

DEVELOPMENT OF A COMPUTERIZED RETRIEVAL SYSTEM  
FOR COSTFINDER FARM RECORD DATA

By

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1973

Submitted to the Faculty of the Graduate College  
of the Oklahoma State University  
in partial fulfillment of the requirements  
for the Degree of  
MASTER OF SCIENCE  
July, 1975

Thesis  
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DEVELOPMENT OF A COMPUTERIZED RETRIEVAL SYSTEM  
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## ACKNOWLEDGEMENTS

I wish to thank my major adviser, Dr. Darrel D. Kletke, for his advice and encouragement throughout my graduate program. Appreciation is also expressed to the members of my committee, Dr. Ted R. Nelson and Dr. Vernon R. Eidman.

Special appreciation is extended to Dr. James S. Plaxico for his interest and support and to the Department of Agricultural Economics for financial assistance.

Thanks are due to Kenny Empting for his programming assistance and to my fellow graduate students for their suggestions and encouragement.

I want to thank the secretarial staff of the Department of Agricultural Economics, in particular Debbie Miller for the typing of the early draft, and Kathy Reece for her excellence in typing the final copy.

Very special gratitude is expressed to my brother, Mike, for his scholarly knowledge and assistance, for encouraging me to pursue graduate study and for his special brotherly counsel. Finally, special recognition is given to my parents, Mr. and Mrs. Talmage Hardin.

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## CHAPTER I

### INTRODUCTION

The difficulty of obtaining primary farm data for research purposes is well known. Farm surveys and experimental test plots are two of the more widely used methods of acquiring such data. These techniques are irreplaceable in some cases, but the research labor required is expensive, in terms of both time and money. The amount of labor used and its cost may be reduced if an alternative data source is available. One alternative source which may be used is the data file developed and stored by a farm record system.

Not all farm record data are usable for research projects. Data which are reported by the farmer to satisfy some limited objective may not be adequate in research having a broader set of objectives. Inadequately identified data, for example, where coding is incomplete, are useless when detail beyond that which is coded is required. In addition records which are over aggregated within the record system prior to storage may provide inadequate detail. Nonetheless, a farm record system which satisfies the demands of its cooperating farmers, according to Plaunt, "should provide an important part of the data base required for a substantial proportion of the applied research in farm management."<sup>1</sup>

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<sup>1</sup>Darrel H. Plaunt, "Canada's Experience in and Aspirations for a Comprehensive Farm Data System," Journal of Farm Economics, Vol. 49 (December, 1967), p. 1535.

The development by the record system of a systematic data library is necessary for the data to be useful. Its usefulness depends partly upon its convenient and efficient access. As noted by Plaunt,

one of the requirements of the system would be the development of a general retrieval program. Such a program would permit the user to specify the characteristics of the information and have the program sort, identify, seek, retrieve, and output the data in the format he requires.<sup>2</sup>

#### Problem Statement

Costfinder, Oklahoma State University's computerized farm record program, has been operating since 1966.<sup>3</sup> It consists of twenty-two source programs written in COBOL, Common Business Oriented Language. It provides information to farmers for tax, credit, and planning purposes. Transaction data and periodic balances brought forward are permanently stored on magnetic tape and disc files.

One of the purposes of Costfinder is "To acquire timely data for extension, teaching, and research programs."<sup>4</sup> The data stored on the transaction and balance forward files provide much useful information about farms and their operation in Oklahoma. However, the lack of sufficiently detailed programs to read these files has almost totally precluded the use of these Costfinder data in research projects.

The only programs currently available for reading these files have no provisions for specifying data in any manner except for calling

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<sup>2</sup>Ibid, p. 1536.

<sup>3</sup>Costfinder, Computerized Oklahoma State Farm Income and Detailed Enterprise Records, was initiated in 1966 by Dr. Ted R. Nelson, Extension Economist, Farm Management.

<sup>4</sup>Mike L. Hardin, "1974 Field Draft of the Costfinder User's Manual" (Stillwater, 1974), p. 1.

a specific farm or farms. Current programs cannot isolate a particular type of information, such as cash flow or enterprise information, nor can they isolate information for any further breakdown within these general categories, such as a particular income or expense item. These items could be found on the computer printouts provided by Costfinder's Periodic Report program,<sup>5</sup> but if one is sampling a large number of farms, the time required for the researcher to gather these printouts and then to search for the data in question becomes prohibitive. Only after this is done can all the data be compared to determine if it is bad or unrealistic. The lack of detail in the current programs makes it necessary that a great amount of hand work be done by the researcher. The most frequent suggestions for program modification reflect the difficulty of employing Costfinder data in research projects.

The programs currently available for data retrieval use such basic logic that modification would, in all probability, be more costly than writing completely new routines. Inclusion of sections to provide added detail could be incorporated in a new program much more efficiently than into one in which this type of detail was never considered or intended.

The first basic objective of this project, then, is the development of a data retrieval system to facilitate the use of Costfinder data in research projects. Hopefully, this procedure can be used by many people, some of whom are not familiar with Costfinder. Therefore, the second basic objective is to provide basic instructions which simplify the use of the system by those unfamiliar with Costfinder.

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<sup>5</sup>The Periodic Report Program was initiated by Dr. Ted R. Nelson, Extension Economist, Farm Management.

## The Costfinder System

The Costfinder Farm Business Information System was designed for the following purposes:<sup>6</sup>

1. To demonstrate the field use of good farm records containing necessary tax, credit and management information.
2. To acquire timely data for extension, teaching, and research programs.
3. To provide assistance to data processors desiring to provide similar services to Oklahoma farmers.

From 20 farms in 1966, Costfinder has grown to 140 farms in 1974. Current plans call for expansion of the system in late 1975. The main facet of the expansion will be the placement of additional field advisors. With the added personnel available to enlist and counsel new cooperators, it is projected that the system will serve approximately 300 farms in 1976, with as many as 200 more being enrolled in the three years following.

The motivations of farmers for participating in the Costfinder system are varied. Some may be interested mainly in cash flow information, to assist in scheduling repayment of debts and collection of accounts receivable. Some will require information regarding tax management and preparation of tax returns. Others may concentrate on enterprise costs and returns and measures of productive efficiency. Most Costfinder cooperators have one, combinations of, or all of the above purposes as incentives for participation. A small percentage of

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<sup>6</sup>Mike L. Hardin, p. 1.

cooperators may have individual objectives which are impossible to categorize on a large scale.

Whatever the motivation a cooperator has in mind, it will have a large effect on the quality of information provided to be used in research. A farmer whose main interest lies in cash flow and tax records may furnish the computer with detailed information of this type, but with incomplete or inaccurate enterprise information. Conversely, the cooperator who concentrates on enterprise data may give little thought to the accuracy of the credit information he supplies. Care must be taken to recognize such inaccuracies and avoid aggregations of and comparisons between data which is furnished for such different objectives.

#### Types of Records Available

The data stored permanently by Costfinder on tape or disc files are generated by the Periodic Report program.<sup>7</sup> Two files are developed. The Master Transaction file stores each individual transaction which is processed by the Report program. This transaction data is used to generate the Balance Forward file, which stores data for the summaries which are printed and updated by each processing of Report. The 1966-73 version of Report generated four of these summaries. The Report program was revised in 1974. This revision changed the format in which the data was stored for the four original summaries, and added three new summaries.

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<sup>7</sup> Hereafter referred to as Report, or Report program.

There are a total of eight types of records which can be obtained from these two files. The first, Transaction Journal, is obtained from the Master Transaction file. Types two through eight are stored on the Balance Forward file. Brief explanations of these record types are listed in Table I. In addition, examples of Costfinder output, generated by the Report program, are found in Nelson and Brant.<sup>8</sup>

### Farm Identification

Each cooperator on the Costfinder system has a unique four-digit farm number. The first two digits represent the county in which the farm unit is located. The first digit of the county number signifies the area of the state in which the county is situated. For example, Farm Number 5202 is located in Wagoner county (designated by the first two digits, 52), which is located in the east central area of the state (designated by the first digit, 5). The last two digits serve to make farm numbers unique within counties, and have no locational significance in the system. Oklahoma's 77 counties are represented by numbers ranging from 11 to 97 (not all the inclusive numbers are used). The state is divided into nine areas, represented by the range of the first digits of the county numbers. A map of Oklahoma outlining the areas, counties, and their numbers is shown in Figure 5 of the Appendix.

### The Basic Code Structure

The Costfinder system identifies input data according to a numeric

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<sup>8</sup>Ted R. Nelson and William L. Brant, "Costfinder Users' Notebook" (Stillwater, 1974).

TABLE I  
TYPES OF RECORDS STORED ON COSTFINDER FILES

| Record Type | Name  | Years Available | Description  |
|-------------|---|-----------------|--|
| 1.          | Transaction Journal                                   | 1966-Present    | Listing of each individual transaction reported by the operator during the year.                 |
| 2.          | Cash Flow Summary                                     | 1966-Present    | Summary of each operator's income and expense by tax category.                                   |
| 3.          | Credit Summary  | 1966-Present    | Summary of credit transactions by tax category.  |
| 4.          | Loan, Account Payable, and Account Receivable Summary | 1974-Present    | Summary of a farm unit's credit position at each credit institution with which it has an account |
| 5.          | Inventory Summary                                     | 1974-Present    | Beginning and ending inventory dollar values in each of 14 categories.                           |
| 6.          | Payroll Summary                                       | 1966-Present    | Summary of all wages and withholdings for each employee of a farm unit.                          |
| 7.          | Livestock Numbers Summary                             | 1974-Present    | Information on number of head of livestock on hand by the type of livestock.                     |
| 8.          | Enterprise Summary                                    | 1966-Present    | Summary of income and expense, allocated to specific enterprises, by tax category.               |



code. The code is a numerical dictionary of definitions which provide a logical basis for classifying entries of information. The five digits of the basic code are called Account, Transaction, Item, General, and Detail. The Costfinder cooperator is required to complete only the Account, Transaction, and Item codes.

The Account, or A, code separates different types of transactions. Cash, charge, payment on account, and inventory are examples. These codes are listed in Table XXIII of the Appendix.

The Transaction code sets up major categories for tax accounting. There are categories for different types of income and expense transactions, such as capital assets, items purchased for resale, and non-farm cases. The Item code when combined with the Transaction code adds further detail to the classification of transactions and determines the appropriate accounting category for each input item. All combinations of Transaction and Item (or TI) are listed in Table XXIV of the Appendix.

The General and Detail codes can be used to further classify the input line. These are not required for coding by the cooperator, and therefore are not reported in all cases.

Another important code in Costfinder is Enterprise. This code can be used to obtain cost and return information for the individual segments of the farming unit. It is a two-digit code, with the first digit representing a broad classification, such as grain or beef. The second digit gives a further breakdown, for example, grain sorghum or purebred beef breeding. The complete listing of Enterprise numbers is shown in Table XXV of the Appendix.

There are several other codes used by Costfinder cooperators. These codes are assigned special meanings by individual cooperators, and have no general meaning for the system as a whole.

#### Procedure

Due to the 1974 revision of Report, which changed the format of the Balance Forward File, a program will be written to transform Balance Forward files for the years 1966-73 to the 1974 format. This program will read the old Balance Forward file one record at a time, arrange all applicable data into the new format, and write the resulting record on a tape or disc file. This file will then be acceptable as input to any computer routine which reads the 1974 version of the Balance Forward file.

The next step will be to develop a system to retrieve and edit data from the Costfinder files. The system will consist of two computer programs. The first will read the two permanent files, isolate a chosen type or types of information, and print this data in a concise format. These records will also be placed on a tape or disc file so that they may be conveniently accessed by further programs.

As in any sampling of data, some information collected may turn out to be inadequate or incomparable with the rest of the data. Therefore, the second procedure of the retrieval and editing system will be designed to delete user-specified data from the file created by the retrieval program. The editing procedure will allow the user to delete all records for a particular farm, certain types of records for an entire farm, or individual records which, for various reasons, may be useless. This procedure may be used as many times as necessary, until

only the desired data is left on the file. Following necessary conversions, this file will be acceptable as input to user-selected aggregative or analytic computer routines.

To go along with this system, instructions will be written to familiarize the users with Costfinder and its coding system. The instructions will also explain the input required to process the Retrieval and Editing programs. The application of the Costfinder codes which are used to complete the input form for the Retrieval program will also be outlined.

#### Outline of Following Chapters

The computer program developed to retrieve Costfinder data from the permanent files will be presented in Chapter II. The output generated by the program, the input required to obtain that output, and the operation of the program will be included in the discussion. The Editing program, designed to delete user-specified data from the file created by the Retrieval program, will be explained in Chapter III. The discussion will be comprised of the input requirements of the program, the format of the output generated, and the operations performed by the program. Also included will be the procedure required to prepare the data for processing by computer routines outside the Retrieval System, along with the final format of each type of data. Possible applications of data selected by the system are examined in Chapter IV, in addition to a section summarizing results of the study. The Appendix contains tables and figures illustrating the Costfinder codes necessary to prepare input to the retrieval program.

## CHAPTER II

### THE RETRIEVAL PROCEDURE

This chapter will introduce and discuss the computer routine written to select user-specified data from Costfinder files. Included are examples and explanations of the output that is generated, a discussion of the card input required to obtain that output, and a discussion of the operations performed by the program. The Retrieval program is written in COBOL for processing by an IBM 360 Model 65 computer. Twelve data files are required during execution of the program; the card input file, two files of Costfinder input data, eight temporary files used for storage during execution, and an output file for the data selected to be processed further.

Data reported by Costfinder cooperators is confidential. For purposes of aggregation, complete farm numbers are printed by the Retrieval System. However, for purposes of publication, farm numbers should never be included where they would serve to attribute reported data to a certain farm. In this study, output examples will include complete farm numbers only for hypothetical test farms, where the first digit of the farm number is zero. For all real data, only the county number will be printed, for example, all farms in Woodward county will be designated simply as 1700.

## Examples and Explanation of Output

The nature of the Retrieval program is such that an understanding of the output provided by the program must be attained in order to fully understand the input requirements of the program. An example of a page of output from each of the eight output sections (one for each record type) will be presented (Tables II through IX). There are many elements of the output which are applicable to more than one or all sections. These elements are discussed first, followed by an explanation of the individual attributes of each section. The section discussions also include the code or codes which can be specified by the user to obtain data from that section.

### Common Elements of the Output

Line Numbers. Each line of Costfinder data selected by the Retrieval program is numbered to aid the user in further processing. These numbers, found under the heading "LINE", begin with 1 and run consecutively within each section. The line number may be used to access the particular line of data during subsequent computer runs. It may also be used, combined with the record type, to specify a line to be deleted by the Editing procedure, discussed in detail in Chapter III.

Farm Number. Under the heading "FARM" in each section of output is the number of the farm unit which reported the data. The number may be specified in the Editing procedure (Chapter III) to delete all records for a farm, or may be used in combination with record type to delete all data having that farm number and record type.

Month and Day. The month and day on which a particular transaction takes place is listed only for Record Types 1 and 3, under the headings "MO" and "DY." If a month is listed as blank or zero, the transaction listed is a beginning or ending inventory. A record having the day equal to the data year (listed in the heading) indicates a beginning inventory; Day equal to the data year plus one shows an ending inventory.

Basic Codes. Various elements of the basic code system of Costfinder are utilized to classify data of Record Types 1, 2, 3, 5 and 8. These codes and their meanings are discussed in Chapter 1. The output headings listed for each of these codes are as follows: Account, "A"; Transaction-Item, "TI"; General, "G"; General-Detail, "GD"; Enterprise, "ENT." A list of the General and Detail codes subordinate to each TI code are found in Nelson and Brant.<sup>1</sup>

TI Code Definition. The written definition of the TI code listed for a particular record is shown under the heading "CODE DEFINITION" for Record Types 1, 2 and 8. There are eleven TI's (10, 20, 24, 25, 27, 28, 29, 30, 31, 60 and 70) for which the code definition is blank. These are left blank to provide flexibility in the use of these codes by the cooperators.

Enterprise Definition. This is the written definition of the enterprise which is listed for a particular record or records. It is listed on each line in Record Type 1 under the heading "ENTERPRISE DEFINITION," and in the page heading in Record Type 8.

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<sup>1</sup>Ted R. Nelson and William R. Brant, "Costfinder Users' Notebook" (Stillwater, 1974).

Record Type 1: Transaction Journal

The Transaction Journal provides a listing of each individual transaction reported by a farm operator during the year. Table II shows a page of sample output from this section. All elements of the basic Costfinder code structure, i.e., A, TI, GD, and ENT, are printed in this section. In addition, the TI Code Definition and Enterprise Definition, if any, are printed. Also printed are the farm number, designating the cooperator that reported the data, and the line number, generated by the Retrieval program to facilitate further access.

Each line will provide the data reported by the cooperator for units, price, pounds, and dollars. The measure of the unit figure reported is indicated in the "QDESC," Quantity Description column.

Data reported by the cooperator with Account equal to 6 (inventory of depreciable assets) is not stored on the Transaction Journal file. This information is used only in the Depreciation program, which requires card input. Purchases, sales, and trades of depreciable assets are stored for the year in which the transaction takes place. In addition, some cooperators may also wish to report their depreciable inventory with Account equal to 5 for the purpose of providing input to the Inventory Summary (Record Type 5). However, this is not required; consequently, there will be very little data of this type available, especially for years prior to 1974, when the Inventory Summary was initiated.

Internal transfers (account equal to 4) are used to transfer an item from one farm enterprise to another. The retrieval program handles these transfers as if two separate transactions were involved.

TABLE II

SAMPLE OUTPUT FROM TRANSACTION JOURNAL  
(RECORD TYPE 1)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM |      |    |    |   |    |    |                |            |     |                       | PAGE 2    |       |        |         |            |
|--|------|----|----|---|----|----|----------------|------------|-----|-----------------------|-----------|-------|--------|---------|------------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                      |      |    |    |   |    |    |                |            |     |                       | 1974 DATA |       |        |         |            |
| TRANSACTION JOURNAL (RECORD TYPE 1)                  |      |    |    |   |    |    |                |            |     |                       |           |       |        |         |            |
| LINE   | FARM | MO | DY | A | TI | GD | CODE           | DEFINITION | ENT | ENTERPRISE DEFINITION | UNITS     | QDESC | PRICE  | PUNDS   | DOLLARS    |
| 47   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 99.00     | ACR   |        |         | 19,800.00  |
| 48   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 46.00     | ACR   |        |         | 9,200.00   |
| 49   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 66.00     | ACR   |        |         | 13,200.00  |
| 50   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 66.00     | ACR   |        |         | 12,919.00  |
| 51   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 208.00    | ACR   |        |         | 42,716.00  |
| 52   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 186.00    | ACR   |        |         | 46,500.00  |
| 53   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 66.00     | ACR   |        |         | 13,200.00  |
| 54   | 6900 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 123.00    | ACR   |        |         | 24,600.00  |
| 55   | 6200 | 8  | 15 | 7 | 11 |    | BEEF, RAISED   |            | 11  | BEEF BREEDING GRADE   | 129.00    | HD    |        |         |            |
| 56   | 6200 | 7  | 25 | 9 | 11 |    | BEEF, RAISED   |            | 11  | BEEF BREEDING GRADE   | 7.00      | HD    |        |         |            |
| 57   | 6200 | 2  | 12 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 1,000.0 |            |
| 58   | 6200 | 2  | 12 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 1,000.0 |            |
| 59   | 6200 | 3  | 10 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 1,000.0 |            |
| 60   | 6200 | 4  | 10 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 1,000.0 |            |
| 61   | 6200 | 4  | 10 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 1,000.0 |            |
| 62   | 6200 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 220.00    | ACR   | 366.72 |         | 80,678.40  |
| 63   | 6200 | 5  | 1  | 7 | 11 |    | BEEF, RAISED   |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    |        | 70.0    |            |
| 64   | 6200 | 12 | 28 | 9 | 11 | 60 | BEEF, RAISED   |            | 11  | BEEF BREEDING GRADE   | 2.00      | HD    |        | 600.0   |            |
| 65   | 6200 | 12 | 28 | 9 | 81 | 80 | BEEF BREEDING  |            | 11  | BEEF BREEDING GRADE   | 1.00      | HD    | .10    | 800.0   |            |
| 66   | 1700 | 4  | 22 | 3 | 96 | 19 | MOTOR VEHICLES |            | 00  |                       | 7408.00   |       |        |         | 675.00     |
| 67   | 1700 |    | 75 | 5 | 99 | 10 | LAND           |            | 76  | WHEAT                 | 115.80    | ACR   | 250.00 |         | 28,950.00  |
| 68   | 1700 |    | 75 | 5 | 99 | 10 | LAND           |            | 76  | WHEAT                 | 445.20    | ACR   | 250.00 |         | 111,300.00 |
| 69   | 1700 |    | 75 | 5 | 99 | 10 | LAND           |            | 76  | WHEAT                 | 294.50    | ACR   | 250.00 |         | 73,625.00  |
| 70   | 6300 | 7  | 2  | 0 | 51 |    | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 117.15     |
| 71   | 6300 | 9  | 3  | 0 | 51 |    | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 60.75      |
| 72   | 6300 | 10 | 30 | 0 | 51 |    | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 97.00      |
| 73   | 6300 | 12 | 4  | 0 | 51 |    | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 107.05     |
| 74   | 6300 | 12 | 28 | 0 | 51 |    | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 45.00      |
| 75   | 6300 | 10 | 5  | 0 | 51 | 10 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 84.00      |
| 76   | 6300 | 8  | 1  | 0 | 51 | 20 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 25.50      |
| 77   | 6300 | 10 | 3  | 0 | 51 | 50 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 39.35      |
| 78   | 6300 | 12 | 26 | 0 | 51 | 50 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 21.33      |
| 79   | 6300 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 100.00    | ACR   |        |         | 25,000.00  |
| 80   | 1700 | 4  | 22 | 3 | 96 | 19 | MOTOR VEHICLES |            | 00  |                       | 7408.00-  |       |        |         | 675.00-    |
| 81   | 5200 | 11 | 9  | 0 | 51 | 10 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 26.00      |
| 82   | 5200 | 12 | 14 | 0 | 51 | 10 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 61.00      |
| 83   | 5200 | 11 | 25 | 0 | 51 | 20 | VET MEDICINE   |            | 21  | DAIRY COWS GRADE      |           |       |        |         | 5.56       |
| 84   | 6200 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 7.60      | ACR   | 252.83 |         | 1,921.50   |
| 85   | 6200 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 918.50    | ACR   | 252.83 |         | 232,224.27 |
| 86   | 6200 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 22.90     | ACR   | 243.15 |         | 5,568.14   |
| 87   | 6200 |    | 75 | 5 | 99 |    | LAND           |            | 76  | WHEAT                 | 11.00     | ACR   | 243.15 |         | 2,674.65   |



For example, if an expense is transferred from one enterprise to another, an output line is printed charging the expense to the enterprise to which it was transferred. Immediately following, another line is printed crediting income to the second enterprise, the one from which the expense is transferred. If the expense is such that a corresponding TI exists (a code denoting income for the same type of transaction), the income TI is printed on the second line. If no such corresponding TI exists, the units, pounds, and dollars are printed as negatives on the second line to accomplish the appropriate credit.

No option exists for the Transaction Journal data to be sorted by the Retrieval program. The data is stored on the permanent file in order of farm number. Each farm's data is sorted in order of Account, TI, and GD.

Four code combinations may be specified as input to retrieve Transaction Journal data. They are combinations of Account and TI (Part 8 of the input form, shown in Figure 1), Account and Enterprise (Part 9), TI and Enterprise (Part 10), and Account, TI, and Enterprise (Part 11).

#### Record Type 2: Cash Flow Summary

The Cash Flow Summary provides each operator's cash totals for the year for each tax category, or TI. Table III shows a page of sample output from this section. As in every section, the line and farm numbers are printed. The Costfinder codes printed in this section are TI and G, or General. The TI Code Definition is also printed. The data reported by the farmer which is printed in this

TABLE III

SAMPLE OUTPUT FROM CASH FLOW SUMMARY  
(RECORD TYPE 2)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM |      |       |                 |          |            |           |
|--|------|-------|-----------------|----------|------------|-----------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                      |      |       |                 |          |            |           |
| CASH FLOW SUMMARY (RECORD TYPE 2)                    |      |       |                 |          |            |           |
| LINE   | FARM | T I G | CODE DEFINITION | UNITS    | POUNDS     | DOLLARS   |
| 47   | 6700 | 17 0  | GRAIN           |          |            | 22,586.45 |
| 48   | 6700 | 17 6  | GRAIN           | 1213.76  | 72,825.6   | 52,783.91 |
| 49   | 6700 | 17 3  | GRAIN           |          | 168,000.0  | 8,560.00  |
| 50   | 6700 | 17 6  | GRAIN           |          | 1015,982.0 | 70,467.47 |
| 51   | 6800 | 17 6  | GRAIN           | 8582.60  | 514,937.0  | 28,168.89 |
| 52   | 6900 | 17 1  | GRAIN           |          | 52,950.0   | 3,177.00  |
| 53   | 6900 | 17 4  | GRAIN           |          | 35,420.0   | 1,063.80  |
| 54   | 6900 | 17 6  | GRAIN           | 16227.14 | 991,625.0  | 58,888.06 |
| 55   | 6900 | 17 6  | GRAIN           | 13811.88 | 880,408.0  | 63,899.15 |
| 56   | 6900 | 17 1  | GRAIN           | 1867.08  | 89,620.0   | 4,057.99  |
| 57   | 6900 | 17 1  | GRAIN           | 1867.08  | 39,620.0   | 4,057.99  |
| 58   | 6900 | 17 3  | GRAIN           |          | 42,963.0   | 859.26    |
| 59   | 6900 | 17 3  | GRAIN           |          | 42,963.0   | 859.26    |
| 60   | 6900 | 17 6  | GRAIN           | 3274.80  | 196,494.0  | 60,379.54 |
| 61   | 6900 | 17 6  | GRAIN           | 15198.30 | 911,897.6  | 64,179.60 |
| 62   | 0174 | 44 0  | FEED PURCHASED  | 3938.00  | 12,750.0   | 58.04     |
| 63   | 1200 | 44 0  | FEED PURCHASED  |          |            | 412.20    |
| 64   | 1200 | 44 2  | FEED PURCHASED  |          |            | 522.70    |
| 65   | 1200 | 44 3  | FEED PURCHASED  | 17.00    | 34,000.0   | 13,503.20 |
| 66   | 1200 | 44 4  | FEED PURCHASED  |          |            | 52.20     |
| 67   | 1200 | 44 7  | FEED PURCHASED  |          |            | 562.48    |
| 68   | 1200 | 44 8  | FEED PURCHASED  | 130.00   |            | 2,717.30  |
| 69   | 1200 | 44 0  | FEED PURCHASED  |          |            | 3,654.11  |
| 70   | 1200 | 44 7  | FEED PURCHASED  | 334.28   |            | 1,186.69  |
| 71   | 1200 | 44 0  | FEED PURCHASED  |          |            | 153.86    |
| 72   | 1200 | 44 2  | FEED PURCHASED  |          |            | 3.45      |
| 73   | 1700 | 44 0  | FEED PURCHASED  |          |            | 211.72    |
| 74   | 1700 | 44 2  | FEED PURCHASED  | 310.00   |            | 45.90     |
| 75   | 1700 | 44 0  | FEED PURCHASED  |          |            | 70,249.75 |
| 76   | 1700 | 44 7  | FEED PURCHASED  |          |            | 412.26    |
| 77   | 5200 | 44 2  | FEED PURCHASED  |          |            | 32.00     |
| 78   | 5200 | 44 3  | FEED PURCHASED  |          |            | 199.63    |
| 79   | 5200 | 44 5  | FEED PURCHASED  |          |            | 2,880.00  |
| 80   | 5200 | 44 0  | FEED PURCHASED  |          |            | 1,616.10  |
| 81   | 5200 | 44 1  | FEED PURCHASED  |          |            | 55.70     |
| 82   | 5200 | 44 2  | FEED PURCHASED  |          |            | 180.50    |
| 83   | 5200 | 44 3  | FEED PURCHASED  |          | 50,050.0   | 6,002.53  |
| 84   | 5200 | 44 4  | FEED PURCHASED  |          |            | 7,485.01  |
| 85   | 5200 | 44 8  | FEED PURCHASED  |          | 78,280.0   | 2,935.50  |
| 86   | 5200 | 44 0  | FEED PURCHASED  |          |            | 1,420.79  |
| 87   | 5200 | 44 3  | FEED PURCHASED  |          |            | 178.56    |
| 88   | 5200 | 44 4  | FEED PURCHASED  |          |            | 30,959.40 |
| 89   | 5200 | 44 8  | FEED PURCHASED  | 234.14   | 229,220.0  | 18,040.19 |
| 90   | 6200 | 44 0  | FEED PURCHASED  |          | 49,090.0   | 2,905.01  |
| 91   | 6200 | 44 1  | FEED PURCHASED  |          | 100.0      | 2.65      |
| 92   | 6200 | 44 2  | FEED PURCHASED  | 124.00   | 5,367.1    | 491.97    |

section includes the units, pounds, and dollars involved in each transaction.

For years prior to 1974, the Cash Flow data stored does not use the G code. Any output for these years will have the G code equal to zero for each line. In 1974, the revision of the Costfinder Report program provided for the breakdown by G code for certain TI's. Output for years after 1974 will print the G codes for these TI's. The totals for transactions reported without G codes and for TI's not broken down will be printed with zero in the G column.

In some cases more than one total may be printed with the same TI and G codes for one farm. Separate totals are printed for each subfarm which a cooperator reports, for the purpose of keeping separate records for rented land, for each member of a partnership, or for other reasons. The subfarm numbers are not printed, as they have meaning only to the individual cooperator.

The Retrieval program contains an optional sort for Cash Flow data. If the sort is requested, the data will be printed in ascending order of TI codes. Within each TI, the data will be in farm number order, and in order of the G code within farm number. If the sort is not requested, farm number will be the primary sort, followed by TI and G.

TI is the specifying input code for Cash Flow data. These codes are to be listed in Part 6 of the input form.

### Record Type 3: Credit Summary

The Credit Summary provides information on credit transactions reported by each cooperator. Table IV shows a page of sample output

TABLE IV

SAMPLE OUTPUT FROM CREDIT SUMMARY (RECORD TYPE 3)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM                          |      |       |         |           |            |             |
|---|------|-------|---------|-----------|------------|-------------|
| SAMPLE DATA FOR OUTPUT EXAMPLES   |      |       |         |           |            |             |
| CREDIT SUMMARY (RECORD TYPE 3)  |      |       |         |           |            |             |
| TIS 02, 04, 05, 07, 08, 10, 40-59, 70-79, 90-99 ARE LOANS OR ACCOUNTS PAYABLE |      |       |         |           |            |             |
| TIS 01, 03, 06, 11-39, 60-69, 80-89 ARE ACCOUNTS RECEIVABLE                   |      |       |         |           |            |             |
| LINE  | FARM | MO DY | A T I G | NET UNITS | NET POUNDS | NET DOLLARS |
| 881   | 6900 | 7 17  | 1 02    |           |            | 19.77       |
| 882   | 6900 | 7 15  | 1 02    |           |            | 121.75      |
| 883   | 6900 | 7 11  | 1 02    |           |            | 170.32      |
| 884   | 6900 | 11 18 | 1 02    |           |            | 15,000.00   |
| 885   | 6900 | 11 9  | 1 02    |           |            | 215.26      |
| 886   | 6900 | 11 1  | 1 02    |           |            | 2,224.47    |
| 887   | 6900 | 11 1  | 1 02    |           |            | 850.00      |
| 888   | 6900 | 11 1  | 1 02    |           |            | 850.00      |
| 889   | 6900 | 9 16  | 1 02    |           |            | 925.00      |
| 890   | 6900 | 9 25  | 1 02    |           |            | 10,000.00   |
| 891   | 6900 | 9 21  | 1 02    |           |            | 1,155.00    |
| 892   | 6900 | 10 25 | 1 02    |           |            | 204.95      |
| 893   | 6900 | 10 23 | 1 02    |           |            | 600.00      |
| 894   | 6900 | 10 17 | 1 02    |           |            | 195.00      |
| 895   | 6900 | 10 10 | 1 02    |           |            | 3,794.67    |
| 896   | 6900 | 10 4  | 1 02    |           |            | 159.00      |
| 897   | 6900 | 10 3  | 1 02    |           |            | 7,155.36    |
| 898   | 6900 | 10 3  | 1 02    |           |            | 1,550.00    |
| 899   | 6900 | 9 26  | 1 02    |           |            | 12.52       |
| 900   | 6900 | 9 16  | 1 02    |           |            | 32.05       |
| 901   | 6900 | 9 12  | 1 02    |           |            | 599.50      |
| 902   | 6900 | 9 7   | 1 02    |           |            | 500.00      |
| 903   | 6900 | 9 6   | 1 02    |           |            | 598.63      |
| 904   | 6900 | 9 6   | 1 02    |           |            | 184.36      |
| 905   | 6900 | 9 3   | 1 02    |           |            | 1,000.00    |
| 906   | 6900 | 8 19  | 1 02    |           |            | 600.00      |
| 907   | 6900 | 8 5   | 1 02    |           |            | 1,046.87    |
| 908   | 6900 | 8 1   | 1 02    |           |            | 400.00      |
| 909   | 6900 | 7 31  | 1 02    |           |            | 224.70      |
| 910   | 6900 | 7 30  | 1 02    |           |            | 109.85      |
| 911   | 6900 | 7 29  | 1 02    |           |            | 67.95       |
| 912   | 6900 | 7 29  | 1 02    |           |            | 614.25      |
| 913   | 6900 | 7 29  | 1 02    |           |            | 5,000.00    |
| 914   | 6900 | 7 29  | 1 02    |           |            | 150.00      |
| 915   | 6900 | 7 26  | 1 02    |           |            | 1,000.00    |
| 916   | 6900 | 9 4   | 2 02    |           |            | 300.00      |
| 917   | 6900 | 6 3   | 2 02    |           |            | 700.00      |
| 918   | 6200 | 11 1  | 1 17 6  | 92.00     | 5,520.0    | 361.14      |
| 919   | 0174 | 6 5   | 1 44    | 27.00     | 198.0      | 4.36        |
| 920   | 0174 | 5 23  | 1 44    | 28.00     | 197.0      | 8.64        |
| 921   | 0174 | 5 23  | 1 44    | 28.00     | 34.0       | .50         |
| 922   | 0174 | 5 23  | 1 44    | 26.00     | 94.0       | .46         |
| 923   | 0174 | 5 22  | 1 44    | 25.00     | 94.0       | .42         |
| 924   | 1700 | 12 26 | 1 44    |           |            | 1.74        |

from this section. The month and day of each transaction is listed, along with the Account, TI, and G codes. Accounts 1 and 2 are used in this section, 1 indicating a charged transaction, and 2 a payment on account. The TI code is used, by means of the information listed in the page heading, to determine if the transaction involves an account payable or receivable. The units, pounds, and dollars reported for each transaction are also listed.

There are several possible reasons for negative entries in this section. A discount given for prompt payment will be reported as a negative charge (account equal to 1). Other negative entries may appear as corrections, an exact reproduction of a previous line (with the exception of the negative signs) used to offset a transaction which for some reason is incorrect. Negative entries with Account equal to 2 are considered overpayments on the particular account, whether caused by a reporting error (such as failing to report the charged transaction which was paid off) or by an actual overpayment.

The sorting option also exists for Credit Summary data. The order in which the sorts are performed is TI, farm number, and Account. The unsorted order is farm number, TI, and Account.

As is the case with Cash Flow data, the TI code is used to specify the Credit Summary data to be retrieved. Part 6 of the input form is used to specify these codes.

Record Type 4: Loan, Account Payable,  
and Account Receivable Summary

The Loan, Account Payable, and Account Receivable Summary provides a farm unit's credit position at each credit institution at which it

TABLE V

SAMPLE OUTPUT FROM LOAN, ACCOUNT PAYABLE, AND ACCOUNT RECEIVABLE  
SUMMARY (RECORD TYPE 4)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM                  |      |                          |                           |                  |                    |               |  |
|---|------|--------------------------|---------------------------|------------------|--------------------|---------------|--|
| SAMPLE DATA FOR OUTPUT EXAMPLES                                       |      |                          |                           |                  |                    |               |  |
| LOAN, ACCOUNT PAYABLE, AND ACCOUNT RECEIVABLE SUMMARY (RECORD TYPE 4) |      |                          |                           |                  |                    |               |  |
| EACH LINE REPRESENTS A CREDIT INSTITUTION FOR THE RESPECTIVE FARM     |      |                          |                           |                  |                    |               |  |
| LINE  | FARM | PAYABLE OR<br>RECEIVABLE | BEGINNING<br>YEAR BALANCE | ACCOUNT<br>TOTAL | CURRENT<br>BALANCE | INTEREST PAID |  |
| 89  | 6700 | RECEIVABLE               | 434.00                    | 954.00           | 695.00             |               |  |
| 90  | 6700 | RECEIVABLE               |                           | 200.00           | 200.00             |               |  |
| 91  | 6700 | RECEIVABLE               | 1,600.00                  | 200.00           | 1,800.00           |               |  |
| 92  | 6700 | RECEIVABLE               |                           | 60,000.00        | 30,000.00          |               |  |
| 93  | 6700 | RECEIVABLE               |                           | 68,031.50        | 10,000.00          |               |  |
| 94  | 6800 | RECEIVABLE               | 18.09                     | 32.20            |                    |               |  |
| 95  | 6800 | RECEIVABLE               | 12.94                     |                  |                    |               |  |
| 96  | 6800 | RECEIVABLE               | 1,050.00                  |                  |                    |               |  |
| 97  | 6800 | RECEIVABLE               | 3,840.00                  | 630.00           |                    |               |  |
| 98  | 6800 | RECEIVABLE               | 88.35                     |                  |                    |               |  |
| 99  | 6800 | RECEIVABLE               | 120.00                    |                  |                    |               |  |
| 100   | 6800 | RECEIVABLE               | 194.19                    |                  |                    |               |  |
| 101   | 6800 | RECEIVABLE               |                           | 28.89            |                    |               |  |
| 102   | 6800 | RECEIVABLE               |                           | 382.48           |                    |               |  |
| 103   | 6800 | RECEIVABLE               |                           | 41.78            |                    |               |  |
| 104   | 6800 | RECEIVABLE               | 7,661.62                  | 49,869.14        | 55,853.56          |               |  |
| 105   | 6800 | RECEIVABLE               | 22.79                     |                  |                    |               |  |
| 106   | 6800 | RECEIVABLE               | 32.00                     |                  |                    |               |  |
| 107   | 6800 | RECEIVABLE               | 13.80                     |                  |                    |               |  |
| 108   | 6800 | RECEIVABLE               | 1,350.00                  |                  |                    |               |  |
| 109   | 6800 | RECEIVABLE               | 1,000.00                  |                  |                    |               |  |
| 110   | 6800 | RECEIVABLE               | 200.00                    |                  |                    |               |  |
| 111   | 6900 | RECEIVABLE               |                           | 1,525.00         |                    |               |  |
| 112   | 6900 | RECEIVABLE               | 400.00                    |                  |                    |               |  |
| 113   | 6900 | RECEIVABLE               |                           | 71,000.00        |                    |               |  |
| 114   | 6900 | RECEIVABLE               | 7,759.98                  |                  | 1,221.79           |               |  |
| 115   | 6900 | RECEIVABLE               | 2,890.00                  | 14,805.00        |                    |               |  |
| 116   | 6900 | RECEIVABLE               |                           | 64,415.00        | 53,827.34          |               |  |
| 117   | 6900 | RECEIVABLE               | 6,180.00                  | 3,400.00         |                    |               |  |
| 118   | 6900 | RECEIVABLE               | 510.00                    |                  | 510.00             |               |  |
| 119   | 6900 | RECEIVABLE               | 5,311.10                  |                  |                    |               |  |
| 120   | 6900 | RECEIVABLE               |                           | 1,199.75         | 1,199.75           |               |  |

has an account. The particular credit institution and type of institution (bank, cooperative, etc.) is known only to the cooperator himself. Therefore, as noted in the page heading of the output sample (Table V), it can be ascertained only that each line represents a different institution. The data is separated into accounts payable and accounts receivable, the one applying to a particular line listed in the column headed "PAYABLE OR RECEIVABLE." Four dollar figures are reported for each line; beginning year balance, account total (beginning balance plus year to date charges), current balance (account total minus year to date payments), and interest paid. This section was initiated in 1974 and is not available for years previous.

If the sort is requested for this record type, the data is arranged to print payables first, then receivables. Within these categories, the data is printed in farm number order. If the sort is not requested, farm number is the first sort, payable or receivable the second.

Part 12 of the input form is used to specify data from this section. A 1 should be entered to retrieve accounts payable, 2 for receivables.

#### Record Type 5: Inventory Summary

The Inventory Summary provides beginning and ending inventory dollar values in each of 14 categories. Sample output from this section is shown in Table VI. The category number (under the heading "CAT") and its description are listed on each line. There is the possibility (sometime in the future) that this section will be modified to store values for each TI code. For this reason, the heading "TI" is

TABLE VI

## SAMPLE OUTPUT FROM INVENTORY SUMMARY (RECORD TYPE 5)

## COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM

## SAMPLE DATA FOR OUTPUT EXAMPLES

## INVENTORY SUMMARY (RECORD TYPE 5)

| LINE | FARM | TT CAT | DESCRIPTION | BEG. DOLLARS | END. DOLLARS |
|------|------|--------|-------------|--------------|--------------|
| 1    | 1200 | 4      | BEEF        | 204,242.60   |              |
| 2    | 1700 | 4      | BEEF        | 120,602.38   |              |
| 3    | 5200 | 4      | BEEF        | 5,775.00     |              |
| 4    | 5200 | 4      | BEEF        | 13,200.00    |              |
| 5    | 6200 | 4      | BEEF        | 57,771.35    | 62,987.17    |
| 6    | 6200 | 4      | BEEF        | 63,187.50    |              |
| 7    | 6200 | 4      | BEEF        | 49,369.30    |              |
| 8    | 6200 | 4      | BEEF        | 150,699.70   |              |
| 9    | 6200 | 4      | BEEF        | 49,892.00    | 106,325.31   |
| 10   | 6200 | 4      | BEEF        | 41,600.00    |              |
| 11   | 6300 | 4      | BEEF        | 90,524.25    | 105,125.00   |
| 12   | 6300 | 4      | BEEF        | 5,300.00     | 5,125.00     |
| 13   | 6300 | 4      | BEEF        | 21,082.33    | 15,740.00    |
| 14   | 6500 | 4      | BEEF        | 24,652.95    |              |
| 15   | 6600 | 4      | BEEF        | 23,150.00    |              |
| 16   | 6700 | 4      | BEEF        | 134,352.16   |              |
| 17   | 6800 | 4      | BEEF        | 39,076.81    | 19,751.80    |
| 18   | 6800 | 4      | BEEF        | 64,639.35    |              |
| 19   | 6900 | 4      | BEEF        | 40,260.00    | 25,084.00    |
| 20   | 6900 | 4      | BEEF        | 58,137.53    |              |
| 21   | 6900 | 4      | BEEF        | 34,263.00    | 43,262.50    |
| 22   | 6900 | 4      | BEEF        | 35,965.00    | 41,575.50    |
| 23   | 5200 | 5      | DAIRY       | 66,950.00    |              |
| 24   | 5200 | 5      | DAIRY       | 35,960.00    |              |
| 25   | 6300 | 5      | DAIRY       | 91,225.00    | 97,575.00    |
| 26   | 6300 | 5      | DAIRY       | 77,200.00    | 66,520.00    |
| 27   | 6500 | 5      | DAIRY       | 27,138.00    |              |
| 28   | 1700 | 10     | MACHINERY   |              | 5,584.97     |
| 29   | 6200 | 10     | MACHINERY   |              | 35,399.63    |
| 30   | 6200 | 10     | MACHINERY   |              | 1,415.25     |
| 31   | 6300 | 10     | MACHINERY   |              | 759.81-      |
| 32   | 6300 | 10     | MACHINERY   |              | 7,780.00     |
| 33   | 6300 | 10     | MACHINERY   |              | 11,565.70    |
| 34   | 6300 | 10     | MACHINERY   |              | 8,208.58     |
| 35   | 6700 | 10     | MACHINERY   |              | 11,487.38    |
| 36   | 6800 | 10     | MACHINERY   | 200.00       | 3,525.00     |
| 37   | 6800 | 10     | MACHINERY   |              | 1,000.00     |
| 38   | 6900 | 10     | MACHINERY   |              | 1,000.00-    |
| 39   | 6900 | 10     | MACHINERY   |              | 1,350.50     |
| 40   | 6900 | 10     | MACHINERY   |              | 1,423.00-    |



also printed. The Retrieval program will require no modifications if this Costfinder change is made. This section was initiated in 1974 with the modification of the Report program.

The sort on Inventory Summary data is executed first on the inventory category number, then on farm number. The order is reversed if the sort is not requested.

The inventory categories are also used to specify the data to be printed from this section. Part 15 of the input form is used to list the category numbers desired.

#### Record Type 6: Payroll Summary

The Payroll Summary provides a listing of all wages and withholdings for each employee of a farm unit. As noted in the page heading of the sample output (Table VII) each line provides data for one employee of a farm. There are nine classifications for which dollar values are printed; net cash wages paid, FICA tax withheld, room and board, home and utilities, health insurance, life insurance, workers' compensation, state income tax withheld, and federal income tax withheld. Gross wages paid, the total of the nine figures, is not stored on the Costfinder file.

Since all the data for an employee is printed on one line, and there is no other type of classification, there is no optional sort for data from this section. The data will be printed in farm number order.

The payroll classifications are used to specify data. Classifications not requested will be left blank. The classifications requested should be entered in Part 13 of the input form.

TABLE VII

SAMPLE OUTPUT FROM PAYROLL SUMMARY (RECORD TYPE 6)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM      |      |                        |                      |                 |                     |                     |                   |             |                      |                    |
|---|------|------------------------|----------------------|-----------------|---------------------|---------------------|-------------------|-------------|----------------------|--------------------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                           |      |                        |                      |                 |                     |                     |                   |             |                      |                    |
| PAYROLL SUMMARY (RECORD TYPE 6)                           |      |                        |                      |                 |                     |                     |                   |             |                      |                    |
| EACH LINE REPRESENTS ONE EMPLOYEE FOR THE RESPECTIVE FARM |      |                        |                      |                 |                     |                     |                   |             |                      |                    |
| LINE  | FARM | NET CASH<br>WAGES PAID | FICA TAX<br>WITHHELD | ROOM &<br>BOARD | HOME &<br>UTILITIES | HEALTH<br>INSURANCE | LIFE<br>INSURANCE | WJK<br>COMP | STATE INC<br>TAX W/H | FED INC<br>TAX W/H |
| 45  | 5200 | 339.00                 |                      |                 |                     |                     |                   |             |                      |                    |
| 46  | 5200 | 4,150.72               |                      |                 |                     |                     |                   |             |                      |                    |
| 47  | 5200 | 200.00                 |                      |                 |                     |                     |                   |             |                      |                    |
| 48  | 5200 | 3,076.77               |                      |                 |                     |                     |                   |             |                      |                    |
| 49  | 6200 | 5,086.36               | 316.06               |                 |                     |                     |                   |             |                      |                    |
| 50  | 6200 | 25.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 51  | 6200 | 222.43                 | 13.82                |                 |                     |                     |                   |             |                      |                    |
| 52  | 6200 | 25.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 53  | 6200 | 15.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 54  | 6200 | 97.50                  |                      |                 |                     |                     |                   |             |                      |                    |
| 55  | 6200 | 265.62                 | 16.63                |                 |                     |                     |                   |             |                      |                    |
| 56  | 6200 | 8.00                   |                      |                 |                     |                     |                   |             |                      |                    |
| 57  | 6200 | 34.75                  |                      |                 |                     |                     |                   |             |                      |                    |
| 58  | 6200 | 20.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 59  | 6200 | 500.19                 | 34.81                |                 |                     |                     |                   |             |                      |                    |
| 60  | 6200 | 1,033.59               | 64.59                |                 |                     |                     |                   |             |                      |                    |
| 61  | 6200 | 25.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 62  | 6200 | 187.11                 | 9.14                 |                 |                     |                     |                   |             |                      |                    |
| 63  | 6200 | 121.25                 |                      |                 |                     |                     |                   |             |                      |                    |
| 64  | 6200 | 10.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 65  | 6200 | 363.89                 |                      |                 |                     |                     |                   |             |                      |                    |
| 66  | 6200 | 9,513.89               | 573.61               |                 |                     |                     |                   |             |                      |                    |
| 67  | 6200 | 5,699.40               | 325.40               |                 |                     |                     |                   |             |                      |                    |
| 68  | 6200 | 555.29                 | 29.52                |                 |                     |                     |                   |             |                      |                    |
| 69  | 6200 | 20.21                  | 1.24                 |                 |                     |                     |                   |             |                      |                    |
| 70  | 6200 | 82.25                  | 2.51                 |                 |                     |                     |                   |             |                      |                    |
| 71  | 6200 | 45.29                  | 2.81                 |                 |                     |                     |                   |             |                      |                    |
| 72  | 6200 | 271.30                 | 16.70                |                 |                     |                     |                   |             |                      |                    |
| 73  | 6200 | 243.47                 | 15.03                |                 |                     |                     |                   |             |                      |                    |
| 74  | 6200 | 27.37                  | 1.68                 |                 |                     |                     |                   |             |                      |                    |
| 75  | 6200 | 2,820.15               | 1.36                 |                 |                     |                     |                   |             |                      |                    |
| 76  | 6200 | 4,300.00               |                      |                 |                     |                     |                   |             |                      |                    |
| 77  | 6200 | 1,500.00               |                      |                 |                     |                     |                   |             |                      |                    |
| 78  | 6200 | 4,608.17               | 280.06               |                 |                     |                     |                   |             |                      |                    |
| 79  | 6200 | 4,619.94               | 282.09               |                 |                     |                     |                   |             |                      |                    |
| 80  | 6200 | 1,728.02               | 100.23               |                 |                     |                     |                   |             |                      |                    |
| 81  | 6200 | 744.30                 | 40.32                |                 |                     |                     |                   |             |                      |                    |
| 82  | 6200 | 1,179.51               | 52.99                |                 |                     |                     |                   |             |                      |                    |
| 83  | 6200 | 264.58                 | 12.42                |                 |                     |                     |                   |             |                      |                    |
| 84  | 6200 | 65.00                  |                      |                 |                     |                     |                   |             |                      |                    |
| 85  | 6200 | 961.78                 | 144.98               |                 |                     |                     |                   |             | 8.67                 | 46.80              |
| 86  | 6200 | 4,879.43               | 294.00               |                 |                     |                     |                   |             | 7.57                 | 144.80             |
| 87  | 6200 | 1,403.56               | 51.20                |                 |                     |                     |                   |             | .51                  | 11.70              |
| 88  | 6200 | 6,770.24               | 333.55               |                 |                     |                     |                   |             | 12.23                | 106.70             |

### Record Type 7: Livestock Numbers Summary

The Livestock Numbers Summary provides information on the number of head of livestock on hand by type of livestock. The number of head of each different type of livestock is reported for six categories; beginning inventory, purchases, births, weanings, sales, and deaths. The types of livestock for which this information is reported are: beef, dairy, sheep, swine, other livestock, and poultry. One line is printed for each category, with all types of livestock included on that line for a particular farm. Duplicate category lines for one farm may be generated by reporting of subfarms, which are explained on page 18. The category name is printed for each line. This section is one of the three initiated in 1974. Sample output is shown in Table VIII.

If the optional sort is requested, the categories are printed in the order listed in the previous paragraph. Within categories, the data is sorted on farm number. If the sort is not requested, farm number is the primary sort, within which the data is sorted by category.

Part 14 of the input form is used to specify Livestock Numbers data. One line should be completed for each livestock type requested, entering the code for livestock type, followed by the category numbers requested.

### Record Type 8: Enterprise Summary

The Enterprise Summary provides information on income and expense for each enterprise, with totals for each tax category, or TI. Sample output is shown in Table IX. A separate page is printed for each

TABLE VIII

## SAMPLE OUTPUT FROM LIVESTOCK NUMBERS SUMMARY (RECORD TYPE 7)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM |      |           |        |        |       |                   |        |
|--|------|-----------|--------|--------|-------|-------------------|--------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                      |      |           |        |        |       |                   |        |
| LIVESTOCK NUMBERS SUMMARY (RECORD TYPE 7)            |      |           |        |        |       |                   |        |
| LINE   | FARM | CATEGORY  | BEEF   | DAIRY  | SHEEP | SWINE OTHER LVSTK | PULTRY |
| 1  | 0174 | SALES     | 293.00 | 26.00  |       |                   |        |
| 2  | 1200 | PURCHASED | 49.00  |        |       |                   |        |
| 3  | 1200 | PURCHASED | 9.00   |        |       |                   |        |
| 4  | 1200 | PURCHASED | 89.00  |        |       |                   |        |
| 5  | 1200 | SALES     | 14.00  |        |       |                   |        |
| 6  | 1700 | PURCHASED | 21.00  |        |       |                   |        |
| 7  | 1700 | PURCHASED | 473.00 |        |       |                   |        |
| 8  | 1700 | SALES     | 857.00 |        |       |                   |        |
| 9  | 5200 | SALES     | 7.00   |        |       |                   |        |
| 10   | 5200 | PURCHASED | 1.00   |        |       |                   |        |
| 11   | 5200 | SALES     | 14.00  | 86.00  |       |                   |        |
| 12   | 5200 | SALES     | 53.00  |        |       |                   |        |
| 13   | 5200 | BIRTHS    |        | 87.00  |       |                   |        |
| 14   | 5200 | SALES     |        | 49.00  |       |                   |        |
| 15   | 6200 | PURCHASED | 443.00 |        |       |                   |        |
| 16   | 6200 | SALES     | 220.50 |        |       |                   |        |
| 17   | 6200 | DEATHS    | 3.00   |        |       |                   |        |
| 18   | 6200 | PURCHASED | 57.00  |        |       |                   |        |
| 19   | 6200 | BIRTHS    | 129.00 |        |       |                   |        |
| 20   | 6200 | SALES     | 141.00 |        |       |                   |        |
| 21   | 6200 | DEATHS    | 12.00  |        |       |                   |        |
| 22   | 6200 | SALES     | 132.00 |        |       |                   |        |
| 23   | 6200 | SALES     | 447.00 |        |       |                   |        |
| 24   | 6200 | PURCHASED | 120.00 |        |       |                   |        |
| 25   | 6200 | BIRTHS    | 195.00 |        |       |                   |        |
| 26   | 6200 | SALES     | 23.00  |        |       |                   |        |
| 27   | 6200 | DEATHS    | 39.00  |        |       |                   |        |
| 28   | 6200 | SALES     | 2.00   |        |       |                   |        |
| 29   | 6300 | PURCHASED |        | 1.00   |       |                   |        |
| 30   | 6300 | BIRTHS    |        | 185.00 |       |                   |        |
| 31   | 6300 | SALES     |        | 71.00  |       |                   |        |
| 32   | 6300 | DEATHS    |        | 63.00  |       |                   |        |
| 33   | 6300 | PURCHASED | 8.00   |        |       |                   |        |
| 34   | 6300 | BIRTHS    | 147.00 |        |       |                   |        |
| 35   | 6300 | SALES     | 82.00  |        |       |                   |        |
| 36   | 6300 | DEATHS    | 15.00  | 1.00   |       |                   |        |
| 37   | 6300 | PURCHASED | 1.00   | 1.00   |       |                   |        |
| 38   | 6300 | SALES     |        | 33.00  |       |                   |        |
| 39   | 6300 | DEATHS    |        | 7.00   |       |                   |        |
| 40   | 6300 | PURCHASED | 9.00   |        |       |                   |        |
| 41   | 6300 | BIRTHS    | 71.00  |        |       |                   |        |
| 42   | 6300 | BIRTHS    | 16.00  |        |       |                   |        |
| 43   | 6300 | SALES     | 92.50  |        |       |                   |        |
| 44   | 6300 | DEATHS    | 17.00  |        |       |                   |        |
| 45   | 6300 | PURCHASED | 1.00   |        |       |                   |        |
| 46   | 6300 | BIRTHS    | 120.00 |        |       |                   |        |

TABLE IX

## SAMPLE OUTPUT FROM ENTERPRISE SUMMARY (RECORD TYPE 8)

| COSTFINDER DATA RETRIEVAL SYSTEM - RETRIEVAL PROGRAM |      |   |    |                 |         |            |           |
|--|------|---|----|-----------------|---------|------------|-----------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                      |      |   |    |                 |         |            |           |
| ENTERPRISE SUMMARY (RECORD TYPE 8)                   |      |   |    |                 |         |            |           |
| WHEAT ( 76 )   |      |   |    |                 |         |            |           |
| LINE   | FARM | A | TI | CODE DEFINITION | UN. TS  | POUNDS     | DOLLARS   |
| 94   | 6500 | 0 | 45 | SEEDS & PLANTS  | 52.00   | 4,500.0    | 407.35    |
| 95   | 6500 | 0 | 45 | SEEDS & PLANTS  |         |            | 215.00    |
| 96   | 6700 | 0 | 45 | SEEDS & PLANTS  | 201.33  | 27,080.0   | 1,550.07  |
| 97   | 6800 | 0 | 45 | SEEDS & PLANTS  | 530.83  | 9,560.0    | 1,146.08  |
| 98   | 6900 | 0 | 45 | SEEDS & PLANTS  |         | 609.0      | 176.20    |
| 99   | 6900 | 0 | 45 | SEEDS & PLANTS  |         |            | 579.19    |
| 100  | 6900 | 0 | 45 | SEEDS & PLANTS  |         |            | 1,271.06  |
| 101  | 1200 | 0 | 46 | FERTILIZER-LIME |         |            | 3,456.41  |
| 102  | 1200 | 0 | 46 | FERTILIZER-LIME | 13.18   | 26,360.0   | 3,209.58  |
| 103  | 1700 | 0 | 46 | FERTILIZER-LIME |         |            | 1,840.69  |
| 104  | 1700 | 0 | 46 | FERTILIZER-LIME |         |            | 1,840.69  |
| 105  | 6200 | 0 | 46 | FERTILIZER-LIME | 524.40  | 103,212.0  | 11,338.92 |
| 106  | 6200 | 0 | 46 | FERTILIZER-LIME |         |            | 3,000.00  |
| 107  | 6200 | 0 | 46 | FERTILIZER-LIME | 86.25   | 375,240.0  | 30,163.50 |
| 108  | 6200 | 0 | 46 | FERTILIZER-LIME | 36.00   | 71,530.0   | 9,570.99  |
| 109  | 6200 | 0 | 46 | FERTILIZER-LIME |         |            | 22,025.21 |
| 110  | 6300 | 0 | 46 | FERTILIZER-LIME | 93.00   |            | 5,423.57  |
| 111  | 6500 | 0 | 46 | FERTILIZER-LIME |         |            | 3,788.26  |
| 112  | 6700 | 0 | 46 | FERTILIZER-LIME |         | 14,820.0   | 1,396.61  |
| 113  | 6800 | 0 | 46 | FERTILIZER-LIME | 8170.00 | 2,000.0    | 1,051.95  |
| 114  | 6900 | 0 | 46 | FERTILIZER-LIME | 281.00  | 47,110.0   | 6,041.32  |
| 115  | 6900 | 0 | 46 | FERTILIZER-LIME | 164.60  | 430,160.0  | 26,769.18 |
| 116  | 6900 | 0 | 46 | FERTILIZER-LIME | 17.00   | 112,375.0  | 21,125.37 |
| 117  | 1200 | 0 | 47 | MACHINE HIRE    | 1975.00 |            | 1,864.13  |
| 118  | 5200 | 0 | 47 | MACHINE HIRE    | 867.60  | 1052,480.0 | 6,226.47  |
| 119  | 6200 | 0 | 47 | MACHINE HIRE    | 375.00  |            | 4,486.06  |
| 120  | 6200 | 0 | 47 | MACHINE HIRE    |         |            | 15,380.00 |
| 121  | 6200 | 0 | 47 | MACHINE HIRE    | 272.00  |            | 3,570.00  |
| 122  | 6200 | 0 | 47 | MACHINE HIRE    |         |            | 12,868.20 |
| 123  | 6300 | 0 | 47 | MACHINE HIRE    | 90.00   |            | 720.00    |
| 124  | 6300 | 0 | 47 | MACHINE HIRE    | 101.00  | 103,020.0  | 1,303.83  |
| 125  | 6500 | 0 | 47 | MACHINE HIRE    | 850.00  |            | 1,349.13  |
| 126  | 6700 | 0 | 47 | MACHINE HIRE    |         |            | 1,309.55  |
| 127  | 6800 | 0 | 47 | MACHINE HIRE    | 501.67  |            | 3,536.10  |
| 128  | 6900 | 0 | 47 | MACHINE HIRE    | 603.50  |            | 6,583.00  |
| 129  | 6900 | 0 | 47 | MACHINE HIRE    | 814.30  |            | 21,323.23 |
| 130  | 6900 | 0 | 47 | MACHINE HIRE    |         |            | 11,945.48 |
| 131  | 6200 | 0 | 48 | SUPPLIES        |         |            | 16.10     |
| 132  | 6200 | 0 | 48 | SUPPLIES        |         |            | 54.25     |
| 133  | 6300 | 0 | 48 | SUPPLIES        |         |            | 146.70    |
| 134  | 6700 | 0 | 48 | SUPPLIES        |         |            | 169.67    |
| 135  | 6800 | 0 | 48 | SUPPLIES        | 22.00   |            | 773.76    |
| 136  | 6900 | 0 | 48 | SUPPLIES        |         |            | 269.80    |
| 137  | 6900 | 0 | 48 | SUPPLIES        | 3.00    |            | 474.97    |

enterprise, with the enterprise number and definition listed in the page heading. The Account and TI codes, the TI Code Definition, and the units, pounds, and dollars reported for each line are also printed.

Beginning in 1974, a figure for beginning operating inventory is stored for each enterprise. The total beginning inventories of raised products, supplies, items purchased for resale, and depreciable livestock and vehicles are summed to comprise this figure. The Retrieval program will print this inventory value with Account equal to 5, TI equal to 09, and Code Definition "BEG. INVENTORY."

Data with Accounts 7, 8, and 9 are also stored in this section. These Accounts indicate, respectively, births, weanings, and deaths for livestock enterprises and planting, harvest, and casualty losses for crop enterprises. For these figures, the appropriate definition, such as "CROP PLANTINGS" will be printed, rather than the normal TI definition, simply indicating grain.

The sorting option also applies for Enterprise Summary data. If the sort is requested, Enterprise is the code upon which the primary sort is executed, followed by TI and farm number. The data is in order of farm number, Enterprise, the TI if the sort is not requested. Since a new page is begun each time a new enterprise is encountered, failure to specify the sort option will result in a page of output being printed for each enterprise of each farm, rather than simply a new page for each enterprise.

Data from the Enterprise Summary can be specified from either or both of two parts of the input form, Parts 7 and 10. Part 7 allows the listing of Enterprise codes for which all data is to be printed.

Part 10 is used to list combinations of TI and Enterprise for which data is retrieved.

### Card Input

Card input for the Retrieval program is prepared from information coded on the retrieval input form (Figure 1). The input form is divided into four sections. Section I is used to specify user information and the year for which data files are to be read. Sections II through IV deal directly with determining which records will be selected from the files. These three sections contain a total of 15 parts. At least one part of each section must be completed for output to be obtained. Figure 1 contains the completed input form which was used to generate the output examples (Tables II through IX) shown in this chapter.

#### Section I: Title

The first line of input allows the user to input 76 characters of identifying information. The second line is used to specify the year for which data is requested. The year is used to determine which of the Costfinder input files are to be loaded for processing. To facilitate output readability, user provided identifying information and the data year are printed as a heading on each page of output. As shown in Figure 1, "SAMPLE DATA FOR OUTPUT EXAMPLES" is entered as the title. On the next line, it is shown that data files for 1974 are to be used as input to the program.

COSTFINDER DATA RETRIEVAL SYSTEM  
RETRIEVAL INPUT

SECTION I  
TITLE

SAMPLE DATA FOR OUTPUT EXAMPLES

---

DATA YEAR  
1974

---

SECTION II

PART 1: RECORD TYPES

1; 1; 2; 3; 4; 5; 6; 7; 8

PART 2: RECORD TYPES TO BE SORTED (TYPES 1 AND 6 ARE NEVER SORTED)

2; 2; 3; 4; 5; 8; \_\_\_\_\_

SECTION III

PART 3: AREAS

3; 6; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

PART 4: COUNTIES

4; 12; 17; 52; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

4; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

PART 5: FARMS

5; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

5; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_

Figure 1. Completed Retrieval Input Form



SECTION IV

PART 6: TI (RECORD TYPES 2 AND 3)

6; 02 ; 44 ; 17 ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_

6; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_

PART 7: ENTERPRISE (RECORD TYPE 8)

7; 76 ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_

7; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_ ; \_

PART 8: ACCOUNT/TI (RECORD TYPE 1)

8; 3/96 ; 3/97 ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; /

8; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; /

PART 9: ACCOUNT/ENTERPRISE (RECORD TYPE 1)

9; 7/10 ; 9/10 ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; /

9; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; / ; /

PART 10: TI/ENTERPRISE (RECORD TYPES 1 AND 8)

10; 51/21 ; /

10; / ; /

Figure 1. (Continued)

PART 11: ACCOUNT/TI/ENTERPRISE (RECORD TYPE 1)

11; 5/99/ 76; 4/ 17/ 77; 4/ 44/ 40; / / ; / / ; / / ; / / ; / / ;

/ / ; / / ; / / ; / / ; / / ; / / ; / / ;

11; / / ; / / ; / / ; / / ; / / ; / / ; / / ; / / ;

/ / ; / / ; / / ; / / ; / / ; / / ; / / ;

PART 12: ACCOUNTS PAYABLE AND RECEIVABLE (RECORD TYPE 4)

12; 2; \_\_\_

PART 13: PAYROLL CLASSIFICATIONS (RECORD TYPE 6)

13; 1; 2; 8; 9; \_\_\_; \_\_\_; \_\_\_; \_\_\_

PART 14: LIVESTOCK SUMMARY CODES (RECORD TYPE 7)

14; 1 2; 3; 5; 6; \_\_\_; \_\_\_

14; 2 2; 3; 5; 6; \_\_\_; \_\_\_

14; \_\_\_ \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_

PART 15: INVENTORY CATEGORIES (RECORD TYPE 5)

15; 04; 05; 10; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_; \_\_\_

Figure 1. (Continued)

## Section II: Record Types

Part 1. This part must be completed. The numbers of the record types to be read and checked for the code and farm specifications in Sections III and IV are entered.

Part 2. As noted earlier, the program includes an optional sort for data from all record types except Types 1 and 6. In this part, the numbers of the record types for which the sort is requested are entered in the same manner as in Part 1. The record type codes used in Parts 1 and 2 are listed in Table XXII of the Appendix.

Section II of the completed input form (Figure 1) indicates that all record types are selected (Part 1). Part 2 shows that Record Types 2, 3, 4, 5, and 8 are chosen to be sorted. Of the record types for which the sort is available, only Type 7 is not sorted.

## Section III: Farm Identification

Information listed in this section determines the farms for which data is checked for the codes specified in Section IV. One of the three parts in this section must be completed to obtain output. All three parts may be completed, if needed.

Part 3. The area numbers for which data is examined are listed here. The area is indicated by the first digit of the farm number.

Part 4. The county numbers to be selected are listed in this part. The county is designated by the first two digits of the farm number. Figure 5 of the Appendix, an Oklahoma map, shows the numbers of all counties (to be used in Part 4). The area number (used in Part 3) is indicated by the first digit of the county number.

Part 5. The numbers of individual farms for which records are to be examined are listed in Part 5. These farm numbers must be listed in ascending order. Information on specific farm numbers, such as the specific numbers of beef farms, to be used in sampling, must be obtained from the central Costfinder office. It is emphasized that, though farm numbers are made available for research purposes, these farm numbers are not to be published in any way such that data may be attributed to a particular farm.

Section III of the completed input form (Figure 1) lists the following input information: in Part 3, Area 6 (southwest Oklahoma) is selected. In Part 4, Counties 12, 17, and 52 (Texas, Woodward, and Wagoner counties, respectively, are listed. In Part 5, Farm Number 0174 (a hypothetical test farm) is entered. Data from farms having these numbers are examined for code specifications from Section IV.

#### Section IV: Code Specification

The codes entered in this section are the final criteria used to determine if a particular record is printed and stored for further processing. Parts 6 through 11 are used to list individual, or combinations of, the basic Costfinder codes (Account, Transaction-Item,<sup>2</sup> and Enterprise). Parts 12 through 15 are used to list special codes which catalogue the data on file, and are not a part of the basic code structure used for reporting by the cooperators. Again, completion of at least one part of this section is required to obtain data.

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<sup>2</sup>Hereafter referred to as TI.

Part 6. This part is used to list TI codes to be selected. The listed TI's are checked against the TI's of records in the Cash Flow and Credit Summaries (Record Types 2 and 3).

Part 7. Enterprise codes are listed in this part. All Enterprise Summary data (Record Type 8) having enterprise numbers listed here will be printed.

Part 8. This part is used for the recording of combinations of Account and TI. Data from the Transaction Journal (Record Type 1) is checked for the codes listed here.

Part 9. The same format as in Part 8 applies in Part 9, used to list combinations of Account and Enterprise. Records are taken from the Transaction Journal for the code combinations listed.

Part 10. Data from two record types can be accessed with the codes listed in Part 10, combinations of TI and Enterprise. The Transaction Journal and Enterprise Summary, Record Types 1 and 8, are checked for these combinations.

Part 11. Combinations of all three basic codes, Account, TI, and Enterprise are entered here. This is the most specific breakdown of codes available in the retrieval system, and is used in examining data from the Transaction Journal.

The lists of Account, TI, and Enterprise codes used in Parts 6 through 11 are found in the Appendix; Accounts in Table XXIII, TI's in Table XXIV, and Enterprises in Table XXV.

The first digit of the TI and Enterprise codes represents a broad classification. For example, TI = 44 represents feed purchased; the first digit, 4, represents a current farm production expense. Enterprise = 21 denotes grade dairy cows; all Enterprises beginning with 2

denote some type of dairy operation. Therefore, input data for the retrieval program specifying the second digit of TI or Enterprise as 0 effects the program to print all records having the same first digit as is coded, regardless of the second digit stored for the record on file. The only exception to this feature is for TI's and Enterprises where the first digit is also zero.

The following input information is listed in Parts 6 through 11 of Figure 1:

Part 6: TI's 02, 44, and 17 (records for loans received, feed purchased, and raised grains sold) are selected from the Cash Flow and Credit Summaries (Record Types 2 and 3).

Part 7: Data from the Enterprise Summary (Record Type 8) for wheat (76) enterprises are selected.

Part 8: Data with Account 3 and TI's 96 and 97 (trades of motor vehicles and machinery and equipment) are selected from the Transaction Journal (Record Type 1).

Part 9: Accounts 7 and 9 for all Enterprises between 10 and 19 (births and deaths of animals assigned to all beef enterprises) are selected from the Transaction Journal.

Part 10: Records with TI 51 and Enterprise 21 (veterinary medicine expense for grade dairy cows) are selected from the Transaction Journal and Enterprise Summary.

Part 11: Combinations of Account 5, TI 99, and Enterprise 76 (inventory of land assigned to wheat enterprises), Account 4, TI 17, and Enterprise 72 (internal transfer of raised grain income to corn enterprises) and Account 4, TI 44, and Enterprises 40-49 (internal transfer of feed expense to all swine enterprises)

are selected from the Transaction Journal.

The remaining parts (12 through 15) are used to specify codes which are not a part of the basic code structure.

Part 12. Information coded on this line obtains data from the Loan, Account Payable, and Account Receivable Summary (Record Type 4). This data is divided into two groups; (1) loans and accounts payable, and (2) accounts receivable. The numbers in parentheses are the codes used to access the data.

As shown in Part 12 of Figure 1, a 2 is coded, indicating selection of accounts receivable.

Part 13. Records from the Payroll Summary (Record Type 6) are printed by completion of this line. There are nine classifications of data in this summary, the codes for which are found in Table XXVI of the Appendix.

Part 13 of Figure 1 shows the codes entered for classifications 1, 2, 8, and 9. Data is printed for net cash wages paid, FICA tax withheld, state income tax withheld, and federal income tax withheld.

Part 14. This part is used to access the data for the Livestock Numbers Summary (Record Type 7). The first blank line in this part is filled in with the livestock specie code for which information is requested. The remaining blanks are filled in with one or more of the six codes for this information. The specie codes and information codes are listed in Table XXVII in the Appendix.

Information coded in Part 14 of Figure 1 indicates that records are printed for purchases, births, sales, and deaths (the codes 2, 3, 5, and 6 on each line) of beef and dairy cattle (1 and 2 coded on the first blank of each line).

Part 15. Records from the Inventory Summary (Record Type 5) are selected using the information entered here. Beginning and ending inventory dollar values are on file for 14 general categories, the codes for which are listed in Table XXVIII of the Appendix.

In Part 15 of Figure 1, the codes 04, 05, and 10 are entered. This indicates selection of inventory values for beef, dairy, and machinery, respectively.

#### Operation of the Retrieval Program

The discussion of the computer model will be presented in the same sequence as the operations are performed within the program. A flow chart of the program which indicates the major components and operations is presented in Figure 2. All references to sections or parts relate to the input form (Figure 1).

The first step taken by the retrieval program is reading and storing the card input data. When a card is read in, control is transferred to one of 15 blocks of statements, the correct block for a particular card determined by the part number (from the input form). Each block will transfer the card data to the storage table for that part.

When all input data has been stored, the Balance Forward file is opened. This file is read one record at a time, with three checks being made to determine if the record has been requested by the user: (1) if the record type was specified in Section II, (2) if the area, county, or farm number was specified in Section III, and (3) if the applicable code or codes for that record type were specified in Section IV. If any check is negative, another record is read from the file.



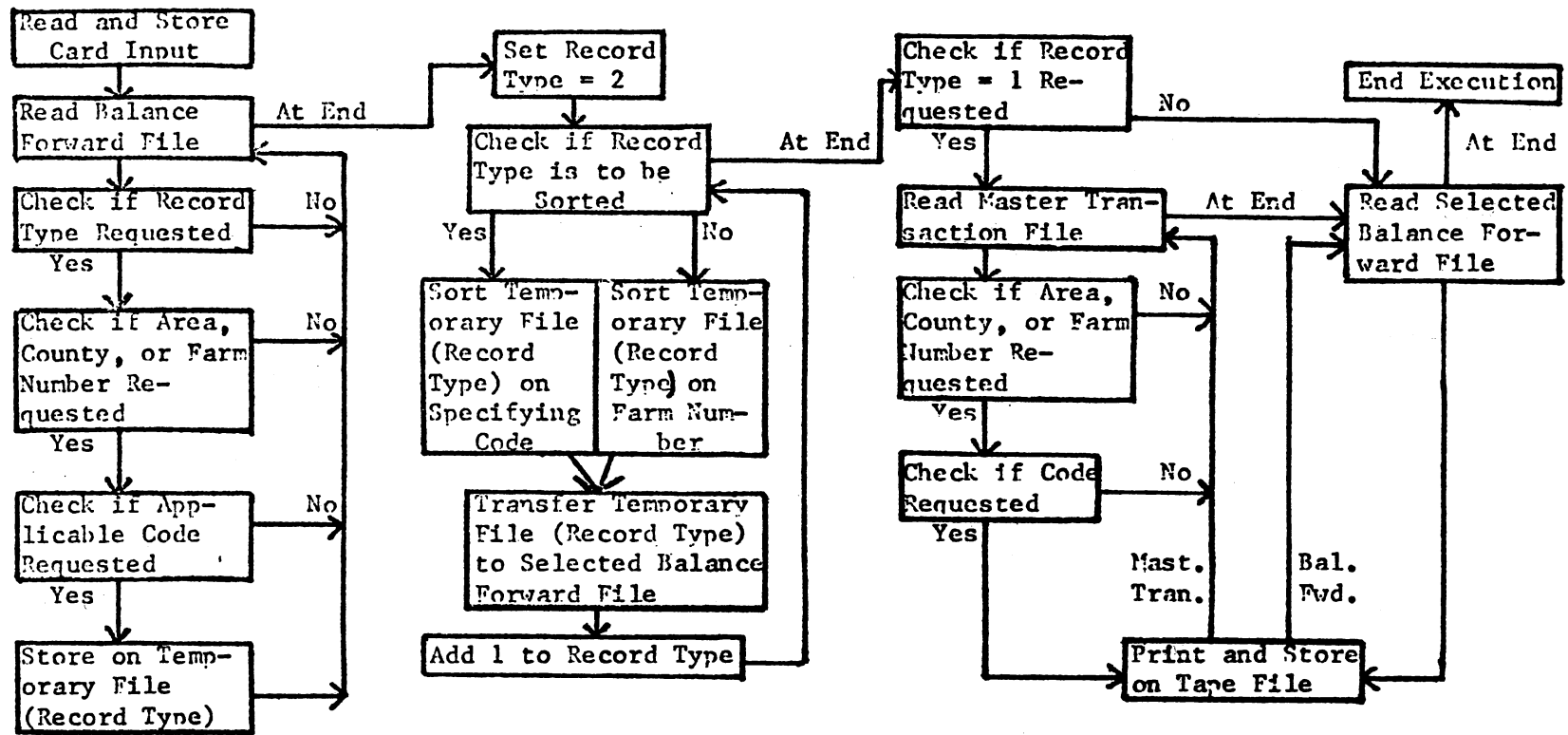


Figure 2. Flow Chart of Retrieval Program

If all three checks are positive, the record is stored on the temporary file for that record type.

When the end of the Balance Forward file is encountered, control is passed to the sort procedure. The table generated by the data coded in Part 2 is checked to determine if the temporary file for a record type is to be sorted in the order of its specifying code or codes. In this case, a secondary sort of farm number is also performed. If the record type has not been specified in Part 2, the primary sort is on farm number, the secondary sort is on the specifying code or codes. After the applicable sort is performed, the temporary file for a record type is transferred to a "master" temporary file containing all selected records from the Balance Forward file.

When the selected Balance Forward file has been created, the program begins reading and selecting data from the Master Transaction file. This procedure is executed in much the same manner as in reading the Balance Forward file. Before the file is opened, a check is made to determine if Record Type 1 is specified in Part 1. If it is not, this section is bypassed. Otherwise, the file is read one record at a time and the remaining two checks are performed: (1) if the area, county, or farm number are requested, and (2) if any of the specifying code combinations are requested. If either check is negative, another record is read from the file. If both checks are positive, control is passed to the output section. When the end of the Master Transaction file is encountered, the selected Balance forward file is opened. As only the desired records remain on this file, no checks or manipulations are performed. After each record is read, control immediately transfers to the output procedure. In the case of each file, after the record is

printed, the program returns and reads another record. At the end of the selected Balance Forward file, execution is completed.

The Retrieval program has been constructed such that any data which is stored on Costfinder files may be specified by card input, printed, and stored for further use. Specification of records is done by means of the identifying codes used by Costfinder. Instructions on preparation of card input using the Costfinder codes have been written.

## CHAPTER III

### THE EDITING PROCEDURE

This chapter will introduce and discuss the computer routine written to delete unusable or unwanted data from the file created by the Retrieval program. The card input required, the operation of the program, and the output generated will be discussed. Also included are an explanation of the steps to be taken when the editing process is completed, and presentation of the format of the data files which will be available for further processing. The Editing program is written in COBOL for processing on an IBM Model 360 computer. Four data files are required for processing; the card input file, the input file generated by the Retrieval program, a temporary file used within the program for sorting purposes, and an output file for the edited data.

The Editing procedure provides three methods of identifying the records to be deleted from the file. A single line of data may be removed by specifying the record type and line number of that line. An entire section of data for a certain farm may be deleted by specifying the record type and farm number. Finally, all data of all record types for a farm may be deleted by specifying the farm number.

#### Card Input

Card input for the Editing procedure is prepared from information

coded on the editing input form (Figure 3). This form is divided into two sections. Section I is used to specify a title to be printed in the output. Section II is used to provide the information determining which records are to be deleted from the data file.

#### Section I: Title

The first line of input allows the user to list up to 76 characters of identifying information. The second line is used to list the year of the data being edited. As in the Retrieval program, this information is printed as an output heading. It is important that this information clearly identify the data being edited, as the file created by the Retrieval program does not store the title or data year.

#### Section II: Editing Information

The information given in this section determines which records are to be deleted from the data file. There are three methods of specifying the data to be edited, any one or all of which may be used.

Part 1. This part is used to specify individual lines to be edited. The record type of the line and the line number should be listed.

Figure 3, the editing input form, is completed with the input used to process an example of the Editing program. The entries made in Part 1 show that line 104 from the Cash Flow Summary (Record Type 2), lines 460, 462, and 464 from the Credit Summary (Record Type 3), and lines 31, 38, and 40 from the Inventory Summary (Record Type 5), are to be deleted.

Part 2. This part is used to list combinations of record type

COSTFINDER DATA RETRIEVAL SYSTEM  
EDITING INPUT

SECTION I  
TITLE

SAMPLE DATA FOR OUTPUT EXAMPLES

DATA YEAR  
1974

SECTION II  
PART 1: RECORD TYPE/LINE NUMBER

1;2/104;3/460;3/462;3/464;5/31;5/38;5/40;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_

PART 2: RECORD TYPE/FARM NUMBER

2;2/6600;7/6600;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_

PART 3: FARM NUMBER

3;0174;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_;/\_

Figure 3. Completed Editing Input Form

and farm number for which data is to be edited. These entries must be made in ascending order of farm number. If more than one record type for one farm number are entered, these must be listed in ascending order of record type.

Part 2 of Figure 3 shows that all data from the Cash Flow Summary (Record Type 2) and the Livestock Numbers Summary (Record Type 7) for farm number 6600 are to be deleted. In processing of the program, the entire farm number is used. But, as noted earlier, farm numbers are not to be used in publications in any way that could attribute data to a specific farm.

Part 3. This part is used to enter farm numbers for which all data on file are to be deleted. These numbers must also be listed in ascending order.

Part 3 of Figure 3 shows that all data from farm number 0174 (a hypothetical test farm) are to be removed.

#### Output of the Editing Program

All records which are not deleted by the Editing program are printed in the same formats as discussed in Chapter II for the Retrieval program. After all the lines which are kept in each of the eight output sections have been printed, the Editing program will print one of two messages. If, as in the output shown in Table X, no records are deleted, the program will print, "THERE WERE NO LINES DELETED FROM THIS SECTION." If, as shown in Table XI, lines were deleted, the program prints, "THE FOLLOWING \_\_\_\_\_ LINES WITH RECORD TYPE \_\_\_\_\_ HAVE BEEN DELETED." Following the printing of this line, the line number and farm number of each line removed from the file are printed under the

TABLE X

## SAMPLE OUTPUT WITH NO LINES DELETED

| COSTFINDER DATA RETRIEVAL SYSTEM - EDITING PROGRAM |      |   |    |                 |         |           |
|--|------|---|----|-----------------|---------|-----------|
| SAMPLE DATA FOR OUTPUT EXAMPLES                    |      |   |    |                 |         |           |
| ENTERPRISE SUMMARY (RECORD TYPE 8)                 |      |   |    |                 |         |           |
| WHEAT ( 76 )                                       |      |   |    |                 |         |           |
| LINE   | FARM | A | TI | CODE DEFINITION | UNITS   | DOLLARS   |
| 138  | 1700 | 0 | 50 | ADMIN EXP       |         | 18.81     |
| 139  | 1700 | 0 | 50 | ADMIN EXP       |         | 18.81     |
| 140  | 6200 | 0 | 50 | ADMIN EXP       |         | 6.25      |
| 141  | 6200 | 0 | 50 | ADMIN EXP       |         | 31.76     |
| 142  | 6500 | 0 | 50 | ADMIN EXP       |         | 15.00     |
| 143  | 6700 | 0 | 50 | ADMIN EXP       |         | 520.00    |
| 144  | 6900 | 0 | 50 | ADMIN EXP       |         | 40.00     |
| 145  | 1200 | 0 | 52 | GAS-FUEL-OIL    | 1246.00 | 1,723.03  |
| 146  | 6200 | 0 | 52 | GAS-FUEL-OIL    | 117.70  | 58.27     |
| 147  | 6800 | 0 | 52 | GAS-FUEL-OIL    | 3.00    | 418.26    |
| 148  | 6900 | 0 | 52 | GAS-FUEL-OIL    | 1037.00 | 470.16    |
| 149  | 6900 | 0 | 52 | GAS-FUEL-OIL    | 1988.00 | 1,590.72  |
| 150  | 1700 | 0 | 53 | STORAGE         | 1622.83 | 476.99    |
| 151  | 1700 | 0 | 53 | STORAGE         | 1622.83 | 476.99    |
| 152  | 6200 | 0 | 53 | STORAGE         |         | 1,703.18  |
| 153  | 6200 | 0 | 53 | STORAGE         |         | 90.00     |
| 154  | 6900 | 0 | 53 | STORAGE         |         | 40.57     |
| 155  | 6900 | 0 | 53 | STORAGE         |         | 1,614.69  |
| 156  | 6200 | 0 | 54 | PROPERTY TAXES  |         | 25.73     |
| 157  | 6200 | 0 | 55 | GEN. FARM INS.  |         | 2,566.90  |
| 158  | 6200 | 0 | 55 | GEN. FARM INS.  |         | 257.90    |
| 159  | 6300 | 0 | 55 | GEN. FARM INS.  |         | 206.00    |
| 160  | 6600 | 0 | 55 | GEN. FARM INS.  |         | 1,287.00  |
| 161  | 6700 | 0 | 55 | GEN. FARM INS.  |         | 369.25    |
| 162  | 6900 | 0 | 55 | GEN. FARM INS.  |         | 6,788.70  |
| 163  | 6900 | 0 | 55 | GEN. FARM INS.  |         | 4,021.45  |
| 164  | 1200 | 0 | 56 | FM. UTILITIES   |         | 8.33      |
| 165  | 6900 | 0 | 56 | FM. UTILITIES   |         | 209.96    |
| 166  | 6800 | 0 | 57 | CASH FARM RENT  |         | 832.57    |
| 167  | 6900 | 0 | 57 | CASH FARM RENT  |         | 4,527.80  |
| 168  | 1200 | 0 | 58 | FRGHT-TRUCKING  |         | 5.00      |
| 169  | 6200 | 0 | 58 | FRGHT-TRUCKING  | 736.50  | 1,374.54  |
| 170  | 6300 | 0 | 58 | FRGHT-TRUCKING  | 1307.00 | 130.70    |
| 171  | 6700 | 0 | 58 | FRGHT-TRUCKING  |         | 5,258.90  |
| 172  | 6800 | 0 | 58 | FRGHT-TRUCKING  | 7586.00 | 758.03    |
| 173  | 6900 | 0 | 58 | FRGHT-TRUCKING  |         | 2,135.47  |
| 174  | 6900 | 0 | 58 | FRGHT-TRUCKING  |         | 3,051.05  |
| 175  | 6200 | 0 | 77 | GRAIN           |         | 18,161.09 |
| 176  | 6900 | 0 | 77 | GRAIN           | 4538.16 | 14,884.01 |
| 177  | 6900 | 0 | 97 | MACHINERY-EQUIP | 1.00    | 1,750.00  |
| 178  | 6200 | 0 | 96 | MOTOR VEHICLES  |         | 19,250.00 |
| 179  | 6200 | 0 | 97 | MACHINERY-EQUIP |         | 1,430.79  |
| 180  | 6200 | 0 | 97 | MACHINERY-EQUIP |         | 224.67    |
| 181  | 6900 | 0 | 97 | MACHINERY-EQUIP |         | 1,000.00  |

THERE WERE NO LINES DELETED FROM THIS SECTION



TABLE XI

SAMPLE OUTPUT WITH LINES DELETED

COSTFINDER DATA RETRIEVAL SYSTEM - EDITING PROGRAM

SAMPLE DATA FOR OUTPUT EXAMPLES

INVENTORY SUMMARY (RECORD TYPE 5)

| LINE | FARM | TI CAT | DESCRIPTION | BEG. DOLLARS | END. DOLLARS |
|------|------|--------|-------------|--------------|--------------|
| 1    | 1200 | 4      | BEEF        | 204,242.60   |              |
| 2    | 1700 | 4      | BEEF        | 120,602.38   |              |
| 3    | 5200 | 4      | BEEF        | 5,775.00     |              |
| 4    | 5200 | 4      | BEEF        | 13,200.00    |              |
| 5    | 6200 | 4      | BEEF        | 57,771.35    | 62,987.17    |
| 6    | 6200 | 4      | BEEF        | 63,187.50    |              |
| 7    | 6200 | 4      | BEEF        | 49,369.30    |              |
| 8    | 6200 | 4      | BEEF        | 150,699.70   |              |
| 9    | 6200 | 4      | BEEF        | 49,892.00    | 106,325.31   |
| 10   | 6200 | 4      | BEEF        | 41,600.00    |              |
| 11   | 6300 | 4      | BEEF        | 90,524.25    | 105,125.00   |
| 12   | 6300 | 4      | BEEF        | 5,300.00     | 5,125.00     |
| 13   | 6300 | 4      | BEEF        | 21,082.33    | 15,740.00    |
| 14   | 6500 | 4      | BEEF        | 24,552.95    |              |
| 15   | 6600 | 4      | BEEF        | 23,150.00    |              |
| 16   | 6700 | 4      | BEEF        | 134,352.16   |              |
| 17   | 6800 | 4      | BEEF        | 39,076.81    | 19,751.80    |
| 18   | 6800 | 4      | BEEF        | 64,639.35    |              |
| 19   | 6900 | 4      | BEEF        | 40,263.00    | 25,084.00    |
| 20   | 6900 | 4      | BEEF        | 58,137.53    |              |
| 21   | 6900 | 4      | BEEF        | 34,263.00    | 43,262.50    |
| 22   | 6900 | 4      | BEEF        | 35,965.00    | 41,575.50    |
| 23   | 5200 | 5      | DAIRY       | 66,950.00    |              |
| 24   | 5200 | 5      | DAIRY       | 35,960.00    |              |
| 25   | 6300 | 5      | DAIRY       | 91,225.00    | 97,575.00    |
| 26   | 6300 | 5      | DAIRY       | 77,200.00    | 66,520.00    |
| 27   | 6500 | 5      | DAIRY       | 27,138.00    |              |
| 28   | 1700 | 10     | MACHINERY   |              | 5,684.02     |
| 29   | 6200 | 10     | MACHINERY   |              | 35,399.63    |
| 30   | 6200 | 10     | MACHINERY   |              | 1,415.25     |
| 32   | 6300 | 10     | MACHINERY   |              | 7,780.00     |
| 33   | 6300 | 10     | MACHINERY   |              | 11,565.70    |
| 34   | 6300 | 10     | MACHINERY   |              | 8,208.58     |
| 35   | 6700 | 10     | MACHINERY   |              | 11,487.38    |
| 36   | 6800 | 10     | MACHINERY   | 200.00       | 3,525.00     |
| 37   | 6800 | 10     | MACHINERY   |              | 1,000.00     |
| 39   | 6900 | 10     | MACHINERY   |              | 1,350.00     |

THE FOLLOWING

LINE FARM  
31 6300  
38 6900  
40 6900

3 LINES WITH RECORD TYPE 5 HAVE BEEN DELETED

respective headings "LINE" and "FARM." The line numbers of the lines which are not deleted remain the same; that is, the Editing program does not consecutively renumber the remaining lines.

#### Operation of the Editing Program

The discussion of the Editing computer model will be presented in the same sequence as the operations are performed within the program. A flow chart of the program which indicates the major operations is presented in Figure 4. References to parts relate to the editing input form (Figure 3).

As in the Retrieval program, the Editing program begins by reading and storing the card input data. As each input card is read, control is passed to one of three blocks of statements, depending on the part number. Each block transfers the card data to the storage table for that part.

When all card input data has been stored, the program examines the storage tables to determine if any data is to be edited by farm number. If either or both of Parts 2 and 3 have been completed, control passes to a section which begins by sorting the tape input file. This file is sorted on ascending order of farm number, with the sorted data being stored on a temporary file and the unsorted tape input file being left intact. The sorted file is read one record at a time, with the farm number and record type of each line matched against elements of the storage tables composed of card input from Parts 2 or 3, which are also in ascending order by farm number. If these checks determine that a line is to be deleted, the record type and line number of that line are entered in the storage table

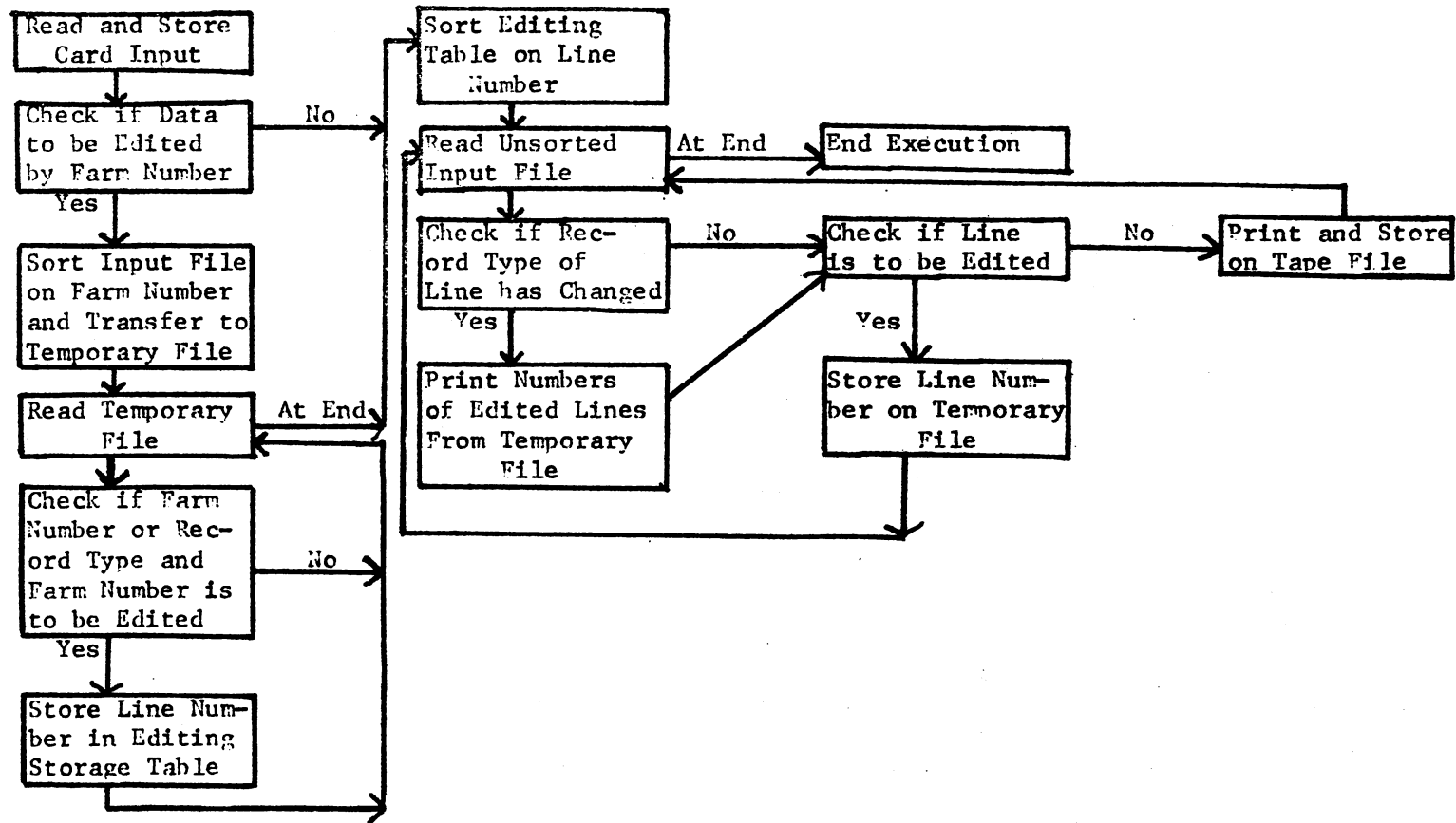


Figure 4. Flow Chart of Editing Program

composed of the line numbers to be edited. When all records of the sorted file have been read, the editing storage table will contain the numbers of all lines to be deleted, specified by each of the three methods.

When all line numbers to be deleted have been placed in the editing storage table (or, if only line numbers were entered in card input and the operations described in the previous paragraph were not performed) control is transferred to a section which sorts the editing storage table. The elements of the table are placed in ascending order of record type. Within each record type, the elements are sorted in ascending line number order.

After the sorted editing table has been constructed, the original tape input file is opened and read one record at a time. The record type and line number of each line are matched against the editing table to determine if the line is to be deleted. If so, the line number and farm number of the line are stored, to be printed at the end of the output section for that record type. After the numbers are stored, control returns to read the next record from the tape input file. If the line is not to be deleted, it is printed (in the same format as in the Retrieval program) and stored on the tape output file, after which control again returns to read the input file.

As each record is read from the input file, a check is made to determine if a new record type is encountered. If so (determining the end of a section of output), one of the messages shown in the output examples (Tables X and XI) is printed, indicating whether or not lines with that record type have been deleted. If lines have been deleted, the line and farm numbers of each deleted line are printed.

After all editing information is printed, control returns to process the record read in when the new record type was encountered. When the end of the tape input file is encountered, indicating the end of the last section of output, editing information for that section is printed, after which execution is completed.

The Editing procedure may be processed as many times as necessary to remove all unwanted data from the file. When all editing is completed, a third procedure must be executed to prepare the data for processing by user-written computer programs.

#### Renumbering and Conversion of Data

There are two factors which, in most cases, prevent the use of data gathered by this system immediately after final editing has been processed. First, the Editing procedure leaves the data file with non-consecutive line numbers where lines have been deleted. Second, the Retrieval and Editing programs are written in COBOL. COBOL is an efficient language for the operations performed by record keeping programs; i.e., large scale data manipulations and the copying of this data onto tape files. However, a more efficient language for the aggregation of record data is FORTRAN. The two languages are not compatible, in that FORTRAN will not read a data file created by COBOL.

The renumbering and conversion procedure, to be processed following final editing, eliminates these problems. The procedure requires no user input, other than file information entered in Job Control Language. Processing requires one input file, the tape file created by final editing, and eight output files, one for each record type.

The first step of the procedure, renumbering, involves the use of a special section of the Editing program. The output generated (Table XII) is identical to the final editing output, with three exceptions: (1) the lines are renumbered consecutively, removing all "gaps" caused by deletion of lines, (2) output indicating which lines have been deleted, as discussed earlier in this chapter, is not printed, and (3) the title, second line of the page heading, will consist only of the word "RENUMBER."

The tape output of the renumbering step is stored on a temporary file, to be passed on as input to the second step, data conversion. The data conversion program is written in PL-1, and re-formats the data file created by COBOL programs so that it may be used as input to programs written in FORTRAN or PL-1.<sup>1</sup> The conversion program removes the two characteristics of COBOL storage that are incompatible with FORTRAN operations. The two languages are incompatible because COBOL utilizes a notation which allows more compact storage of data and a notation which stores the last digit of a figure and its operational sign in the same column.

The conversion program also places data of each record type on a separate tape file. Each type of data has a different record length. The use of a single file with variable record lengths is efficient, and presents no special programming problems in COBOL, but is beyond the scope of a FORTRAN program written for simple aggregation purposes. Therefore, the conversion program generates a separate, fixed record

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<sup>1</sup>The data conversion program was written by Kenny Empting, student programmer.

TABLE XII

## SAMPLE OUTPUT FROM RENUMBERING

| COSTFINDER DATA RETRIEVAL SYSTEM - EDITING PROGRAM |      |        |             |              |              |
|--|------|--------|-------------|--------------|--------------|
| RENJMBER   |      |        |             |              |              |
| INVENTORY SUMMARY (RECORD TYPE 5)                  |      |        |             |              |              |
| LINE   | FARM | TI CAT | DESCRIPTION | BEG. DOLLARS | END. DOLLARS |
| 1  | 1200 | 4      | BEEF        | 204,242.60   |              |
| 2  | 1700 | 4      | BEEF        | 120,602.38   |              |
| 3  | 5200 | 4      | BEEF        | 5,775.00     |              |
| 4  | 5200 | 4      | BEEF        | 13,200.00    |              |
| 5  | 6200 | 4      | BEEF        | 57,771.35    | 62,987.17    |
| 6  | 6200 | 4      | BEEF        | 63,187.50    |              |
| 7  | 6200 | 4      | BEEF        | 49,369.30    |              |
| 8  | 6200 | 4      | BEEF        | 150,699.70   |              |
| 9  | 6200 | 4      | BEEF        | 49,892.00    | 105,325.31   |
| 10   | 6200 | 4      | BEEF        | 41,600.00    |              |
| 11   | 6300 | 4      | BEEF        | 90,524.25    | 105,125.00   |
| 12   | 6300 | 4      | BEEF        | 5,300.00     | 5,125.00     |
| 13   | 6300 | 4      | BEEF        | 21,082.33    | 15,740.00    |
| 14   | 6500 | 4      | BEEF        | 24,652.95    |              |
| 15   | 6600 | 4      | BEEF        | 23,150.00    |              |
| 16   | 6700 | 4      | BEEF        | 134,352.16   |              |
| 17   | 6800 | 4      | BEEF        | 39,076.81    | 19,751.80    |
| 18   | 6800 | 4      | BEEF        | 64,639.35    |              |
| 19   | 6900 | 4      | BEEF        | 40,260.00    | 25,084.00    |
| 20   | 6900 | 4      | BEEF        | 58,137.53    |              |
| 21   | 6900 | 4      | BEEF        | 34,263.00    | 43,262.50    |
| 22   | 6900 | 4      | BEEF        | 35,965.00    | 41,575.50    |
| 23   | 5200 | 5      | DAIRY       | 55,950.00    |              |
| 24   | 5200 | 5      | DAIRY       | 35,960.00    |              |
| 25   | 6300 | 5      | DAIRY       | 91,225.00    | 97,675.00    |
| 26   | 6300 | 5      | DAIRY       | 77,200.00    | 66,520.00    |
| 27   | 6500 | 5      | DAIRY       | 27,138.00    |              |
| 28   | 1700 | 10     | MACHINERY   |              | 5,684.92     |
| 29   | 6200 | 10     | MACHINERY   |              | 35,399.63    |
| 30   | 6200 | 10     | MACHINERY   |              | 1,415.25     |
| 31   | 6300 | 10     | MACHINERY   |              | 7,780.00     |
| 32   | 6300 | 10     | MACHINERY   |              | 11,565.70    |
| 33   | 6300 | 10     | MACHINERY   |              | 8,208.58     |
| 34   | 6700 | 10     | MACHINERY   |              | 11,487.38    |
| 35   | 6800 | 10     | MACHINERY   | 200.00       | 3,525.00     |
| 36   | 6800 | 10     | MACHINERY   |              | 1,000.00     |
| 37   | 6900 | 10     | MACHINERY   |              | 1,350.50     |

length tape output file for data of each record type. The program generates no printed output.

With the processing of the renumbering and conversion procedures, the data selected by the Costfinder Data Retrieval System may be used as input to any user-written programs. It may also be used in packaged programs, such as the Statistical Analysis System or Econometric Analysis System, which utilize a "free format" system for input. The format of each type of data, as stored by processing of the conversion program, is shown in Tables XIII through XX. These tables include each data item which is stored, as well as the record column or columns in which each item is stored. The FORTRAN notation of non-integer items is shown in parentheses.

The Editing procedure has been designed to provide an efficient method of deleting undesirable data from the file generated by the Retrieval program. It provides three methods of designating the data to be removed. An input form outlining the entry of these specifications and instructions for completing the form were also developed. The two-step conversion procedure was devised to prepare the data for input to other computer routines.



TABLE XIII

STORED FORMAT OF TRANSACTION JOURNAL  
DATA (RECORD TYPE 1)

| Column | Item               |
|--------|--------------------|
| 1      | Record Type        |
| 2 - 5  | Line Number        |
| 6 - 9  | Farm Number        |
| 10-11  | Month              |
| 12-13  | Day                |
| 14     | Account            |
| 15-16  | Transaction - Item |
| 17-18  | General - Detail   |
| 19-20  | Enterprise         |
| 22-31  | Units (F10.2)      |
| 32-38  | Price (F7.2)       |
| 39-49  | Pounds (F11.1)     |
| 50-61  | Dollars (F12.2)    |

TABLE XIV

STORED FORMAT OF CASH FLOW SUMMARY  
DATA (RECORD TYPE 2)

| Column | Item               |
|--------|--------------------|
| 1      | Record Type        |
| 2 - 5  | Line Number        |
| 6 - 9  | Farm Number        |
| 10-11  | Transaction - Item |
| 12     | General            |
| 13-22  | Units (F10.2)      |
| 23-33  | Pounds (F11.1)     |
| 34-45  | Dollars (F12.2)    |

TABLE XV  
 STORED FORMAT OF CREDIT SUMMARY  
 DATA (RECORD TYPE 3)

| Column | Item               |
|--------|--------------------|
| 1      | Record Type        |
| 2 - 5  | Line Number        |
| 6 - 9  | Farm Number        |
| 10-11  | Month              |
| 12-13  | Day                |
| 14     | Account            |
| 15-16  | Transaction - Item |
| 17     | General            |
| 18-27  | Units (F10.2)      |
| 28-38  | Pounds (F11.1)     |
| 39-50  | Dollars (F12.2)    |

TABLE XVI  
 STORED FORMAT OF LOAN, ACCOUNT PAYABLE,  
 AND ACCOUNT RECEIVABLE SUMMARY  
 DATA (RECORD TYPE 4)

| Column | Item  |
|--------|---|
| 1      | Record Type   |
| 2 - 5  | Line Number   |
| 6 - 9  | Farm Number   |
| 10     | Indicates whether record is payable or receivable (payable = 1, receivable = 2) |
| 11-22  | Beginning Year Balance (F12.2)  |
| 23-34  | Account Total (F12.2)   |
| 35-46  | Net Balance (F12.2)   |
| 47-58  | Interest Paid (F12.2)   |

TABLE XVII  
 STORED FORMAT OF INVENTORY SUMMARY  
 DATA (RECORD TYPE 5)

| Column | Item  |
|--------|---|
| 1      | Record Type   |
| 2 - 5  | Line Number   |
| 6 - 9  | Farm Number   |
| 10     | Indicates whether record is<br>classified by Category or TI<br>(1 = Category, 2 = TI) |
| 11-12  | Inventory Category or TI<br>depending on Column 10                                    |
| 13-24  | Beginning Inventory (F12.2)   |
| 25-36  | Ending Inventory (F12.2)  |

TABLE XVIII  
 STORED FORMAT OF PAYROLL SUMMARY  
 DATA (RECORD TYPE 6)

| Column | Item                                |
|--------|-------------------------------------|
| 1      | Record Type                         |
| 2 - 5  | Line Number                         |
| 6 - 9  | Farm Number                         |
| 10-19  | Net Cash Wages (F10.2)              |
| 20-29  | FICA Withheld (F10.2)               |
| 30-39  | Room & Board (F10.2)                |
| 40-49  | Home & Utilities (F10.2)            |
| 50-59  | Health Insurance (F10.2)            |
| 60-69  | Life Insurance (F10.2)              |
| 70-79  | Workers' Compensation (F10.2)       |
| 80-89  | State Income Tax Withheld (F10.2)   |
| 90-99  | Federal Income Tax Withheld (F10.2) |

TABLE XIX

STORED FORMAT OF LIVESTOCK NUMBERS SUMMARY  
DATA (RECORD TYPE 7)

| Column | Item                    |
|--------|-------------------------|
| 1      | Record Type             |
| 2 - 5  | Line Number             |
| 6 - 9  | Farm Number             |
| 10     | Information Code        |
| 11-20  | Beef (F10.2)            |
| 21-30  | Dairy (F10.2)           |
| 31-40  | Sheep (F10.2)           |
| 41-50  | Swine (F10.2)           |
| 51-60  | Other Livestock (F10.2) |
| 61-70  | Poultry (F10.2)         |

TABLE XX

STORED FORMAT OF ENTERPRISE SUMMARY  
DATA (RECORD TYPE 8)

| Column | Item               |
|--------|--------------------|
| 1      | Record Type        |
| 2 - 5  | Line Number        |
| 6 - 9  | Farm Number        |
| 10     | Account            |
| 11-12  | Transaction - Item |
| 13-14  | Enterprise         |
| 15-24  | Units (F10.2)      |
| 25-35  | Pounds (F11.1)     |
| 36-47  | Dollars (F12.2)    |

## CHAPTER IV

### APPLICATIONS, SUMMARY, AND CONCLUSIONS

#### Applications

Research projects involving extensive use of Costfinder farm record data have been limited in the past by the difficulty of obtaining the data. The projects which have utilized this information, despite this difficulty, have found the data satisfactory in attaining their objectives, especially in studies requiring information in terms of value rather than detailed physical quantities.

One project utilizing Costfinder records was done by Janssen and Tweeten, which examined property taxes in Oklahoma.<sup>1</sup> Property tax payments reported by a sample of Costfinder cooperators, chosen by predetermined income and ownership criteria, were obtained. The data were used to calculate median property tax burden as a percentage of returns to unpaid labor, capital, and management. Retrieval of the data was achieved by ad hoc modification of a Costfinder retrieval program which was originally designed only to print the entire data bank for a selected farm or farms. As noted in Chapter I, this type of modification is inefficient, in terms of computer costs, as well as time-consuming for the researcher. The needed data can be obtained by

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<sup>1</sup>Larry Janssen and Luther Tweeten, "Property Tax in Oklahoma: A Look at Some Criticisms," Oklahoma Business Bulletin, Vol. 41, No. 10 (October, 1973), pp. 16-23.

use of the Retrieval System developed in this study by the use of five input cards: one to identify the record type containing the data, three to identify the farms in the sample, and one to specify the property tax records.

A study by Carman involved the use of farm record data in Georgia.<sup>2</sup> A sample of 42 dairy farms was chosen from cooperators of the Georgia Farm Accounting and Management System. The data were used to calculate measures of technical, price, and economic efficiency, with variable production costs aggregated into seven input categories and expressed in cost per dollar of output. Again, the data were obtained by use of a retrieval program written especially for the study. The use of such ad hoc programs can be criticized, in the majority of cases, due to the inability of many users to write such a program, in addition to the inefficiency of such programs, as mentioned earlier, and the limited time of the researcher. Data for a study of this nature can be easily accessed by the Retrieval System, the only programming requirement of the user being an aggregation routine, which, of course, is optional.

The first test of data selected by the Retrieval System was in a paper by Spence.<sup>3</sup> The author selected a sample of 31 western Oklahoma farms where a majority of farm production came from beef, grain, and forage enterprises. Costfinder data was selected for income and expense items relating to these enterprises, and for inventories of land and

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<sup>2</sup>Clifford Morris Carman, "Measurements of Efficiency: The Farrell Approach," (unpublished Masters Thesis, University of Georgia, 1973).

<sup>3</sup>Lyle C. Spence, "Estimating a Farm Firm Production Function for Western Oklahoma Wheat-Beef Farms" (unpublished Research Paper, Oklahoma State University, 1975).

beef cattle. These data, along with Costfinder data not stored on the permanent files (such as machinery inventory) were used as input in the estimation of a whole-farm production function in Cobb-Douglas form. While the presentation of results of the function estimation itself are beyond the scope of this study, Table XXI summarizes the data selected by the Retrieval System, as it was used as input in the estimation procedure. The summary does not show the entire sample, but is intended as an example of the capabilities of the system.

The discussion of possible applications, no matter how extensive, cannot do justice to the large range of prospective uses. However, other areas of study will be mentioned in general terms.

Farm record data are probably best suited for micro analysis. The data may be used as input to the Budget Generator program. In turn, these budgets may be prepared as input to the LP-FARM program. The results provided by these programs may be valuable aids in farm management decision making. The estimates of capital requirements generated in these programs may also be used in the prediction of, and planning for credit needs. These needs may also be estimated by use of data on actual credit transactions. Costfinder data may also provide needed information for market analysis, both in the product and factor markets. Information on seasonal and regional price variability, and magnitude of quantity discounts is available. The area of growth of farm firms may also be analyzed. Data may be obtained to study changes, over a period of time, in inventory, production, and equity positions, for example.

One of the major difficulties in using farm record data for macro analysis is the difficulty of identifying the population of which the

TABLE XXI

SUMMARIZATION OF DATA SELECTED BY  
THE RETRIEVAL SYSTEM

| <u>INCOME FROM BEEF, GRAIN - AND FORAGE</u> | <u>VALUE OF STOCKERS PURCHASED IN PREVIOUS YEAR</u> | <u>ACRES OF CROPLAND</u> | <u>ACRES OF PERMANENT PASTURE</u> | <u>NUMBER OF BREEDING CATTLE</u> | <u>NUMBER OF STOCKERS</u> | <u>MACHINERY REPAIR, FUEL AND NET CUSTOM HIRE EXPENSE</u> |
|---|---|--------------------------|-----------------------------------|----------------------------------|---------------------------|---|
| \$ 31,855                                   |   | 309                      | 2037                              | 106                              | 116                       | \$18,123  |
| 54,849                                      |   | 1332                     | 129                               | 24                               | 115                       | 10,536  |
| 57,756                                      |   | 710                      | 191                               | 65                               | 184                       | 15,969  |
| 158,232                                     |   | 1525                     | 2717                              | 279                              | 645                       | 33,775  |
| 87,372                                      |   | 1632                     | 284                               | 13                               | 370                       | 17,093  |
| 160,129                                     |   | 418                      | 2123                              | 230                              | 475                       | 9,461   |
| 95,041                                      |   | 1020                     | 500                               | 32                               | 403                       | 15,765  |
| 42,503                                      |   | 134                      | 965                               | 130                              | 35                        | 7,998   |
| 36,951                                      |   | 740                      | 120                               | 84                               | 57                        | 12,004  |
| 86,826                                      |   | 989                      | 633                               | 121                              | 210                       | 13,473  |
| 21,741                                      |   | 421                      | 314                               | 35                               | 102                       | 8,283   |
| 29,682                                      |   | 605                      | 492                               | 41                               | 96                        | 5,130   |
| 14,788                                      |   | 89                       | 743                               | 51                               | 8                         | 4,317   |
| 31,605                                      |   | 169                      | 350                               | 156                              | 27                        | 18,669  |



firm providing the records is a member. However, there are several problem areas in which study is possible. Information is available to examine changing patterns of land use and livestock production. The information can permit not only a description of the changing patterns, but also an analysis of the underlying causes. In addition to the study of growth of individual farm firms, the growth dynamics of a given region may also be examined. Cross-sectional as well as time series data may be obtained. The use of information on what farmers actually did permits researchers to give a positive rather than a normative response to questions concerning policy issues. It is in this area that identification of the population becomes imperative. If the census category of farms can be determined, information beyond that obtained in the census is available from farm records for analysis of various census subclasses.

The potential and limitations in the use of farm record data have been discussed elsewhere, notably by Eisgruber<sup>4</sup> and Irwin and Havlicek.<sup>5</sup> Two of the major problems in the use of Costfinder data will be examined here. Inaccurate reporting by the cooperators can result in incomparable data. Careful selection of the sample can, to a degree, help to avoid this problem. Output from the Costfinder Whole-Farm Comparison program, available from the central staff, contains information on production and returns for each farm. Selection of

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<sup>4</sup>L. M. Eisgruber, "Micro- and Macro-analytic Potential of Agricultural Information Systems," Journal of Farm Economics, Vol. 49 (December, 1967) pp. 1541-1552.

<sup>5</sup>George D. Irwin and Joseph Havlicek, Jr., "Tailoring Farm Account Projects to Answer Aggregate Questions," Journal of Farm Economics, Vol. 48 (December, 1966) pp. 1623-1628.

farms using these criteria should result in a sample of records which have been carefully and accurately prepared.

Inadequate or non-existent reporting of physical quantities is a second problem common to all record systems and no available solution is apparent. If the data is not reported by the farmer, no amount of computer technology can obtain it. The only alternative is to use the dollar value reported, assume representative prices and then compute quantity estimates. For most situations this procedure is unacceptable.

#### Summary

The objectives of this study were to develop a system to retrieve Costfinder data, present it in a form acceptable for use in research projects, and to develop instructions to facilitate use of the system by researchers. By accomplishing these objectives, it is hoped that more use can be made of the great quantity of farm data available in the Costfinder system.

The 1974 version of the Costfinder Report program caused the Balance Forward file, generated by the Report program, to be printed in a different format than the files printed before 1974. In order to use any year's Balance Forward data as input to a retrieval system, a computer routine was written to convert these files to a standardized format.

The two permanent files (Balance Forward and Master Transaction) were then examined to determine the most useable methods of accessing their data. The chosen methods were used in the development of a computer program which, using card input of data specifications employing these methods, selects, prints, and stores data from the Costfinder

files. All data stored on these files are accessible, using the proper specifications. A file of the data selected is stored for further processing. The three major means of access (record types, farm identification, and the specifying codes) were then used to construct an input form to aid in the preparation of card input data. Instructions have also been written to guide the user in the application of the Costfinder codes used to complete the input form and obtain the data desired.

The limitations of farm record data are such that some of the information collected will not be useable in research projects. For this reason, a computer routine was written and designed to delete any user-specified data from the file generated by the Retrieval program. The program provides three ways to identify data to be edited from the file: specification of line numbers, each removing one line of data from the file, specification of record types and farm numbers, removing one or more records having the information specified, and specification of farm numbers, deleting all data for a particular farm or farms. As with the Retrieval program, an input form was developed to ease the preparation of input data containing these specifications, and instructions were written outlining the form in which they should be entered.

Since most data selected by the system will require some form of aggregation, which will be most easily done by FORTRAN programs, a procedure was developed which converts the file generated by the Retrieval System from COBOL to FORTRAN notation. This procedure also renumbers the lines in consecutive order, correcting "gaps" caused by editing,

and stores each type of data on a separate file, eliminating the need for variable record length handling.

### Conclusions

The Costfinder Data Retrieval system should prove to be a valuable tool in obtaining data for farm management research. It will save time and effort for those who have used Costfinder data in the past, despite the difficulty of collection, and hopefully will encourage its use by those who have been disinclined by the difficulty of collection.

The need for future modification of the system will directly depend on future changes in Costfinder, one of which is the possibility of adopting a six-digit farm number rather than the current four-digit number. This would necessitate modification of all programs in the Retrieval System.

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APPENDIX

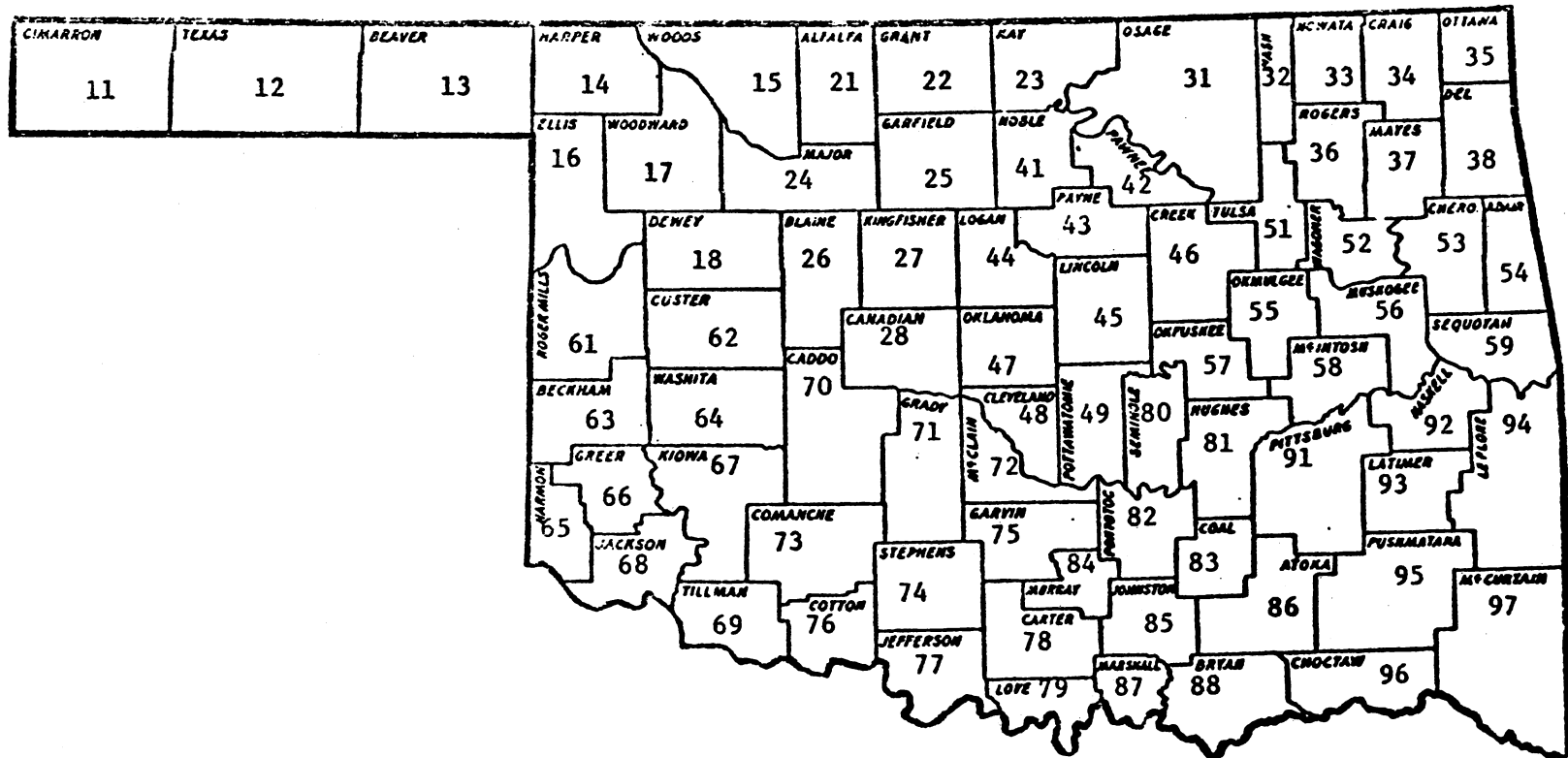


Figure 5. Oklahoma Map Showing Area and County Codes



TABLE XXII  
RECORD TYPE CODES

| Code | Description  |
|------|--|
| 1    | Transaction Journal                                      |
| 2    | Cash Flow Summary  |
| 3    | Credit Summary   |
| 4    | Loan, Account Payable, and<br>Account Receivable Summary |
| 5    | Inventory Summary  |
| 6    | Payroll Summary  |
| 7    | Livestock Numbers Summary                                |
| 8    | Enterprise Summary                                       |

TABLE XXIII  
ACCOUNT CODES

| Code | Description   |
|------|---|
| 0    | Cash Transactions   |
| 1    | Charged Transactions  |
| 2    | Payment on a Charged Account                                      |
| 3    | Items Traded in or Received in Trade                              |
| 4    | Internal Transfers Between Enter-<br>prises of the Firm           |
| 5    | Non-Depreciable Inventory   |
| 6    | Depreciable Inventory (Not Accessible<br>by the Retrieval System) |
| 7    | Livestock Births and Crop Plantings                               |
| 8    | Livestock Weanings and Crop Harvest                               |
| 9    | Livestock Deaths and Casualty Losses                              |

TABLE XXIV  
TRANSACTION - ITEM CODES

| Code | Description                            | Code | Description                           |
|------|--|------|---------------------------------------|
|      | Nonfarm Income                         | 33   | Breeding Fees                         |
| 01   | Taxable Income                         | 34   | Wood and Lumber                       |
| 02   | Loans from Others                      | 35   | Patronage Refunds                     |
|      | Nonfarm Expense                        | 36   | Agriculture Program Payments          |
| 03   | Deductable Expense                     | 37   | Tax Refunds                           |
| 04   | Itemized Expense                       | 38   | Insurance Proceeds                    |
| 05   | Personal Draw                          | 39   | Miscellaneous                         |
| 06   | Loans to Others                        |      | Current Farm Expense                  |
| 07   | Undivided Utilities                    | 40   | Special                               |
| 08   | Undivided Auto Expense                 | 41   | Labor Hired                           |
| 09   | Memoranda                              | 42   | Repairs                               |
|      | Current Farm Income                    | 43   | Interest                              |
| 10   | Special                                | 44   | Feed                                  |
| 11   | Beef                                   | 45   | Seeds and Plants                      |
| 12   | Dairy                                  | 46   | Fertilizer - Lime                     |
| 13   | Sheep                                  | 47   | Machine Hire                          |
| 14   | Swine                                  | 48   | Supplies Purchased                    |
| 15   | Other Livestock                        | 49   | Breeding Fees                         |
| 16   | Poultry                                | 50   | Administrative Expense                |
| 17   | Grain                                  | 51   | Veterinary Medicine Expense           |
| 18   | Forage                                 | 52   | Gas - Fuel - Oil                      |
| 19   | Cash Crops                             | 53   | Storage                               |
| 20   | Rental Income or Special               | 54   | Taxes                                 |
| 21   | Fruits and Nuts                        | 55   | Insurance                             |
| 22   | Dairy Products                         | 56   | Utilities                             |
| 23   | Wool                                   | 57   | Rent                                  |
| 24   | Meat Products or Special               | 58   | Freight - Trucking                    |
| 25   | Other Livestock Products or<br>Special | 59   | Conservation Expense                  |
| 26   | Eggs                                   |      | Sale of Items Purchased<br>For Resale |
| 27   | Melons or Special                      | 60   | Futures or Special                    |
| 28   | Vegetables or Special                  | 61   | Beef                                  |
| 29   | Supplies Sold or Special               | 62   | Dairy                                 |
| 30   | Special Income                         | 63   | Sheep                                 |
| 31   | Merchandise Received or<br>Special     | 64   | Swine                                 |
| 32   | Machine Work                           | 65   | Other Livestock                       |
|      |  | 66   | Poultry                               |
|      |  | 67   | Grain                                 |
|      |  | 68   | Forage                                |
|      |  | 69   | Cash Crops                            |

TABLE XXIV (Continued)

| Code                                      | Description                |
|---|----------------------------|
| Purchase of Items Purchased<br>For Resale |                            |
| 70  | Futures or Special         |
| 71  | Beef                       |
| 72  | Dairy                      |
| 73  | Sheep                      |
| 74  | Swine                      |
| 75  | Other Livestock            |
| 76  | Poultry                    |
| 77  | Grain                      |
| 78  | Forage                     |
| 79  | Cash Crops                 |
| Sale of Capital Assets                    |                            |
| 80  | Special                    |
| 81  | Beef                       |
| 82  | Dairy                      |
| 83  | Sheep                      |
| 84  | Swine                      |
| 85  | Other Livestock            |
| 86  | Vehicles and Motors        |
| 87  | Machinery and Equipment    |
| 88  | Buildings and Improvements |
| 89  | Land                       |
| Purchase of Capital Assets                |                            |
| 90  | Special                    |
| 91  | Beef                       |
| 92  | Dairy                      |
| 93  | Sheep                      |
| 94  | Swine                      |
| 95  | Other Livestock            |
| 96  | Vehicles and Motors        |
| 97  | Machinery and Equipment    |
| 98  | Buildings and Improvements |
| 99  | Land                       |

TABLE XXV  
ENTERPRISE CODES

| Code  | Description                | Code  | Description                |
|-------|----------------------------|-------|----------------------------|
| 10    | BEEF General               | 62    | Layers                     |
| 11    | BEEF Breeding Grade        | 63    | Ducks                      |
| 12    | BEEF Breeding Purebred     | 64    | Turkeys                    |
| 13    | BEEF Growing (Stockers)    | 65    | Geese                      |
| 14    | BEEF Fattening             | 66    | Guineas                    |
| 15-19 | Special Beef               |       |                            |
|       |                            | 70    | Grain                      |
| 20    | DAIRY General              | 71    | Barley                     |
| 21    | DAIRY Cows Grade           | 72    | Corn                       |
| 22    | DAIRY Cows Purebred        | 73    | Grain Sorghum              |
| 23    | DAIRY Growing Replacements | 74    | Oats                       |
| 24-29 | Special Dairy              | 75    | Rye                        |
|       |                            | 76    | Wheat                      |
| 30    | SHEEP General              | 77-79 | Other Grains               |
| 31    | SHEEP Breeding Grade       |       |                            |
| 32    | SHEEP Breeding Purebred    | 80    | Hay and Forage             |
| 33    | SHEEP Growing              | 81    | Alfalfa                    |
| 34    | SHEEP Fattening            | 82    | Grome                      |
| 35-39 | Special Sheep              | 83    | Bermuda                    |
|       |                            | 84    | Grass, Tame                |
| 40    | SWINE General              | 85    | Native Pasture             |
| 41    | SWINE Breeding Grade       | 86    | Silage                     |
| 42    | SWINE Breeding Purebred    | 87    | Sudan                      |
| 43    | SWINE Growing              | 88    | Forage Sorghums            |
| 44    | SWINE Fattening            | 89    | Graze-out Small Grain      |
| 45-49 | Special Swine              |       |                            |
|       |                            | 90    | Cash Crops                 |
| 50    | Other Livestock            | 91    | Broomcorn                  |
| 51    | Bees                       | 92    | Cowpeas and Mungbeans      |
| 52    | Dogs                       | 93    | Cotton                     |
| 53    | Goats                      | 94    | Guar                       |
| 54    | Horses                     | 95    | Peanuts                    |
| 55    | Rabbits                    | 96    | Pecans and Tree Nuts       |
| 56    | Furbearing                 | 97    | Fruits, Melons,<br>Berries |
| 60    | Poultry                    | 98    | Soybeans and Oilseed       |
| 61    | Broilers                   | 99    | Vegetables                 |

NOTE: Enterprise codes between "02" and "09" inclusive may be used for special unique enterprises on individual farms which have no special meaning to the Costfinder system.

TABLE XXVI  
PAYROLL CLASSIFICATION CODES

| Code | Description                 |
|------|-----------------------------|
| 1    | Net Cash Wages Paid         |
| 2    | FICA Tax Withheld           |
| 3    | Room and Board              |
| 4    | Home and Utilities          |
| 5    | Health Insurance            |
| 6    | Life Insurance              |
| 7    | Workers' Compensation       |
| 8    | State Income Tax Withheld   |
| 9    | Federal Income Tax Withheld |

TABLE XXVII  
LIVESTOCK NUMBERS CODES

| Code | Specie          | Code | Category            |
|------|-----------------|------|---------------------|
| 1    | Beef            | 1    | Beginning Inventory |
| 2    | Dairy           | 2    | Purchases           |
| 3    | Sheep           | 3    | Births              |
| 4    | Swine           | 4    | Weanings            |
| 5    | Other Livestock | 5    | Sales               |
| 6    | Poultry         | 6    | Deaths              |

TABLE XXVIII  
INVENTORY CATEGORY CODES

| Code | Description                   |
|------|-------------------------------|
| 01   | Cash and Miscellaneous Assets |
| 02   | Supplies and Feed             |
| 03   | Grain and Forage              |
| 04   | Beef                          |
| 05   | Dairy                         |
| 06   | Sheep                         |
| 07   | Swine                         |
| 08   | Other Livestock               |
| 09   | Poultry                       |
| 10   | Machinery                     |
| 11   | Buildings                     |
| 12   | Land                          |
| 13   | Accounts Receivable           |
| 14   | Accounts Payable              |

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