	0001110	50 D44	•					PUN	ICHING INST.	4
			EASYTAB (CODING	FURM	2					CODED		1
PROGRAM DEDREG	RUN C7										PUNCH	1.11	PAGE 4 OF
PROGRAM DEDREG	KUN C/	PROGRA	MMER			DAT	E		RE\	/. NO	CARD FO	RM NO.	
SEQUENCE & A B												IDENTITY	
PAGE LINE T													_
1 2 3 4 5 6 7 8 12	15 20 24	28 32	36	40	44	48	52	56	60	64	68	73 86	4
0 0 1 0 F.D.	BLOCK C	N.T.A.I.N.S.	RECOR	D.S.					بنين				<u>-[1]</u>
0020	LABEL RECO	MOS ARE										1,,,,,,,	(2)
ø ø 3 ø	V.A.L.U.E. O.F.	DENTIFIE	ATION	4-5-									(3)
8 8 4 8	D.A.T.A.B.F.COM	LD-1 S-	<u></u>	1111							· ·		T~
	, , , , , , , , , , , , , , , , , , ,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•••		II.						 	 	4
						4-4-4-4-		4-4-4-4					4
	1.4					1			ــــــــــــــــــــــــــــــــــــــ			 	4
Ø Ø 5 Ø Ø 1 TOTL	!N.	* 											10
11111111	1												1
0060 02	FILLER PLO	TURE IS	x (37.).									1	5
0065 02			z (6) . 9			1 1						1111111	1
	7,5,5,5,5,5,5		~ '. '. O ' '			A A A A		111				 	LEGEND
		TURE IS	^										1 ①
Ø 0 7 5 Ø2	TLINEZ PIC	TURE IS	Z,(,6,),.,9	1,9					ببين			 	ALL FILES - Fill in 6
0 0 8 0	FILLER P.I.C	TURE IS	<u>X., , , , , , , , , , , , , , , , , , , </u>										Character file name.
0085 02	TLINES PIC	T,U,R,E, ,I,S, ,	Z(4), 9	19								1	TAPE FILE - Fill in number
Ø Ø 9 Ø Ø Ø 2	FILLER PIC		X										of records in a block (1 to 9) EASYTAB STANDARD IS
Ø Ø 9 5 Ø 2	71.55		z(4).9	9	 			1-1-1-1				111111	BLOCKED 2.
								4.1.4.4				 	NON-TAPE-FILE - Line thru
	71.14.55	<u> </u>	<u>X </u>									 	(Do not use) "Block con- tains 72 records".
Ø 1 Ø 5 Ø2	110111-10101		Z(5).9	7									2
Ø 1 1 Ø Ø2.	FILLER PIC	T,U,R,E, I,S	Χ			 							TAPE FILE - Fill in
Ø 1 1 5 Ø2	TLINE 6 PIC	TURE IS	Z(5).9	9								1	"STANDARD" or "OMITTED" Label.
0120 02	FILLER PIC	TURE IS	Χ.										NON-TAPE-FILE - Fill in
Ø 1 2 5 Ø 2			Z(4).9	9	1,1,1,1,		1111					 	"OMITTED".
			<u>~`````</u>	ــــــــــــــــــــــــــــــــــــــ				1111			1 	 	f 3
Ø 1 3 Ø Ø2	<u> </u>	TURE IS	<u> </u>									 	TAPE FILE - If label is
Ø 1 3 5 , Ø2			<u>z (4). 9</u>	14.	<u> </u>	سس						 	"STANDARD" fill in 10 character name that is in
Ø 1 4 Ø Ø.2 .	FILLER PIC	TURE IS	<u>X </u>										the header label. If label
ø 1 4 5 Ø2 .	TLINE? P. LO	TURE IS	2(7).9	9									is "OMITTED", line thru, (Do not use) this line.
Ø 1 5 Ø Ø2	FILLER PIC		X(3).	1.1.1.1							 	1	NON-TAPE-FILES - Line
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>		() (I-47)				1 1 1 1				1_1_1_	 	thru (Do not use) this line.
Ø 1 5 5												 	4 •
Ø 1 6 Ø		TURE 1,5			بنب							 	ALL FILES - Fill in 6 character record name.
Ø 1 6 5	P.1.0	TURE, IS											(5)
	P.I.G.	TURE, IS,										1	ALL FILES - Fill in Level
Ø 1 7 5		TURE IS											No. (92 to 95) Fill in 6
		TURE, IS.		1				1 . 1				 	character field name. Field descriptions must be
0 1 8 0												 	provided by the program-
Ø 1 8 5		T,U,R,E, I,S										++	mer.
Ø 1 9 Ø	PIC	TURE IS	<u> </u>									 	NOTE: Statements which are
Ø 195	PIC	TURE IS		1 1 1 1 1 1 1 1							1 <u>,1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	not used should be lined thru.
1 2 3 4 5 6 7 8 12	16 20 24	28 32	36	40	44	48	52	56	60	64	68	73 8	

Figure 9-27 (cont). Run C7: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

															PUN	CHING INS	ΞT.	
Honey	wel	1				COB	OL PRO	GRAMN	NING FO	RM					CODED		TI	
ELECTRONIC DATA	PROCESSIN														PUNCH			PAGE 5OF
PROGRAM	DE	<u> DREG</u>	RUN	<u>C7</u>	P	ROGRAM	/ER			DAT	re		_ REV.	NO	CARD FOR	IM NO.		PAGE
SEQUENCE 8	A	В														IDENT	ITV	
PAGE LINE 1 2 3 4 5 6 7	'	ļ				-,		,						,		73		
1 2 3 4 5 6 7		12	16 20	GE SE	28	32	36	40	44	48	52	56		64	68	73	- 80	
┠┸┷┼┸┼	MOKE	11,140,-	2 LOKY	G.E., .S.E.\	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	·•			4.1.1.1	1								
┠┸┸┋ ┸┹╉	Ø1.	DTC							4.1.1			سسب						
┠┸┹╂┹┸┼	V21	DTEL					(5-)	1111			<u> </u>							
┠╍┋	 	Ø2.	FILLE	R. P.I.C.	LUKE,	, 1,S ,X	(50)	'A'Y'	U.E. IS	5, 8,P,I	JCE.							
\vdash	 	02	DAIL	PICTUF TURE	<u>lt. 15</u>	<u>. XU</u>	<u>), , , , , , , , , , , , , , , , , , , </u>		4								ــــــــــــــــــــــــــــــــــــــ	
+ + + + + + + + + + + + + + + + + + +	Ø1.	LIMI	1P.I.C.	TUKE	1 <u>S. 97</u>	_V.A.L.	U.E. 13	S, 6.0	<u> </u>			ببني		سب		1111		
	Ø1.	LINC	NT PI	CTURE	<u> 15 9</u>	<u>,9,,,,V,</u>	ALUE.	, I,S, ;	zero.	•						1		
	ø١	PREV	PICT	URE_1.	<u>6, ,9 (,3</u>	<u>)</u>												
	\downarrow ——	بب	سبب	سبب		سيبي		ببب				نيلسا					ــــــــــــــــــــــــــــــــــــــ	
	Ø1.	TOTD	E.D. P.I.	CTURE	<u>,1,5, 9</u>	(5) y	9,9 <u>.</u> V.	A,L,U,E	_18_3	Z,E,RO	•							
	Ø1	MINT					1.1.1.1				1.1.1.1.						4.1	
	1			PICTUI		9.(6						L. Laberton	1.11					
	1			PICTUI		. 9, (,6,				S ZE					<u> </u>			
		Ø2.	MIN3	PICTUR	RE, IS	. 9(4).V,9,9.	VAL	UE L	S ZEI	२०							
	Ι	02.	MIN4	PICTUI	RE IS	9.(4).V.99.	.VAL	UE. L	S ZE	RO.							
	T	Ø.2	MIN5	PICTUR	RE 15	.9 (5).V.9.9.	VAL	UE I	S ZE	Ro.							
	1	Ø2 .	MINE	PICTUI	RE IS	915).V99.	VAL	UE N	S ZE	Ro.							
	1			PICTUR		9(4).V.9.9.	VAL		S ZEI								
		Ø2 .	MIN8	PICTUI			V99	VAL		S ZE								
	 			PICTU				VAL		S ZE		L		1		 		
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	1				1-1-1-1									<u> </u>	II. III			
 	1	 			1-1-1-1						1.1.1.1.				<u> </u>			
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	<u> </u>	 																
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	<u>L.</u>	<u> </u>	<u>L</u>		4.4.4							<u> </u>						
		L., .							_1_4_+1									
1 2 3 4 5 6 7		12	16 20	24	ZB.	32	36	40	44	48	52	56	50	64	68	73	80	

9-52

Figure 9-27 (cont). Run C7: COBOL Coding - IDENTIFICATION, ENVIRONMENT, and DATA DIVISIONS

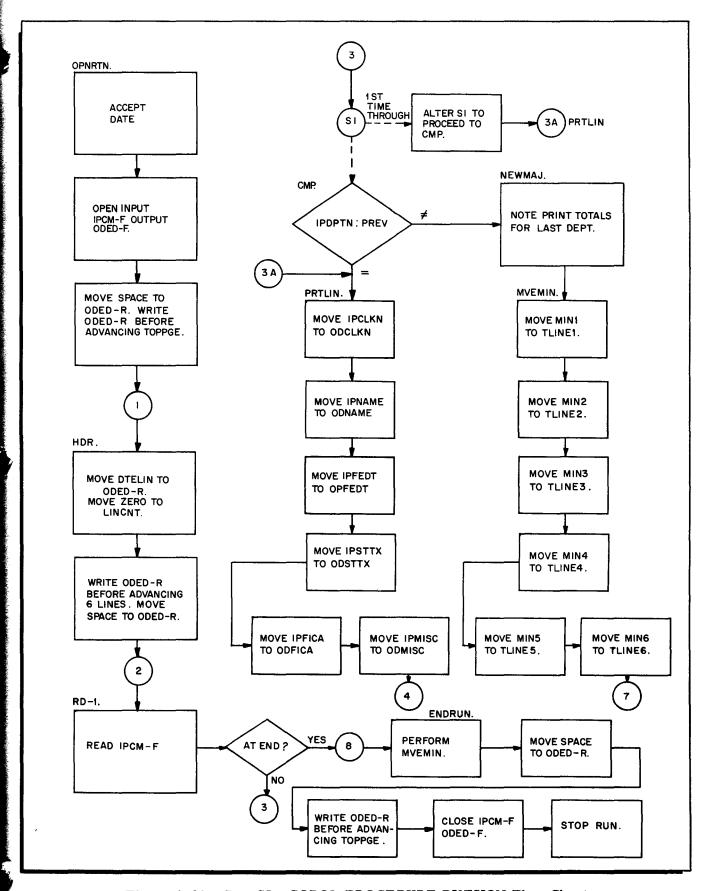


Figure 9-28. Run C7: COBOL PROCEDURE DIVISION Flow Chart

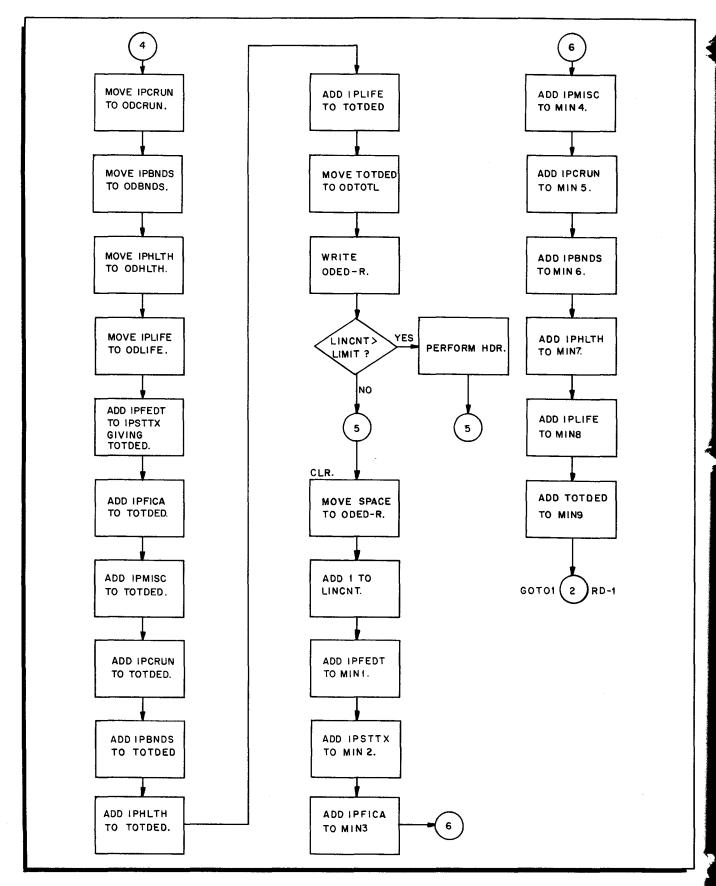


Figure 9-28 (cont). Run C7: COBOL PROCEDURE DIVISION Flow Chart

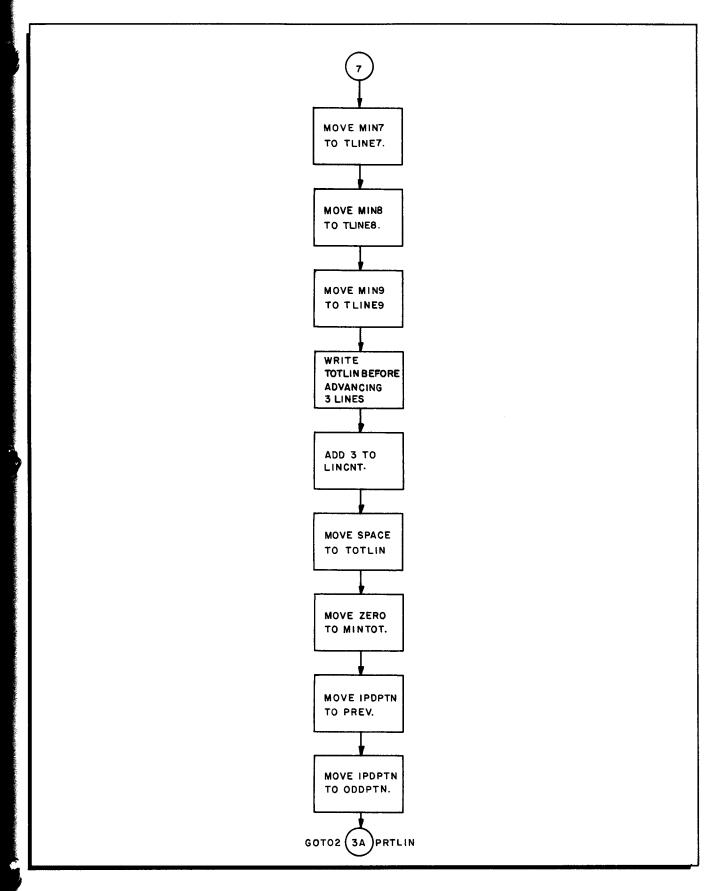


Figure 9-28 (cont). Run C7: COBOL PROCEDURE DIVISION Flow Chart

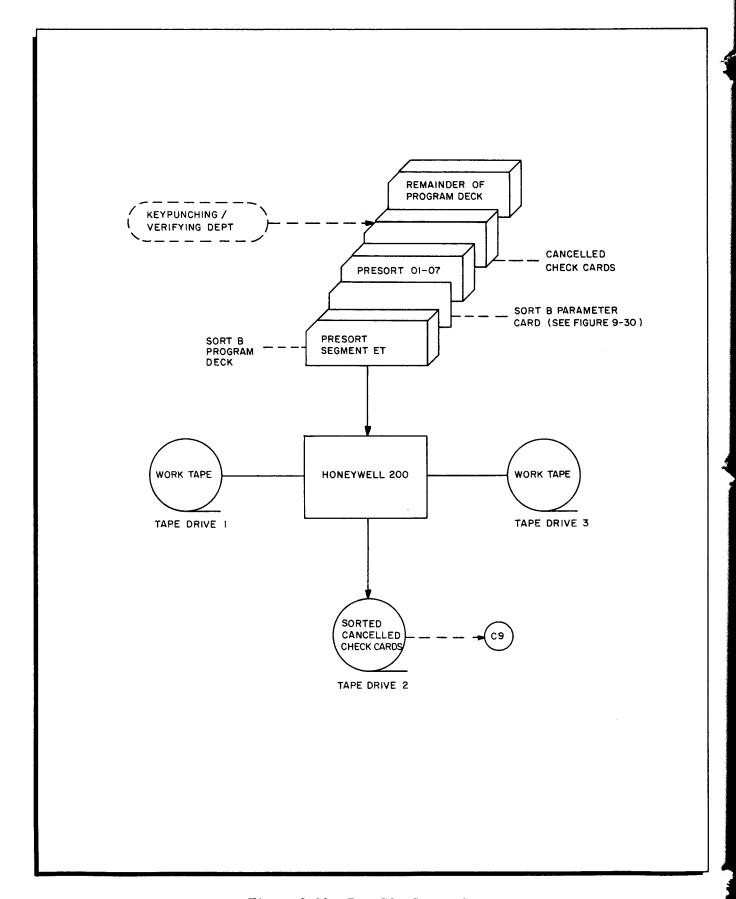


Figure 9-29. Run C8: Sort B Setup

	EAS	SYTAB - SO	ORT B	Date
APPLICATION SOR	T OF CANC	euen Gi	ECK CARI	1.D. <u>C 8</u> M Author
$\begin{bmatrix} S_1 O_1 R_1 T \\ 1 \end{bmatrix}$	B 5	Input INPUT 6 C = Card T = Tape	on cards 4TH TAPE OPTION 7 △= No 4th Tape 4 = 4th Tape	INPUT TAPE OPTION ① SEQUENCE 8 R = Do Not Use Tape 1 as Work 1 = Use Tape 1 as Work
NO. OF REELS OF INPUT 10 1 Thru 9	MA CHINE SIZE 11 Δ = 8K 3 = 12K 4 = 16K	INPU BLOCKI 15 $\Delta \Delta = 0$	NG ② BLO 16 17	TPUT CKING ② 18 $\Delta = 02$
Key 1	Check Number Ke	ey 2	Key 3	Key 4
Key 5	5 Ke	ey 6	Key 7	Key 8
	61	Input Reel Ide		
(1) Input tape (s) may	71	Dutput Reel Id	DICNIC	80 2, in order to use Tape 1

- as a work tape.
- 2 Tape input and output of Sort B are assumed to be blocked 2, within an 8K machine. If blocking factor is other than 2, the factor must be entered in the appropriate input and/or output box.

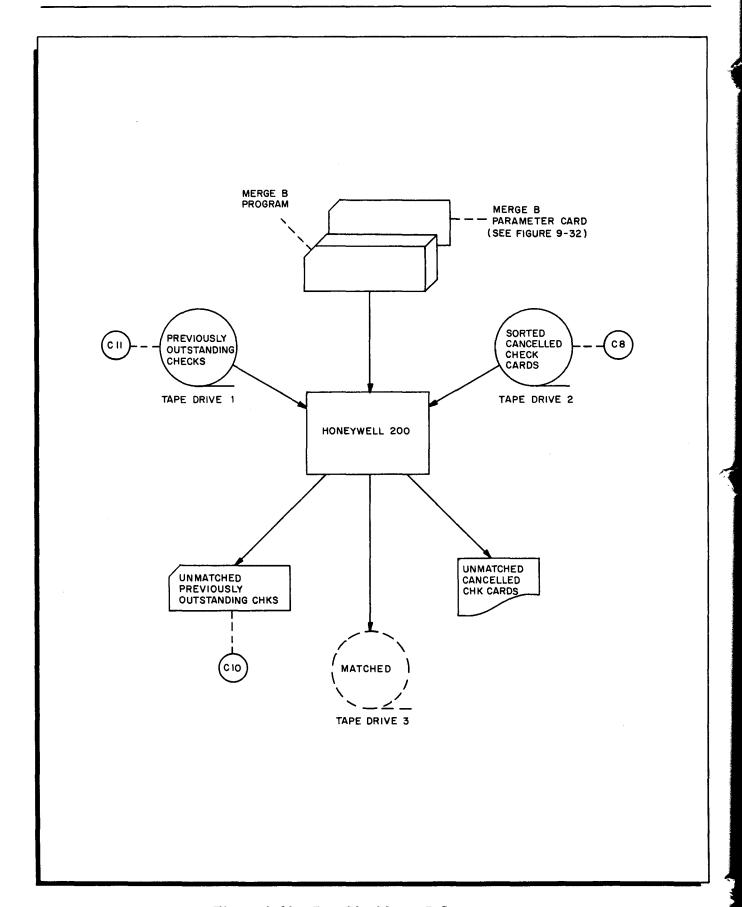


Figure 9-31. Run C9: Merge B Setup

FACUTAD MEDOF	
EASYTAB - MERGE	Date
	I.D. C9
APPLICATION RECONCILIATION OF CANCELLED CHECKS	Author
AITEIGATION	701101
$[\underline{M}, \underline{E}, \underline{R}, \underline{G}, \underline{E}]$	
(Unmatched primaries and	
unmatched secondaries to be selected SELECTED	
NO. OF PRIMARY SECONDARY PRIMARY KEYS FUNCTION INPUT INPUT OUTPUT	SECONDARY OUTPUT
1 MM PT ST PP	
7 9 10 12 13 15 16 18 1 1 to 5 SP = Select Financy PC = Card SC = Card PL = Printe	r SL = Printer
SS = Select Secondary PT = Tape ST = Tape MM = Match Merge NM = Normal Merge	
Punch unmatche	0110011 0-1 00 (011010)
(current	k masters ly outstanding
PRIMARY KEYS Checks Key 1 Key 2 Key 3 Key	
6/22 Key 2 Key 3 Key	, 4 Rey 3
25 28 29 32 33 36 37	40 41 44
Compare on all keys (Emp #, Name, Che	cck #) or just on check number
SECONDARY KEYS	4
Key 1 Key 2 Key 3 Key	y 4 Key 5
45 48 49 52 53 56 57	60 61 64
Keys are in descending order – Major is Key 1, Lowes	t Minor is Key 5.
and the second s	, , , , , , , , , , , , , , , , , , , ,

Figure 9-32. Run C9: Merge B Parameter Card

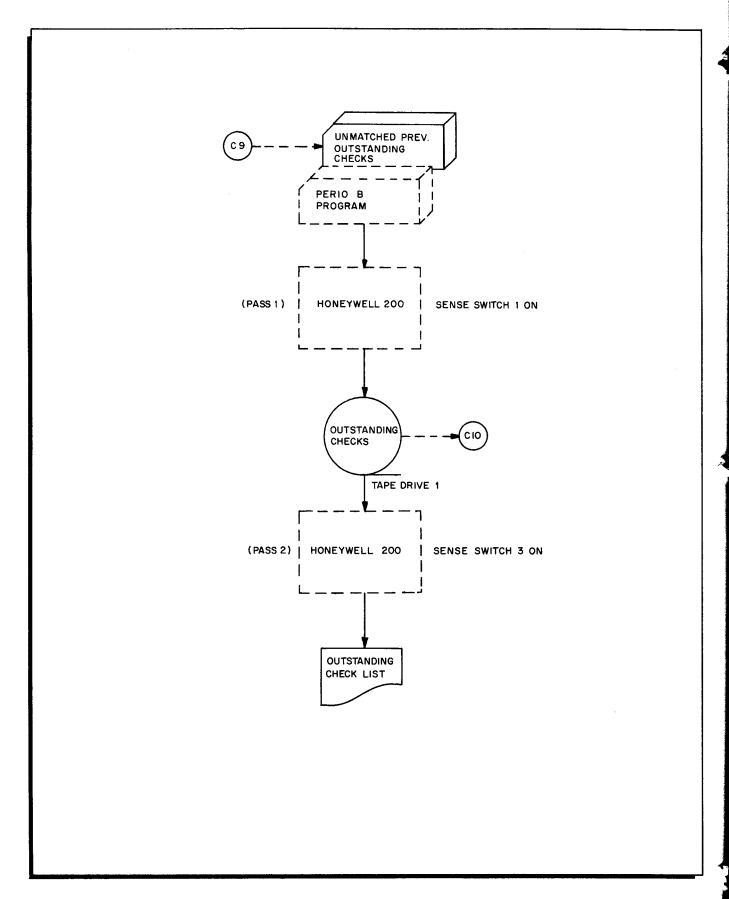


Figure 9-33. Run C10: PERIO B Program Setup

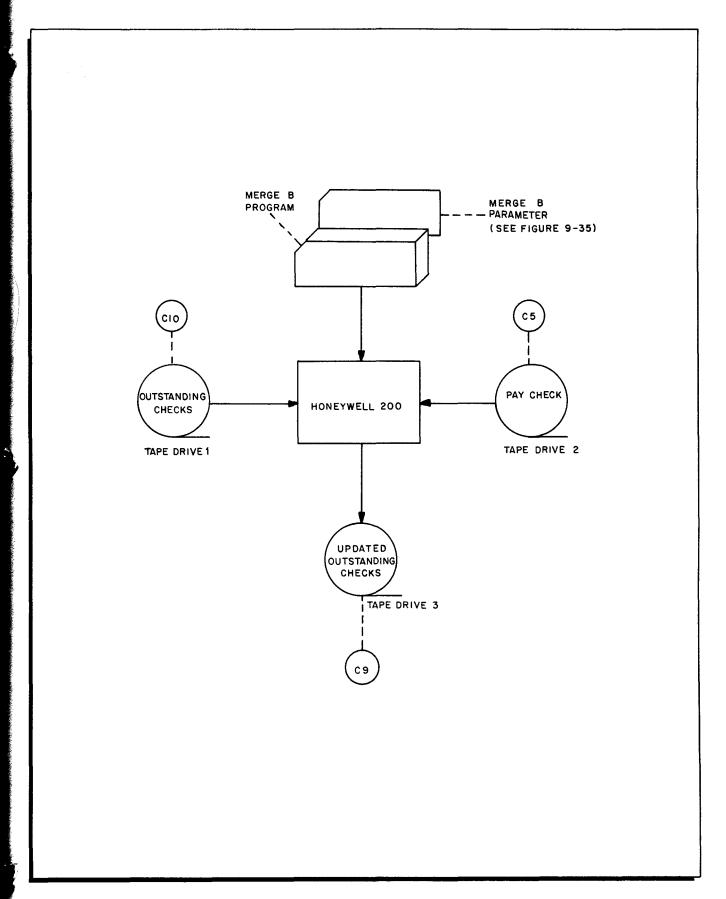


Figure 9-34. Run Cll: Merge B Setup

EASYTAB - MERGE	
MERGE OF CURRENT PAY CHECK MASTERS I.D. C 11 APPLICATION	
$\begin{bmatrix} \mathbf{M}_1 \mathbf{E}_1 \mathbf{R}_1 \mathbf{G}_1 \mathbf{E}_5 \end{bmatrix}$	
NO. OF PRIMARY SECONDARY PRIMARY SECONDARY OUTPUT No. of Function Primary Secondary Primary Secondary Primary Output	
PRIMARY KEYS Key 1 Key 2 Key 3 Key 4 Key 5 25 28 29 32 33 36 37 40 41 44	
SECONDARY KEYS Key 1 Key 2 Key 3 Key 4 Key 5 48 49 52 53 56 57 60 61 64	

Keys are in descending order - Major is Key 1, Lowest Minor is Key 5.

Figure 9-35. Run Cll: Merge B Parameter Card

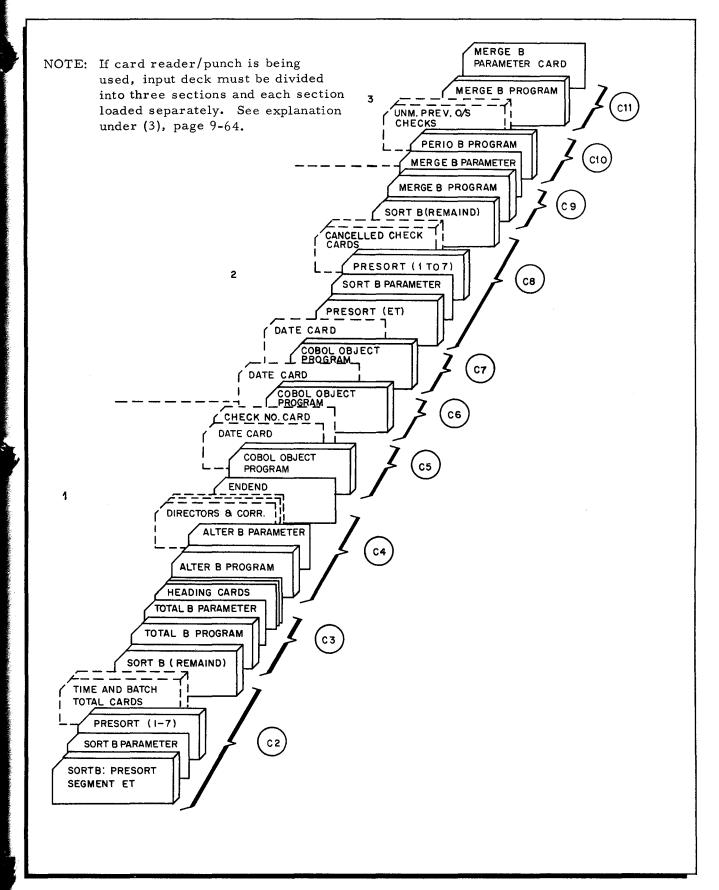


Figure 9-36. Card Deck Setup for Entire Payroll Application

Loading the Programs from Tape

If there is one additional tape drive available throughout the execution of the entire series of runs, the programs may be loaded from tape instead of from the card reader. The following procedure can be used:

- 1. Place the ordered program decks (solid lines Figure 9-36) on tape. When the payroll is to be run, this tape is mounted on tape drive 0.
- 2. Place the data input (broken lines Figure 9-36) in order. Again, notice that the corrections input to run C4 and the outstanding check cards input to run C10 will not be available until the preceding runs are executed.
- 3. If the Type 214-2 Reader/Punch is being used, the data deck must be divided into three groups:
 - a. Input to runs C2 through C5.
 - b. Input to runs C6 through C9.
 - c. Input to runs Cl0 through Cl1.

This is because the reader/punch unit must be available for punching the output from runs C5 and C9. If separate card reader and card punch units are available, the entire data deck can be placed in the card reader.

```
ALTER
                                                                                                                                CARD (CONT.)
                                                                                                                                             RUN C8: SORT B PARAMETER CARD, 9-57
RUN C9: MERGE B PARAMETER CARD, 9-59
SELECT B PROGRAM, SELECTION BY TEST WITH
MULTIPLE FIELDS (AND CONDITION, 5-11
PERIO B PROGRAM, PUNCHED CARD TO MAGNETIC TAPE -
        " B PROGRAM CHECK LIST, 8-12
       " B PROGRAM, 8-1
" B PROGRAM, 8-1
" B PROGRAM, DELETE - COMPUTER SETUP, 8-6
" B PROGRAM, DELETE - DIRECTOR CARDS, 8-5
" B PROGRAM, INSERT - COMPUTER SETUP, 8-4
" B PROGRAM, INSERT - DIRECTOR CARDS, 8-3
" B PROGRAM, INSERT - RECORD LAYOUT, 8-2
" B PROGRAM, MULTIPLE OPERATIONS 1 - COMPUTER SETUP,
                                                                                                                                             SETUP. 6-2
PUNCHED CARD TO MAGNETIC TAPE CONVERSION. 6-2
PUNCHED CARDS.
                                                                                                                                                      PERIO B PROGRAM, MAGNETIC TAPE TO PUNCHED CARDS
        * B PROGRAM, MULTIPLE OPERATIONS 1 - DIRECTOR CARDS,
                                                                                                                                                                    - SETUP. 6-3
                                                                                                                                            REPRODUCE B PROGRAM, SEQUENTIAL NUMBERING (CARD TO TAPE) - PARAMETER, 7-12

REPRODUCE B PROGRAM, OFFSET REPRODUCING WITH EMITTING (CARD TO TAPE) -, 7-10

REPRODUCE B PROGRAM, OFFSET REPRODUCING WITH EMITTING (TAPE TO CARD) -, 7-9, 7-11

REPRODUCE B PROGRAM, REPRODUCING AND OFFSET REPRODUCE B PROGRAM, REPRODUCING AND OFFSET REPRODUCE B PROGRAM, SEQUENTIAL NUMBERING (CARD TO TAPE) - COMPUTER, 7-13

REPRODUCE B PROGRAM, STRAIGHT REPRODUCING WITH EMITTING (CARD TO TAPE) -, 7-8, 7-9

REPRODUCE B PROGRAM, STRAIGHT 80-80 REPRODUCE (CARD TO TAPE) WITH, 7-3, 7-4

REPRODUCING AND OFFSET REPRODUCING (TAPE TO CARD),
                                                                                                                                              REPRODUCE B PROGRAM. SEQUENTIAL NUMBERING (CARD TO
        " B PROGRAM. MULTIPLE OPERATIONS 2 - COMPUTER SETUP.
                     8-11
        " B PROGRAM, REPLACE - DIRECTOR CARDS, 8-7
" B PROGRAM, REPLACE EXAMPLE - COMPUTER SETUP, 8-8
RUN C4: ALTER B PARAMETER CARD, 9-21
            RUN C4: ALTER B SETUP, 9-20
APPLICATION
           PAYROLL APPLICATION,
CARD DECK SETUP FOR ENTIRE PAYROLL APPLICATION.
                                 9-63
            SAMPLE EASYTAB APPLICATION, 9-1
        " 1 - SINGLE FIELD TEST WITH MULTIPLE VALUES, 5-6
" 2 - MULTIPLE FIELDS (OR CONDITION), 5-8
" 3 - MULTIPLE FIELDS (AND CONDITION), 5-10
        " 4 - EDITING. 5-12
                                                                                                                                              REPRODUCING AND OFFSET REPRODUCING (TAPE TO CARD).
ASCENDING
        " ORDER
                    SORT B PROGRAM, THREE-TAPE SORT (CARD INPUT,
ASCENDING ORDER) - COMPUTER, 2-4
THREE-TAPE SORT (CARD INPUT, ASCENDING ORDER),
                                                                                                                                              SELECT B PROGR M, SELECTION BY LOCATION WITHIN GROUP
                                                                                                                                              (CARD TO TAPE) -, 5-5

SELECT B PROGRAM, SELECTION BY TEST WITH MULTIPLE FIELDS (OR CONDITION), 5-9
                                 2-2
        " ORDER- PARAMETER CARD,
                                                                                                                                              SELECT B PROGRAM, SELECTION BY COUNT (TAPE TO CARD)
- COMPUTER SETUP, 5-4
SELECT B PROGRAM, SELECTION BY COUNT (TAPE TO CARD)
SORT B PROGRAM THREE-TAPE SORT (CARD INPUT,
ASCENDING ORDER)-, 2-3
BATCH TOTAL CARD (TABULATING AND COMPUTER SYSTEMS), 9-3
CANCELLED CHECK CARD (TABULATING AND COMPUTER
                                                                                                                                                         PARAMETER CARD.
                                                                                                                                              SELECT B PROGRAM, SELECTION BY LOCATION WITHIN GROUP
                                                                                                                                              (CARD TO TAPE) -+ 5-6
SELECT B PROGRAM. SELECTION BY TEST WITH SINGLE
FIELD CONTAINING. 5-7
                    SYSTEMS) . 9-5
           "1 - CARD TO TAPE AND TAPE TO PRINTER, 6-4
"2 - TAPE TO CARD AND TAPE TO PRINTER, 6-5
ALTER B PROGRAM. DELETE - DIRECTOR CARDS, 8-5
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                                                                                                                                              SELECT B PROGRAM, SELECTION BY TEST: EDITING -
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