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ORNL Direct Purchase Information System (DPIS) User's Manual

Jon W. Grubb
Juan K. Lovin
Mona B. Smith
Randy L. Haese
Dave B. Needham
J. Kathy Wilson

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FINANCE AND MATERIALS DIVISION

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The work documented in this manual is the result of the cumulative effort of several persons who deserve recognition for their contributions.

William R. Ragland, Finance and Materials Division Director, provided the overall objectives and top management support for this project. Ron initiated and provided the funding for implementing this module at ORNL. He also provided the guidance and feedback for top management.

Gary L. Breeden, Central Accounting, was responsible for auditing the data base and improving the accuracy of the data.

Nancy R. Whitehead and Kay L. Zevenbergen were responsible for entering data into the data base and providing feedback on ways to improve the data base maintenance task and the accuracy of the data.

Gary W. Westley provided the guidance and the personnel for the programming effort. Steve Curtis and Harry Thompson extracted raw data from the Central Accounting System.

Others who contributed significantly were William O. Graves, who assisted in establishing the data base maintenance function, and Herb M. Beckler, who was helpful in defining the requirements for the September option.

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FOREWORD

The ORNL Direct Purchase Commitment Module is a modified version of the Fusion Energy Division's Procurement Module described by Juan K. Lovin and Betsy A. Clark in *Procurement Module for a MIS: User's Manual*, ORNL/TM-5854, Oak Ridge, TN, March 1977. The most significant modifications are the additions to the hierarchical structure of the division, Laboratory, budget and reporting (B&R) identification and 189 numbers, additional options, and the capability to provide more control and visibility during the last month of the fiscal year.

The Direct Purchase Information System (DPIS) was rewritten recently to make use of new techniques which have been developed and proved on other management information systems (MISs) developed at Oak Ridge National Laboratory. This made it necessary to rewrite the User's Manual which had been circulated as a Draft manual. The new User Module runs much faster and is more efficient than previous versions.

DPIS/MIS was a team effort. The team consisted of:

J. K. Lovin (Fusion Energy Division) — Project manager, system specifications and basic system design.

J. K. Wilson (Product Engineering and Scheduling Division) — basic system design, program testing and user training.

D. B. Needham (Computer Science Division) — Lead programmer, software design and developing the auto-update and user modules.

M. B. Smith (Computer Science Division) — Design and development of software to process data from the accounting system.

R. L. Haese (Computer Science Division) — Design and development of software for the user module.

J. W. Grubb (Planning Research Corp) — Design and development of software for AUDIT and MERGE (under subcontract to ORNL).

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SUMMARY

The ORNL Management Information System (MIS) Direct Purchase Information System (DPIS) is an online interactive system of computer programs. The system can provide a manager with commitment and delivery schedule information on current direct purchase requisitions. The commitment data accounts for the orders which have been placed and those requisitions yet to be placed with a vendor. Information can be summarized at many different levels, and individuals can quickly determine the status of their requisitions. DPIS contains data only on active outside direct purchases, but has the capability to access historical data. It provides sufficient flexibility to be used to answer many questions pertinent to the status of these direct purchases and their obligating costs. Even an inexperienced computer user should have little difficulty in learning to use DPIS. The User Module prompts the user on what type of response it is expecting. If the user has doubts as to the response, or if the meaning of the response is not clear, the module will give a detailed list of the options available at that level. The user has control of what data is to be considered, how it is to be grouped, and what format the output will take. This user control is the result of the module's hierarchical arrangement. As the user selects the options available at a given level, the module proceeds to the next lower level until sufficient input has been supplied to provide the requested information.

A major benefit of this interactive, user-oriented system is that the manager can specify the information requirements and does not have to spend time going through a great deal of other data to locate what is needed. Because it is interactive, a search can begin at a summary level and then resort to a more detailed level if needed. DPIS allows the user direct control for selecting the

- Type of commitment data
  - original commitment,
  - outstanding commitment,
  - current balance, and
  - month's direct costing;

- Type of output
  - terminal or printer,
  - listing of orders (sequenced on any item),
  - summed commitments (order, use tax, overhead, percent based on estimated costs, and total), and
  - projection of monthly costing;
- Type of funds
  - operating (expense),
  - capital (equipment), and
  - all; and
- Type of direct purchase, defined by restricting the orders to only those meeting a set of user-specified characteristics based on
  - purchase request number,
  - purchase order number,
  - purchase order release number,
  - estimated delivery date,
  - commitment amount or range,
  - requestor's name,
  - work order number,
  - account number,
  - cost center number,
  - division number,
  - B&R activity number,
  - 189 number,
  - status of order (ordered, not ordered, received),
  - FOB code,
  - delivery point,
  - date delivered,
  - date order placed,
  - vendor,
  - buyer,
  - laboratory, and
  - requisitioner.

The user can specify that the listing be put in sequential order of one or more of the record items. With this flexibility a manager can, for example, add the DPIS results to the cost data from the Operating Report and compare the total to the direct purchase budget.

The data base is kept up to date and accurate by the Materials Control Office. The purchase request record contains data on order numbers, description, dates, commitments and accounts to charge, vendor, requestor, and status of the order. Input is made to the data base at certain points in the procurement cycle. The initial data are entered manually when the purchase requisition is opened. In essence, this is a commitment of funds to pay for the item when it is received. When an order is placed, additional data are added to the purchase record. Later, when the item is received, those data are entered into the data base. DPIS uses data from a file generated by the financial system to account for all costing transactions. This not only reduces the effort needed to maintain the data base and the chance of input error but also serves as a cross-check between two major sources of data and keeps the DPIS data consistent with other data from the financial system.

A large part of the software development effort was directed toward making DPIS easy to use. A typical run proceeds as follows:

- Call the computer.
- Type LOGIN ⟨ ppn ⟩.
- When asked, respond with the password.
- Type DO DPIS.
- The computer will ask questions about the desired options. If the user does not know what the response codes are or what they mean, he can enter a ? for a reminder or ?? for a detailed listing of options at that level.
- To terminate the run, respond with END until it terminates.
- To exit the computer, type K/F.

The original version of DPIS/USER (called PROQ) was developed by the Fusion Energy Division (FED) and has been in operation since October 1976. FED's acceptance of PROQ has been good. Feedback has indicated

that it is easy to use and that the information provided is useful. Use of PROQ at the FED division level made it apparent that it would be equally useful at a higher organization level. It could also be used as a tool for a centralized purchasing group. With all the data in an accessible data base, it would be easy to determine orders per buyer, overdue orders from a vendor, the total value of orders placed, geographical distribution of orders, etc. Other uses of the data base and software are being found. For example, a division's Outside Procurement Commitment Report, which had previously been generated manually, is now a spin-off report from DPIS. The output from the module is being used to check for errors in charges for outside purchases and to expedite critical orders. The major benefit of DPIS will be to provide the committed cost for outside direct purchases to a broad-based MIS, which could provide management with information on remaining uncommitted funds and a projection of the year-end cost.

DPIS is now operational at ORNL. Phase I, which was to implement the FED procurement module for the Laboratory, was completed in September 1978. Phase II, to tune the software to the ORNL computer system and to identify problems and information needs of the Laboratory which were not evident at the division level, is now operational.

1. INTRODUCTION

The ORNL Direct Purchase Information System (DPIS) is a group of computer programs which can be used to obtain pertinent information about direct purchases. The user need use only one program, the User Module, to obtain information related to direct purchases. The User Module (DPIS/USER) is an interactive, online program which provides the user with flexibility in selecting and grouping direct purchase commitment data of interest. Primary objectives of DPIS are to provide accurate and timely information on the current dollar amount committed to direct purchases and their expected delivery dates. Some examples of the type of information available from DPIS are vendor and requestor of a specific purchase requisition, orders which are overdue, current financial commitment at the task or program level, and status of requisitions. The user is given additional flexibility to limit the information to only that of interest by specifying a particular set of data. Some examples of these sets (groupings) are the requestor, a work order number, a budget and reporting (B&R) identification number, or a division. DPIS also contains data on the type of funds used for the purchase, overhead and exempt status, tax, and total cost of the order. User options are presented in Sect. 3. The potential DPIS user who does not have the time to read the entire User's Manual is referred either to Sect. 2.4.1, which contains sufficient instructions to use the module, or to Appendix B.

DPIS/USER is a user-oriented module. Because it is not practical to design a module for each potential user, the concept of a user group was developed. Some examples of user groups are: directors or their finance officers, finance personnel, project managers, section heads, project engineers, requisitioners, etc. To accommodate this wide range of interest, DPIS was designed to let the user control the selection of data which is of interest and specify the general output format. Section 3 contains details on the options available to the user and a description of the output.

The ORNL DPIS Management Information System (MIS) consists of several other modules and functions which are invisible to the user but are a major part of the total system. Data are input into the data base

when (1) a requisition is opened, (2) the order is placed, and (3) the item is received. This is accomplished using the Maintenance Module (DPISMA). Costing data is extracted from the UCC-ND Uniform Accounting System and used to update DPIS's data base. The Financial Update Module is a group of programs which perform this function without additional manual input. Several reports related to data base maintenance are available, such as orders not processed through Materials Control, monthly procurement commitment reports, and statistics on the time required to process requisitions. There is even a program which audits the data base. The maintenance function is restricted to Materials Control. Section 4 contains some additional information on the data base and its maintenance for users with an interest in how the system works. Section 5 contains some sample uses of DPIS. Appendix A is designed for those not familiar with data terminals and the PDP-10 LOGIN process.

It may be beneficial to state a few things that the ORNL DPIS is not. It is not an accounting system. In fact, as stated previously, it utilizes data from the accounting system as part of its input. It was not written to support just the financial organization. The main target user is the project manager who is concerned with the control of schedules and budgets. It is not an historical system; only active requisitions are kept in the data base. However, recent additions make some historical data available to the user. It is not the solution to all problems. However, if a user has a specific problem, the system is changeable.

Will the ORNL DPIS work? There is much tangible evidence that it will. The first phase of the ORNL system was based on FED's Procurement Module, which has been in operation for almost three years, and DPIS has been in operation at ORNL for over a year. During this time many changes have been made to the system to adapt it to the users' needs and to improve data accuracy. In the following development phases the ORNL system will be tuned to make it more usable by the larger and broader user group within the Union Carbide Corporation's Nuclear Division (UCC-ND).

Users of the previous ORNL/PROQ system, will notice many improvements. New and more flexible options are available. The time required to get results has been shortened and there is the option to process information as a batch job. The name PROQ was changed to the more representative DPIS.

This report is a manual. A point or item may be discussed in several places and to different degrees of detail. In brief, the manual format is Sects. 1 and 2, information for the new computer user; Sect. 3, details on DPIS's options and commands; Sect. 4, the financial aspect of the data. Several examples of using DPIS are presented in Sect. 5. After reading the manual the user's knowledge can be checked using Sect. 2.4.1.

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2. OVERVIEW

This section is intended to familiarize the user with how the system as a whole works, to provide instructions on how to run the Direct Purchase Information System (DPIS) User Module (USER), and to introduce the hierarchical concept used in the interactive communication between the user and the module. Details on the user options are given in Sect. 3. A few suggested uses of the module are presented in Sect. 5 to show how the various options can be utilized to obtain the specific information a user may need. Appendix A contains information for those who may not be familiar with the PDP-10 computer.

2.1 Procurement System Operation

The direct purchase procurement cycle is a complex process requiring the efforts of several different organizations. The following brief discussion refers to only those steps which directly affect the ORNL DPIS. Figure 2.1 shows the procurement cycle.

When a requirement arises for the purchase of an item not stocked by stores, a request is made through the division organiztion to purchase the item. A purchase requisition (PR) is written and after proper approvals are obtained, the PR is sent to Materials Control (MC). The requisition is reviewed for requirements of special inspection or handling, being a sensitive type of material, or a stores inventory item, etc. MC enters the PR data into the data base using the computer program DPISMA. DPISMA verifies the charge number and makes the data available to the User Module (and users) as an estimated commitment.

MC sends the PR to the Central Purchasing Office where it is assigned to a buyer. If bids are required, they are obtained. After selection of a vendor the buyer writes a purchase order (PO) for the item. A copy of the PO is sent to MC. Purchasing also punches a data card and sends it to Accounts Payable (AP) (actually it goes to the computer site for data processing). MC adds the PO data to the data base. At this point the user has access to the vendor's quoted price and delivery date. At the end of each update cycle (approximately the 10th,

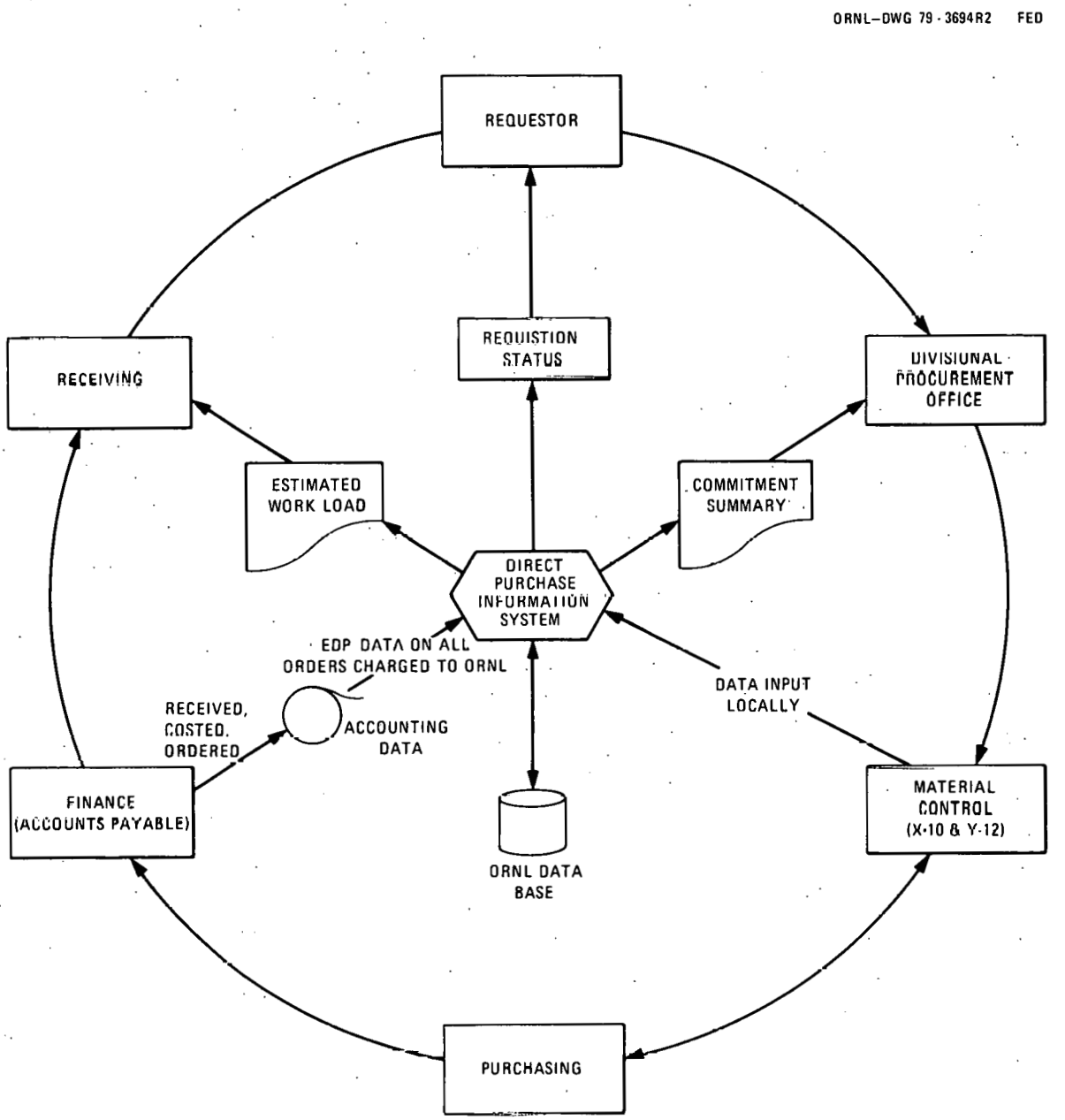

Fig. 2.1. Direct purchase procurement cycle.

15th, 25th, and 1st of the month), the data cards from Purchasing and Accounts Payable (which contain costing transactions) are stored in a data file. Data from this file, the open accruals, and the disbursement files are copied and sent to ORNL. The item data are summarized as a single record. Open accruals and disbursements are also summarized and added to the summary record for the order. Figure 2.2 shows these steps and the data files involved. All orders being charged to an ORNL account are extracted and stored on a magnetic tape. This tape is input to the Financial Update Module for use in updating the ORNL data base. A major feature of this step (in addition to determining the current commitment) is that orders which were not processed originally by MC and are chargeable to ORNL are added to the data base. After AP's 4th cycle tape has been generated, this tape and corrections are processed to generate the end-of-the-month (EOM) tape. The EOM data are used to generate the monthly financial reports, and their use by DPIS ensures consistency between the two systems. This part of the system is complex and may be difficult to grasp without a financial or/and computer background. Some understanding of this process is required to use DPIS fully. This process is discussed in more detail in ref. 1.

The next major step normally occurs when the item is received. A receiving report (RR) is written and sent to Accounts Payable and the data clerk at MC. The data clerk makes an entry to the data base indicating that the item was received. Accounts Payable uses the RR to initiate a costing transaction against the requestor's account. The resulting vendor payment step is more complicated than presented here depending on whether the order is a pay upon receipt (EDP) or requires special approval before paying (DNP). However, a full understanding is not necessary since the general user is concerned with the current financial commitment and not the payment to the vendor. There is a time lag between MC's entering the receiving data into the ORNL data base and the costing transaction's appearance because of the cyclic updates' being run only about once a week (there is also a two-day cutoff for data being put on a cycle tape). Normally the costing transaction will be reflected after the next cycle tape is processed. By the time the data base indicates that the item was received and costed, the requestor

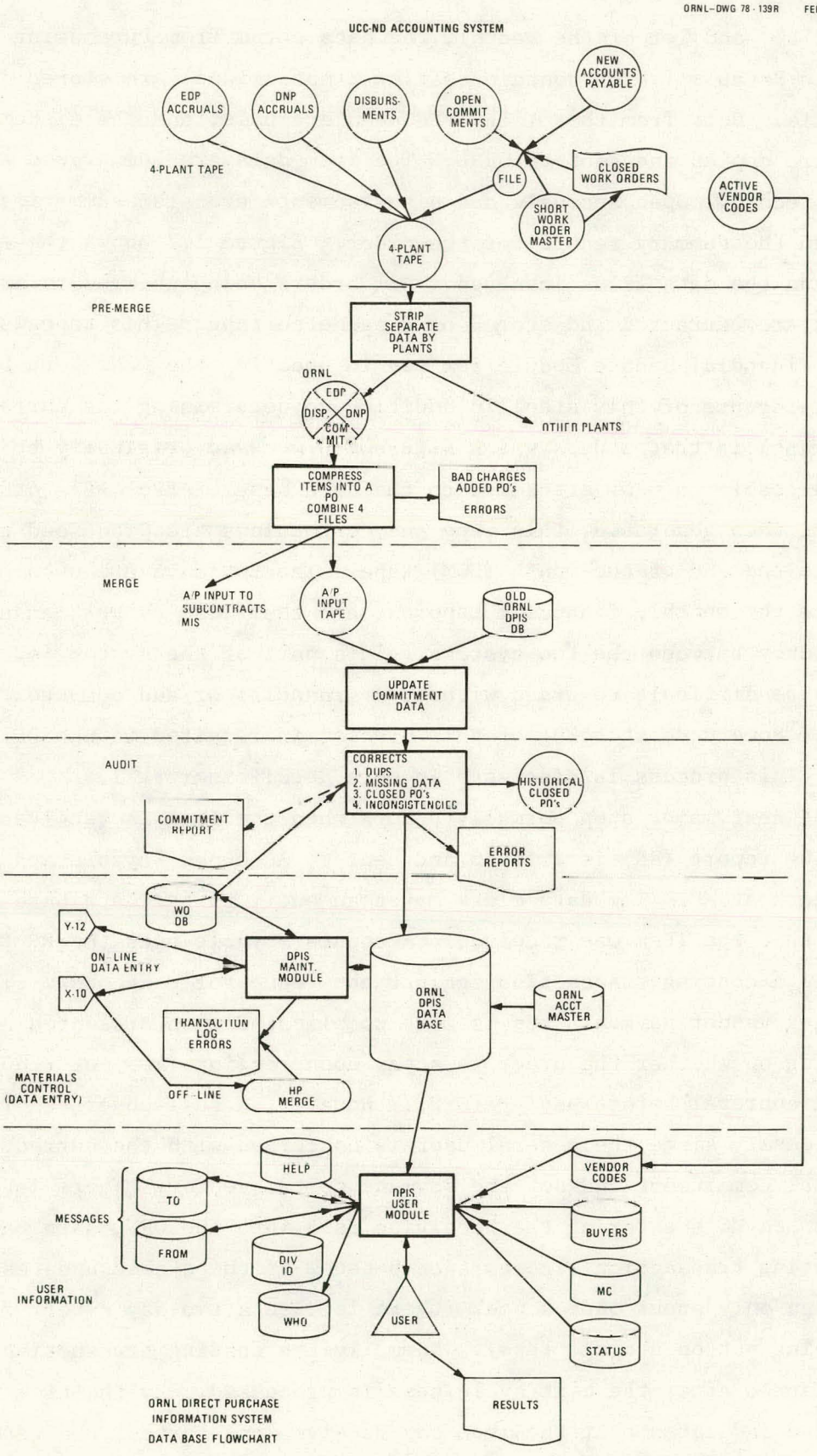

Fig. 2.2. Financial update module: flow chart.

should have the item or be aware that it is awaiting delivery or inspection.

The final step occurs after the PO is fully received and costed against the requestor's account. The PO record in the data base is set to a closed status. After the next EOM tape is processed, all the closed records are purged from the data base. At this point the normal user option in DPIS will not know that the order ever existed. Purged orders are stored in monthly historical files which are accessible by a special DPIS option.

2.2 Understanding and Using the Data

As with most data in the real world, there are some weak points and some restrictions associated with DPIS data. These factors do not, however, significantly reduce the usefulness of the information as long as management understands what the limitations are. This section identifies these limitations so that the user can adjust the information obtained when required.

2.2.1 What data are available

The DPIS data base contains commitment data on all outside purchases except:

1. Subcontracts, even those that are purchased as a purchase order. These data are available through ORNL's Subcontract Information System, ref. 2.
2. Laundry, auto parts, reprints, and some special orders. In general these items are received before the paperwork arrives at Materials Control, and they do not appear in the AP commitment file.
3. Some books and magazine subscriptions are not entered if the receiving report does not show sufficient data to identify the order.
4. Equipment rentals and maintenance are not kept in the data base because the payments are not available from the AP data. Therefore, the financial update can not adjust the current commitment.

5. Orders (or partial orders) which will be taken from stores.
6. Orders not charged directly to an ORNL account (or work order) number. The exception to this is the 8_ _ _ account numbers which are in the data base.
7. Orders which have been received and costed. There are cases where an order may be fully costed and not received but will be deleted from the data base.
8. Orders which are returned to the vendor may not be in the data base. DPIS normally does not get data which could be used to determine returned or rejected orders.

What is left is the bulk of the active direct purchase orders. The data include:

1. both capital and operating expense requisitions,
2. requisitions prior to the actual placing of an order with a vendor,
3. orders placed by other organizations directly to Purchasing but charged directly to ORNL, and
4. orders split between account numbers or requisitions split between vendors.

In cases of split orders, each part will be shown as a separate order with the associated cost.

A data record is kept for each order which summarizes the order (i.e., an order may have several items). In general the following types of data will be available:

1. original and current commitment;
2. charging (account) information;
3. requestor, requisitioner, and buyer;
4. purchase requisition and purchase order numbers;
5. information on the status and costing;
6. associated overhead and tax commitments; and
7. delivery information.

Specific data elements are defined in Table 3.2.

2.2.2 Using the data

One of the objectives of DPIS is to provide the user with current and accurate cost data. This goal was accomplished by linking DPIS to the ORNL Uniform Accounting System via the Financial Update programs. Costing data are extracted from the Accounting System five times each month (each pay cycle and the end-of-month). Pay cycles occur on (or about) the 10th, 15th, 25th, and 1st of each month. The end-of-month is run on the 3rd working day of the month. (There is actually a two-working-days' cutoff prior to the cycle dates.) Using these data to update DPIS is not a simple task, as can be seen in Fig. 2.2. There are cases where, because of an input error, a record will appear in the data base twice. This problem has been greatly reduced with the addition of the AUDIT module, which audits the DPIS data base. But it is still possible to get obvious (although not exact) duplicate orders. A more detailed description of the procurement cycle can be found in ref. 1.

When using the commitment data the following factors should be considered:

1. The Current Balance (CB) is not consistent with the Operating Report (except after the end-of-month update).
2. Use tax is an estimate based on the type of commitment selected and the delivery point. The delivery point must be estimated in some cases.
3. Overhead exempt accounts are identified by considering several different parameters. There could be a weak point in the work for others.
4. The charging of overhead on overhead exempt orders is done manually. DPIS must estimate when this will occur and may be off by a month.
5. The costing projection is based on the vendor's quoted delivery date (or the user's wanted-by date if the delivery date is not known).
6. If the purchase order number is not shown, the order has not been placed. The commitment is that estimated by the requestor (or is zero if an estimate was not given).

7. Bad charges which can be identified as being from ORNL are in the data base but may not be identifiable as to which account the order will be charged.
8. DPIS utilizes the "short" versions of the Work Order Master and Vendor Master. This greatly reduces processing time but may occassionally miss an item. If this occurs it will normally be corrected on the next cycle or the end-of-month run.
9. A charge initiated on an Internal Modification often takes six to eight weeks before the charge appears on the AP data file.

The status of an order gives an indication of both the receipt of the material and the associated costing. They are kept separate even though most orders are costed upon receipt. Under normal conditions a fully costed and closed order will be deleted from the data base, regardless of the receipt status, at the next end of the month. The reason is that receiving reports do not always pass through MC so that the status code can be set correctly.

One of the most difficult concepts for some users to grasp is commitment. DPIS maintains three different commitments and offers a fourth for generating reports:

1. Original Balance (OB) represents the price the buyer negotiated with the vendor. Normally it does not account for tax or transportation, though it could include both if the buyer negotiated the agreement to include them. The OB normally does not change unless the buyer agrees to a change and has the change entered into the AP data file. Initially OB is the requestor's estimated cost.

2. Current Balance (CB) is the amount currently committed to the order. It includes both direct charges and open accruals. The CB is not consistent with the cost reflected in the Operating Report. (See also the comments at end of the September Options discussed in Sect. 3.) The CB will include all new orders and omit those which were closed. It is updated on each cycle run.

3. Uncosted Commitment (UC) is the amount of outstanding commitment. The UC picks up all the new orders, but it does <u>not</u> reflect costing (direct or accruals) which took place during the current month.

The UC is consistent with the last Operating Report. It will be equal to or greater than CB, except at the end-of-month when UC will be set equal to CB.

4. Direct Costing (DC) is the amount costed to an order. It is DC = UC - CB.

If there is doubt as to which commitment to use, select UC.

2.2.3 Cost data

Since the prime objective of DPIS is to provide the manager the current commitment to outside direct purchases, it is necessary to understand what the cost-type data is and how it is used. When the SUM output format is selected, the output will contain data on:

- commitment type,
- commitment based on estimate,
- use tax,
- Laboratory overhead, and
- type of funds.

2.2.3.1 Commitment type. There are four different commitment types available to the user. They reflect the commitment at different points in the procurement cycle. The type commitment selected will be used in the calculation of all cost related data. In general the commitment will not include transportation charges. For further information on commitment type see Sect. 2.4.3.

2.2.3.2 Estimated value. The estimated value is that portion of the total cost which is based on an estimate. A percentage (of the total) is also listed. Estimates of the cost are required prior to placing a purchase order. These estimates are provided by the person requesting the equipment or material. If a value was not included on the requisition, it is omitted in the input. This is, in effect, assuming it will have zero cost.

If the requisition has a purchase order, the cost is not considered to be an estimate. In most cases, the higher the estimated percentage, the less confidence one can place in the commitment data.

2.2.3.3 Use tax. Calculation of the use tax associated with a direct purchase is a complex process. DPIS takes a simple approach to estimating the use tax:

- 4-1/2% of the commitment if delivery is to Y-12.
- 6% if not delivered to Y-12.

Delivery is to Y-12 if one of the following is true:

1. Plant code is Y, B, R, S, or E.
2. The account number begins with 4 and the plant code is not X or K.
3. The purchase order release number begins with Y or L-R.

If any of these are true, delivery to a Y-12 location is assumed.

2.2.3.4 Laboratory overhead. Laboratory overhead is based on a percentage of the commitment. The percentage changes as adjustments are made to the overhead accounts. There are two exceptions to the straight percentage: (1) overhead exempt accounts and (2) major materials exempt.

Overhead exempt accounts are not charged an overhead since they are, in fact, overhead. An account is exempt from overhead if one of the following is true:

1. if the 2nd digit (from left) is between 0 and 2 or 5 and 9.
2. if the 2nd digit is 3 or 4 and the subaccount
   - is ≤0099 or
   - begins with 8.
3. if the account is work for others and the work order
   - begins with L or W and
   - the 7th and 8th digits are 49 or 99.

Work-for-others accounts are identified by one of the following:

1. the Budget and Reporting (B&R) number begins with 11, 41, 42, 61-67, 71, or 72.
2. the 2nd digit of the account number is 5 and
   - the 3rd and 4th are 11, 65, or 66 or
   - the 3rd digit is 7 or 8.

Major material exempt are often referred to as overhead exempt material. This is actually a misnomer because they do collect overhead at a percentage of the cost up to a maximum amount. If the cost exceeds the maximum (currently $10,000) a fixed overhead amount is charged. A major material order is assumed when:

- type expense (TE) = 66
- sub-work order number begins with X.

Collection of overhead on these orders is done manually, and it is difficult to predict when the cost transfer is actually made. The overhead is paid upon receipt of the first item delivered. But there is usually a one-to-two-month delay before the cost will appear on the operating report.

DPIS attempts to identify orders being charged to an overhead exempt account and when the overhead has already been collected on major materials. An overhead flag (OH) is used to indicate that the overhead commitment on a given order is zero (OH = 1).

2.2.3.5 Capital funds. Orders which are charged to capital funds are not charged overhead. These orders are recognized by being charged to a workorder beginning with J or K. There are two exceptions to this rule. Work-for-others items sometimes have a single source of funds which is not separated into capital or operating funds. When these funds are used to purchase capital equipment, an A6_ _ _ _ workorder is used. The second exception is low-cost capital equipment. These orders have workorders beginning with KE. These A6/KE orders will not be charged an overhead and they will be included in the operating funds data, not in the capital funds.

2.2.3.6 Subcontracts. Subcontracts are not included in the DPIS data base. Even those subcontracts which are referred to as "Purchase Order Subcontracts" are excluded from the data base. Information about all subcontracts will soon be available from the ORNL Subcontract Information System. A purchase order is assumed to be a subcontract if one of the following conditions exists:

1. the work order number begins with A7_ _ _ _ or A9, AA, AB, AC,
2. the sub-workorder number begins with G or H,

3. the type expense is 61, 63, or 67,
4. the purchase order begins with S.

2.3 Typical Users of DPIS

One of the questions often asked is, "What is available from DPIS that can't be obtained from the monthly reports from the UCC-ND Accounting System?" The answer to that question is not simple. There are the obvious differences:

1. Commitments are entered to DPIS at the PR stage. Sampling of data at FED indicate that 25% of the requisitions are in this stage. The UCC-ND Accounting System does not contain these data.
2. DPIS includes requestor's name, description, delivery dates, etc. which are not in the Accounting System.
3. DPIS offers a single source for both capital and operating orders. They are separated in the Accounting System.
4. Either the purchase order (PO) or requisition number (PR) can be used to locate an order in DPIS. The Accounting System uses only the PO number.
5. DPIS offers almost real-time information and reports, rather than Accounting's monthly listings.
6. Data in the Accounting System are available by either the account or work order numbers. In DPIS data can be extracted by using any of the data elements or a combination of these elements. The power of DPIS lies in this feature.

One can put forth a good argument against both sides of item 5. Monthly data is often not enough if a project is expecting difficulties, but it would be hard to justify an "instantaneous" need. Nor can the cost-saving aspect of DPIS be emphasized since it, like all management oriented systems, requires additional costs. The value of DPIS is the flexibility it offers the manager to extract information (item 6) in a usable format so that decisions can be based on accurate and current information. Restructuring the data so that different trends or potential problems can be identified is a technique used by most managers. DPIS offers

this capability, quickly, and for little extra cost. Thus the manager need not compromise that "one more iteration" in the search for needed information.

What are some typical questions to which DPIS could provide helpful information? Several examples of the obvious uses of DPIS are given in Sect. 5. Some other potential quesitons for DPIS might include:

1. What would be the impact of changing the overhead exempt (major material) limit from $10,000 to 20,000?

2. As the end of the fisical year approaches, the question of what to expedite always arises. Since the number of requisitioners is fixed, which orders should be selected for their attention?

3. Under the same circumstances as in question 2, what would be the impact of a ±10% variation in the vendor's delivery date or would there be an advantage in changing the FOB point?

4. Is a particular project guilty of allowing too short a lead time to Purchasing?

5. On the contrary side from question 4, are needed materials which are being delayed associated with a specific buyer or vendor?

6. Construction is scheduled to begin in June. What materials needed then have not been ordered?

7. A project will be switched from one DOE mission to another. What will be the effect, in terms of material commitment, on each of the missions affected?

8. A work order will be closed. What is the outstanding material obligation, and what orders require an Internal Modification?

9. Is the ratio of the number of orders to the value of orders constant for all requisitioners or buyers?

10. A one month rail strike is anticipated in August. What critical items might be affected?

Some of these questions cannot be answered directly by DPIS, but it can provide the basic data in each of the cases. There are many other questions related to direct procurement that the manager will be faced with which will not conform to any of the examples. In most cases questions can be structured so that the answer can be found directly or that only the relevant data need to be reviewed.

DPIS has two additional advantages worth mentioning. The DPIS data base and search capabilities will be used to provide input to other management information systems which have a need for information related to direct purchases. The DPIS software is also very flexible and structured for change. If routine questions cannot be answered or a different format is needed, DPIS is changeable.

2.4 Using DPIS

For DPIS to be successful, it must be used. To be used, the information it supplies must be either more timely or more accurate, in a more usable format, or easier to obtain than is possible in the present accounting system. DPIS offers advantages in all these areas. Much design and redesign based on user feedback went into making the DPIS User Module easy to use. It is designed so that even people unfamiliar with computers can, with a minimum of instruction, obtain information about direct purchases.

The User Module is structured so that it prompts the user for inputs, which are then checked for format consistency. When errors are detected, the user is asked to reenter the data. If the user enters an illegal character, DPIS flags the character and gives additional instructions on the input it is expecting. A second level prompt can also be obtained by responding with a "?". A "??" will usually give a more detailed third level prompt.

Another feature of the system is that the user cannot destroy or alter the data base or the software.

2.4.1 Running DPIS

Do not fear having to learn a lengthy list of very precise computer terms. DPIS is easy to run! If you have read the Summary you have already seen the list.

DPIS resides on ORNL's PDP-10 computer. A computer terminal is needed to communicate with the User Module. (Most buildings having scientific or computer personnel also have terminals.) Like most office machines, terminals are easy to use once you gain a little experience,

even if you have never used one before. Appendix A contains instructions for those not familiar with the use of terminals. Also required are a valid computer access code [or project-programmer number (PPN)] and knowing how to LOGIN to the computer. Appendix A also contains instructions on user areas and LOGIN.

Step 1: Make contact and LOGIN

First contact the computer. This can be done by calling the "dial-up" line (currently 4-7474) or using one of the terminals which is hardwired to the PDP-10 at X-10. If the dial-up is used, a steady, high-pitched tone indicates a successful contact. Then place the phone in the coupler. This step is not required for the hardwired terminals. The PDP-10 requires a depression of the RETURN key (indicated by the symbol "↵") as the first response, which sets the transmission speed. After the computer responds with a ".", the user must LOGIN to establish communication with the computer. An example of this procedure follows:

```
↵
UCCND NETWORK CONTROL
WHICH SYSTEM? 1 ↵
UCCND PDP-10 10:15:19 TTY110 port #167 system 1319/3118/1369
Please LOGIN or ATTACH
. LOGIN ⟨PPN⟩ ↵
. PASSWORD ⟨password⟩ ↵
.
```

The following convention is used in this manual:

↵ indicates depressing the terminal's RETURN key. What the user types is underlined.

⟨text⟩ indicates some optional or variable text.

PPN is the user's program-programmer number. Each PPN has an associated password.

. indicates that the computer monitor (collection of programs which provides an interface between the user and the computer) is waiting for the user's instruction to it.

DPIS responds to the first two characters of an option, however additional characters can be entered for readability.

Step 2: Run DPIS

This is accomplished by responding to the "." of line 4 in the example above with the command "DO DPIS." DPIS will respond with the version you are using and ask what you want to do:

```
. DO DPIS ↵
ORNL DIRECT PURCHASE INFORMATION SYSTEM
VERSION: 2A
ACTION DESIRED? USER ↵
```

Step 3: Specify information requirements

At this point you provide DPIS with answers to the questions it prints on the terminal. These questions are related to output format, types of funds and commitment, set definition and instructions on how to process the data. Details on the questions and options available are presented in Sect. 3. The user may find it helpful to refer to Fig. 3.1, which is a logic flow chart of how the user's request is processed.

As an example consider the case of where the total price and status of a purchase requisition (S-2003) is needed (output is to be displayed on the terminal):

```
VERIFICATION OPTION (Y/N) ? N ↵
OUTPUT FORMAT: LI ↵
TYPE FUNDS ? ALL ↵
TYPE COMMITMENT ? UC ↵
GROUPING CODE — 1 : PR ↵
REQUISITION NUMBER ? S2003 ↵
GROUPING CODE — 2 : GO ↵
SORT OUTPUT (Y/N) ? N ↵
REPORT TITLE ?
   REQUISITION #S2003 ↵

RUN CASE BATCH (Y/N) ? N ↵

THERE WILL BE A BRIEF PAUSE WHILE DATA IS SEARCHED AND
  ORGANIZED TO YOUR SPECIFICATIONS

SEND OUTPUT TO PRINT FILE (Y/N) ? N ↵
```

The results printed on the terminal are:

```
O R N L  P R O C U R E M E N T  S Y S T E M  V E R S I O N 1-B
        DATE 4/ 2/80     PAGE      1
           REPORT TITLE : REQUISITION #S2003

           ACTION CHOICE : LIST
           FUNDS TYPE : ALL
           COMMITMENT CHOICE : UNCOSTED COMMITMENT

           USER REQUESTED :

               REQUISITION NUMBER : S2003


O R N L  P R O C U R E M E N T  S Y S T E M  V E R S I O N 1-B
        DATE 4/ 2/80     PAGE   2


                              B P
REQ    ACCT NO     WO NO  U C PO  RN  VENDOR  DESCRIPTION    COMMITMENT
DEL BY WANTED  REQD    NAME       FBMC  MCST APST  FU TE
S2003  44600602 A7632M10 73B13265K25 N26308 SWITCH TOG          50.00
32280   32080 120179 JONES JM    0 0 PART N AP   OP 64
```

Some key points to remember are

1. Your typed response is not processed until the RETURN (↵) key is depressed.
2. If you do not understand what response is expected, a response of "?" will make a second prompt available to you. In most places a "??" will cause a more detailed, third level prompt to be printed.
3. An invalid entry may also result in prompting.
4. To return to a higher level in the hierarchy, respond with END. (The hierarchical concept is described in Sect. 2.4.2.)
5. When a variable-length list is being entered, use GO to indicate completion and to go process the commands.

Step 4: Ending the Session

DPIS can be terminated by entering END ↵ until the EXIT is obtained. This will be followed by a "." indicating that you are at the monitor level. If you requested that the output be sent to the printer, instructions on whether to queue the file to the printer are asked for. To terminate the computer run, type K/F ↵ (after a "."). After the terminal

ceases to type statistical data about your run, disconnect the phone (if used) and turn off the terminal.

For example to exit both DPIS and the computer:

```
RUN ANOTHER CASE (Y/N) ? N )
ACTION DESIRED ? EN )
STOP

END OF EXECUTION
CPU TIME: 0.78 ELAPSED TIME: 5:23.00
EXIT

.K/F )
JOB 30, USER [200,133] LOGGED OFF TTY15 1024 2-APR-80
SAVED ALL FILES (585 BLOCKS)
CPU  TIME = 0.02 MINUTES
CON  TIME = 0.12 HOURS
KILO CORE = 0.01 HOURS
JOB  COST = 0.65 DOLLARS
CHARGE NO = 15445
PRIME RATES
```

There are two additional points to remember. To utilize DPIS's capabilities fully requires practice and thought on how the groupings can be combined to provide the required information. There is no way you can destroy the data base or the program, so there is no harm in experimenting.

2.4.2 Hierarchical concept

Most of us are familiar with hierarchical concepts in the form of organization charts. As shown in Fig. 2.3, the system begins at Level 0. This level is not accessible by the user except to run the DPIS User Module as a stand-alone module. In the future, Level 0 will be the linkage to a broad-based management information system. Entry to DPIS is at Level 0. Here the user has the choice of using the real data base or a special data base such as monthly historical or September. At Level 1 the user can select which of the action options is needed. Upon selecting the action type, DPIS proceeds to that location, which is at Level 2. At this level the user can select one of the several options or groupings available with that action. These groupings are at Level 3. The code symbols used in Fig. 2.3 are the same as those

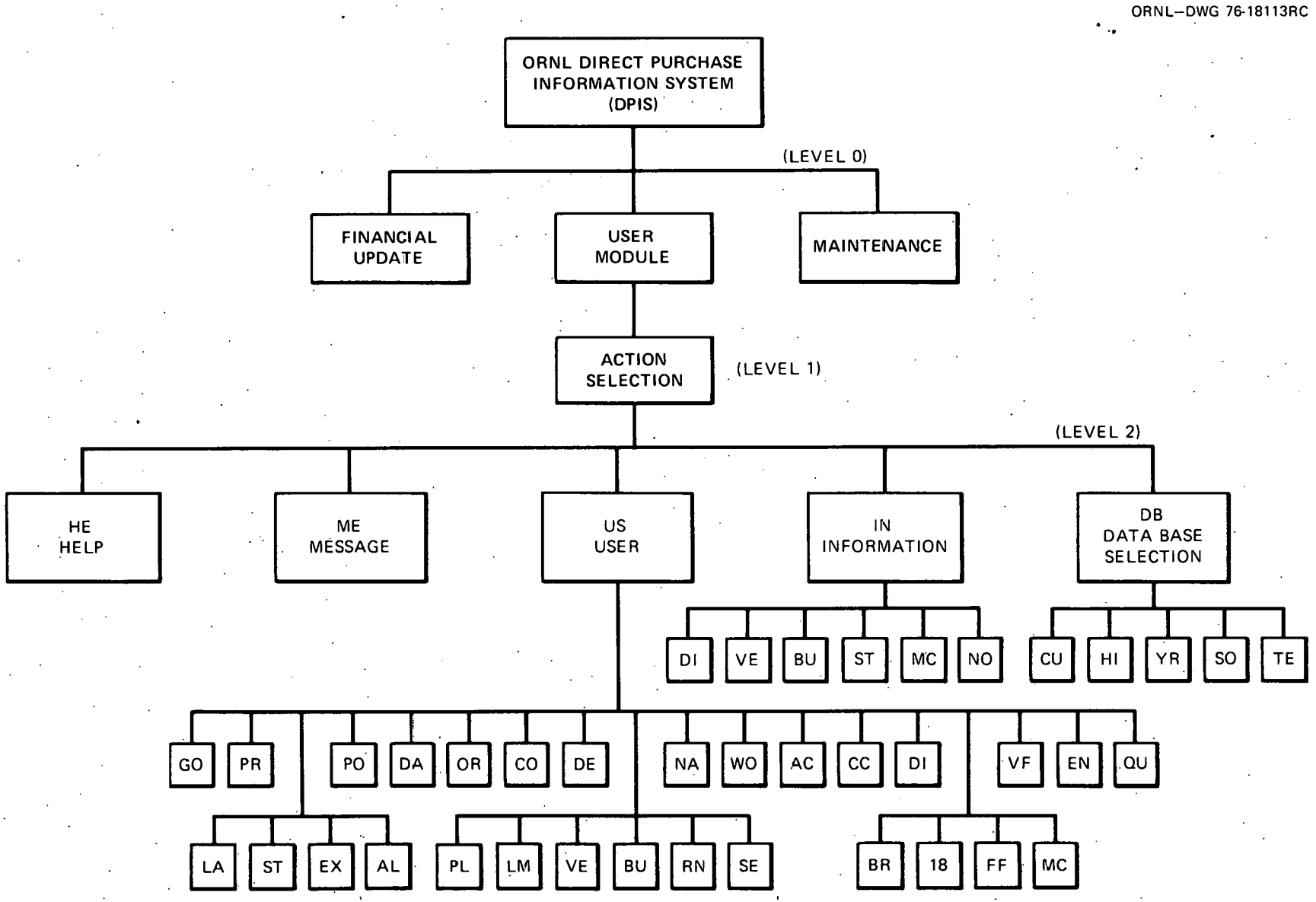

Fig. 2.3. DPIS/USER: the hierarchical program structure.

used to instruct DPIS as to the set of purchase requests of interest. These codes are defined in Tables 3.1 and 3.2. After selection of the grouping the program proceeds to Level 4, Fig. 2.4, where the specific characteristic or value is defined. At this level DPIS has sufficient instructions to search for the information requested. For example, to obtain information on all the requisitions currently opened by Miller: (1) select US action at Level 1; (2) at Level 2 the grouping NAME is chosen; (3) at Level 3 the name is requested (i.e., NA=); and (4) the response (MILLER) is the characteristic value which leaves the program at Level 4. Since no other grouping is necessary to define the data set of interest, DPIS can start processing at the user's request of "GO". The user must make three additional choices before the case can be processed: (1) SORT DATA BASE? This allows the user to define the sequential order of the data selected before it is printed. Most of the grouping codes can be used as the parameter to sort. (2) RUN BATCH? When this option is selected the case just defined will be run later. The submission of this job will be done automatically and control of the terminal returned to the user. (3) DISPOSITION OF THE OUTPUT? Four basic options are available: (a) display on the terminal, (b) delete the output, (c) print on a line printer and delete or save afterwards, and (d) save the output file. After the choice is made, DPIS does the paperwork necessary to carry out the request. Upon completion of the information request, control is returned to Level 2, except for a case being run under ACTION=USER. When the US option is completed the user is asked if another case will be run. A NO will return the user to the ACTION level. A response of END at Level 2 will return control to Level 1. Selection of USER at the ACTION level will generate several other questions about the user's information needs. The first is the output format. Each order belonging to the data set the user defined with the grouping codes can be listed, the totaled cost data printed, or both. The user can select the type of funds to be considered. This restricts the PR records checked to only those purchased under the type of funds indicated. Choice is among operating funds (specified by OP), capital funds (CA), or all funds (AL). DPIS also lets the user select the type of commitment data of interest. Options are: original

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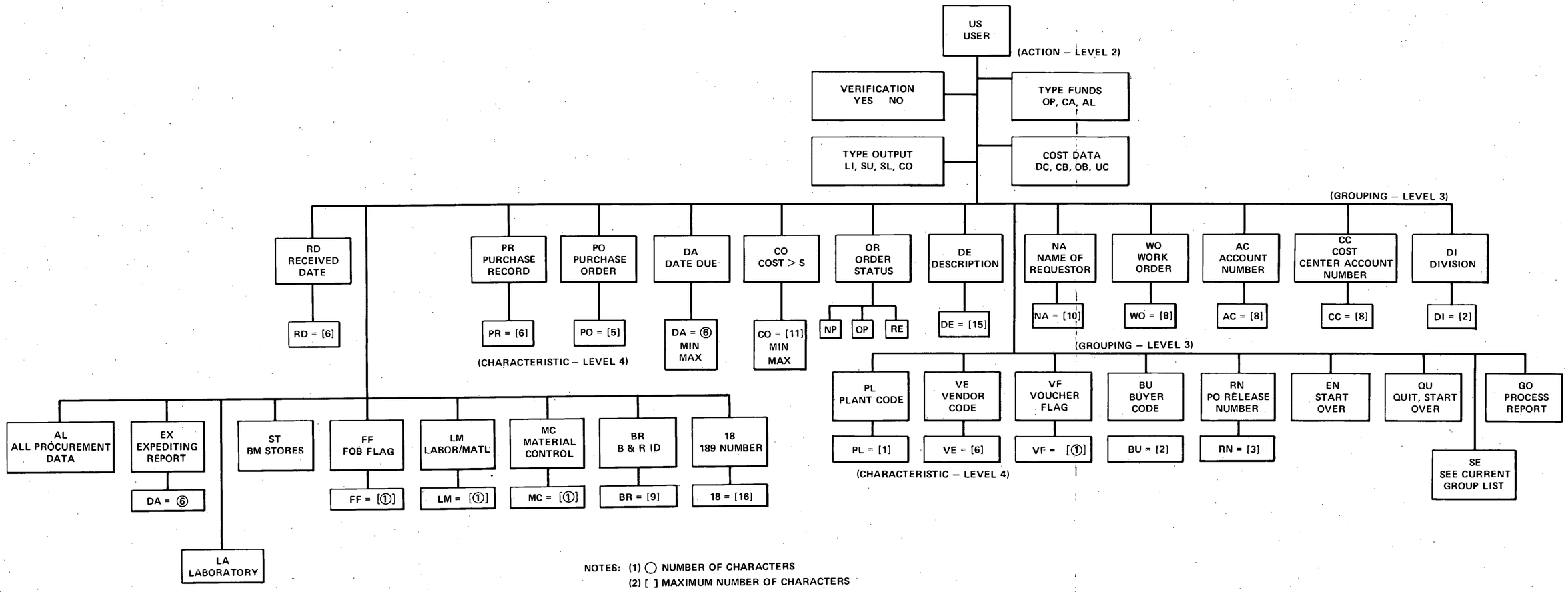

NOTES: (1) ◯ NUMBER OF CHARACTERS
(2) [ ] MAXIMUM NUMBER OF CHARACTERS
(3) XX = DPIS RESPONSE

Fig. 2.4. DPIS/USER: the hierarchical user-action structure.

obligation [or original balance (OB)], uncosted commitment (UC), which neglects costing transactions during the current month, current balance (CB), which includes all cost transactions, and the costing transactions [or direct charges (DC)] during the current month. Next the user has the option to run the case just defined on-line or to run it as a batch job. (Batch results will normally be available the next day.) The last choice is where the output will be printed. Results can be printed on the user's terminal or sent to the printer.*

2.4.3 Definition of commitment

Because of the wide range of potential users and the difficulty of reaching an agreement on the meaning of terms such as cost, commitment, obligation, or cost transactions as they relate to the direct purchase system, these terms will be defined herein as they apply to DPIS. Commitment, as used in DPIS, is defined as the amount of funds obligated on a specific PO. The commitment is not the amount owed to the vendor and does not include overhead or use tax. It usually does not include shipping unless the vendor included it in the quoted price.

During the month, new requisitions are opened and AP makes costing transactions to cover a payment or to accrue funds for future payment. An Operating Report, issued after the end of the month, shows the financial charges which were made against a manager's account. Therefore, to use the information on commitments properly, one must know the time of the commitment. DPIS allows the user to select one of four different "types of commitment." The four commitment options were chosen to meet the needs of specific groups of users. The choice of the heading is the result of a need for a unique label for each of the commitment types. Commitment data available are:

*Using the printer hard-copy option produces quicker responses and less time at the terminal, and each purchase request is printed on a single line. However, the user may need to go to the computer room to get the output after it is printed. If the output is needed quickly and is not too voluminous, output on your terminal is probably best.

1. OB — Original balance. This value is initially an estimate of the cost of the order. After the order is placed with a vendor, it becomes the quoted price for the order and remains unchanged unless a price change is made.
2. UC — Uncosted commitment. This value includes uncosted balance from the previous month plus the current month's revisions to previous commitments and/or additional commitments. This value can be thought of as the cumulative total outside commitment less direct costing through the previous month as determined by the accounting system. Therefore, this value does not include the more frequent costing accumulation as determined by AP. This value is consistent with the cost (CO) in the last (previous) month's Operating Report for determining the uncommitted funds (UF):

$$UF = \text{Budget} - (CO + UC) \ .$$

   The UC commitment will usually be selected by a project manager.
3. CB — Current balance. This value is sometimes referred to as the balance to date. It includes all the active requisitions and all the cost transactions against the order (debits). The CB value is not consistent with the Operating Report during periods other than month ending. If CB were to be used instead of UC in the equation for UF, the costing and/or accruals made during the month would not be accounted for, which could lead to a budget overrun. The current balance (CB) is most useful to a finance officer during the last month of the fiscal year.
4. DC — Direct costing. This is the cumulative amount of costing transactions made by the accounting system during the current month. It is actually the difference between the uncosted commitment and the current balance:

$$DC = UC - CB \ .$$

Its main use is for costing visibility during the last month of the fiscal year.

2.5 Changes to PROQ

Many users are familiar with the earlier version of DPIS — PROQ. The new DPIS User Module contains several new options which will provide more flexibility to the user. It will also confront the user with some new responses. From an operational point of view, response time was greatly improved and CPU/Core requirements were reduced.

Options or features added include:

1. Improvements were made to the use-tax and overhead charges. Overhead exempt accounts are now accounted for.
2. Multiple sorts are now allowed and the response time for sorts was greatly reduced.
3. A consistent prompting system was installed. The prompt for data input was shortened to make routine questions quicker. A "?" will always give the user a brief statement as a reminder. A "??" will provide an explanation of the input parameter.
4. Another aid to the novice user is the option to allow the user to verify and correct each parameter input.
5. The checking of input data is much better. When an error is detected, the invalid characters are flagged and displayed on the terminal.
6. An option is available to show the user all the options chosen and those logically remaining.
7. The status comment indicates the status of both the receiving and costing.
8. Long jobs can be set up interactively and run later as a batch job.
9. The user can switch the output between the terminal and printer on each case. The program will generate the command necessary to queue the user's output to the printer.
10. An information option was added which lists
    a. a vendor's name, address, and telephone number for the user-input vendor code;
    b. the buyer's name and telephone number;

c. the ORNL requisitioner's name and telephone number;
d. the meaning of the status messages; and
e. general instructions on how to use the program.

11. A communication option was added which allows messages to be sent to users, and users can send messages to the DPIS personnel.
12. B&R Activity, 189, division, and cost center numbers are taken from the ORNL Account Master.
13. Cost and date (grouping parameters) are treated as ranges (i.e., find all orders costing between $10,000 and $20,000).
14. A "wild card" option is available for each parameter allowed as a grouping code. (For example, if WO=A9325___ is entered, the search will be for all work orders from A9325A00 to A9325Z99.
15. The following parameters were added to the available grouping codes:
    a. Description,
    b. ML (Material/Labor Code),
    c. Order status (not ordered, ordered, or received).
16. Projections of the cost for the remaining fiscal year are available.
17. The capability to access historical data online has been added. Historical data consist of orders closed within the past 12 months.

In the redesign of the User Module, an attempt was made to make the module easier to use and more responsive to the users' requests and to be consistent with other MISs used at ORNL. To achieve this, one change was necessary which may cause previous users a problem: END is used to terminate the current option and return to a higher level. In the old (PROQ) USER option, END was also used to end the data set definition. In the new (DPIS) User, the command GO must be used to instruct the model to perform the requested task (END will terminate the set definition and return to the start without processing the set).

REFERENCES FOR SECTION 2

1. J. L. Lovin, *ORNL Direct Purchase Information System: System Manual,* ORNL/TM-draft, Oak Ridge National Laboratory, Oak Ridge, Tenn. (to be published).

2. *Subcontract Module: User's Manual,* ORNL/SUB-80/24705/1, PRC Systems Service Company, Oak Ridge, Tenn., April 15, 1980.

3. USER'S GUIDE

The objective of the User's Guide is to provide detailed instructions on how to use the ORNL Direct Purchase Information System (DPIS) to obtain information related to direct purchases. The user's selection process begins at the ACTION level and will normally proceed to the USER options. Therefore the bulk of this guide is concerned with the USER options.

3.1 Action Level

The first option is which action is desired. The request for action type is:

```
ACTION DESIRED ?
```

If, at any point, the user is unsure of the meaning of the question, a second level prompt can be obtained by responding with a "?." To illustrate and to give the action choices:*

```
ACTION DESIRED ? ? )
ENTER ME,US,IN,HE,SE,DB, OR EN
```

The second level prompt is intended to be a "memory jogger." A third level prompt is available at most places. A "??" will cause the prompt to be printed.

```
ACTION DESIRED ? ?? )
  ME = MESSAGES: TO USER; FROM USER
  US = QUERY OF DATA BASE BY THE USER
  IN = INFORMATION ON CODED DATA
  HE = HELP.  INSTRUCTIONS FOR USE
```

*See note in step 1, Sect. 2.4.1 for meaning of) and ____. Towards the end of the fiscal year another option (SE) will appear which will allow use of the September Option.

```
DB = DATA BASE SELECTION
SE = SEPTEMBER OPTION
EN = EXIT FROM PROGRAM DPIS
ACTION DESIRED ?
```

The Action choices are:

EN — End will cause the run to be terminated. If printer reports were requested earlier, their disposition is requested. The user is returned to the monitor.

HE — A help file is available which provides general instructions on using the DPIS User Module. This file will be updated as needed. The current file is shown in Appendix B.

IN — Information about the various codes used is available. The user specifies the type of code information needed:

BU — identification of a buyer code. Included are name and telephone extension.

DI — list all division names and numbers.

MC — lists the name and telephone extension of all the materials control requisitioners.

NO — prints the number of requisitions in the data base.

ST — lists and defines all the status codes used in DPIS.

VE — identification of a vendor code. Included are name, address, and telephone number.

A typical information request is that of a specific vendor:

```
ACTION DESIRED ? IN )
INFO SELECTION : VE )
INPUT VENDOR CODE AS LNNNNN : C00165 )
  VENDOR CODE : C00165
  VENDOR NAME : C & C ELECTRONIC CALCULATOR CO
      ADDRESS : P O BOX 10847
                KNOXVILLE TN  37919
        PHONE : 7-524-2731
```

ME — Messages can be sent

TO — the user. Typically these will be related to the status of the data base, problems relative to the software, or new options.

FROM — the user. This provides a means for the user to send messages to DPIS personnel.

SE — September option. This option will be available for use during the last month of the fiscal year. Its objective is to provide cost commitment data based on receipt of the item rather than the monthly accounting system data. Selection of the SE option will automatically link the user to the September data base. Do not use the DB option to select the September data base.

DB — The data base (DB) function allows the user to select and use a data base other than the current ORNL direct purchase data base. Other data bases available to the user are:

CU — reset to current month.

HI — monthly historical data files — contain data on materials which were received or costed during the month selected:

JAN = January; DEC = December;

YR — historical data (from Jan 1980)* — (currently not operational);

SO — September Option data base; and

TE — test data base.

US — User provides the capability to obtain information about active direct purchases. This is the action type which is most often selected. It is the only link to the DPIS data base.

Once another data base has been selected, all the other DPIS User options are available.

The functions available at the ACTION level are easy to understand and use except:

- Data Base Selection (see Sect. 3.1.1)
- September Option (see Sect. 3.1.2)
- User Options (see Sect. 3.2-3.4).

---

*There are some data available from July 79 to December 79, but their validity is questionable.

3.1.1 Data base selection

The main objective of this option is to allow the user access to data which have already been received and costed and are no longer in the active data base. There also appeared to be a need for determining how much was costed in a previous month. By linking these data to the USER Module, the user can work with the data in the same way as in the active data base. These data are kept online in monthly data files. At the end of a fiscal year the data are stripped of partial costing and stored as a file on a magnetic tape. Once this link to other data bases was established it was decided that there were two other data bases which might be of interest: (1) September data base and (2) Test data base.

3.1.1.1 Monthly historical data files. These files allow the user to have access to orders which have been fully received and costed or partially costed. There is a file for each of the past twelve months. They contain those items which were costed during that month. Although the user can select only one file for a case, the program keeps a running total of the cost data. This will allow the user to select, for example, the past three months as three separate cases and then obtain the total cost. Selection is made by responding with the calendar month (i.e., January or JAN).

3.1.1.2 Historical data tape. When operational, this option will allow a user to have access to all closed (received and costed) orders back to January 1980 (some data may be available back to July 1979, though it is not complete). Historical data are contained on magnetic tapes; each file is a fiscal year. To use the option the user must make a prior request to a DPIS system person (see the Message option) for the file to be put online. Once a file has been put online, the DPIS User Module can then access the data.

3.1.1.3 September data base. This data base will be available only during the month of September and until mid-October. It is the data base used in the September option. The main difference in the September and the "regular" data bases is the current balance (CB). The

CB in the September data base is adjusted to reflect what has been received rather than what has been costed.

When the September option data base is selected under the DB action, the user will be using the regular USER action output format. If the September option is desired, select the SE function at the action level and the September data base will link automatically.

3.1.1.4 Test data base. This data base is used by the programmers for testing system modifications. It is also used for demonstrations and was used to generate the examples shown in this report. A new user may find it helpful in gaining confidence in DPIS, since it is a small defined set of data.

3.1.2 September option

The September option (SE) is intended to aid in the closing of a fiscal year (FY). Direct purchases against operating expense funds present a special problem at the year's end since they must be costed in the FY received. To balance a budget the manager needs to know how much of the current commitment will actually be costed this FY and what the commitment will be next FY. SE will be available only during the month of September (i.e., the last month of the FY). The main difference between SE and US is the data base. SE uses a data base that reduces the commitment based upon receipt of the material or equipment. It does not require that Accounts Payable make a cost transfer as does the US option. SE assumes that if an item is received during the FY it will be costed from those funds. Another change in the September data base is that the voucher flag (VF) is used to indicate that the vendor's delivery date has recently been confirmed (VF = 1).

Once SE is selected and the module is linked to the September data base, the module switches back to the US mode to allow all those options to be used with the September data base. When SE is selected the September data base is automatically linked. The user should not select the DB option to request the September data base since this would actually void the SE request.

Output from the SE option is the same as for US except the following information is added:

	SEPTEMBER BALANCE			
	BASE	TAX	LAB OH	TOTAL
VERIFIED	16583.00	746.23	4974.90	22304.13
BALANCE	55672.15	2505.25	16701.65	74879.05
COSTING DC	36890.75	1660.00	11067.22	49617.97

where

VERIFIED is the total balance of orders whose delivery date was recently verified with the vendor.

BALANCE is the current balance. It includes the VERIFIED.

COSTING DC is the value of the items received or costed during September.

The actual format of this additional data may vary from year to year, depending on user feedback.

3.2 User Operation

The USER action is the major option in the DPIS User Module of benefit to the general user. It allows the user to specify the data of interest, and then retrieves it. This is accomplished by selecting a grouping (data element) and its characteristic (value). Several different groupings can be selected, and only those records having all the specified characteristics will be included in the data set. This option allows the user considerable flexibility in selecting the data of interest. The first step is to select the grouping code, which corresponds to an element in the purchase requisition (PR) record (e.g., name, due date, etc.). Next the characteristic (value) the element must equal is given. Several different groupings can be used to define the data set of interest. They are processed as logical AND's (i.e., only orders having all the characteristics specified are included in the set). The set of orders can be listed and/or summed.

This section is intended to provide the user with information on what the USER options are. Some examples of how to combine these options to answer specific questions are given in Sect. 5.2.

As shown in Figs. 2.3 and 2.4, the user enters this option by requesting USER at the ACTION level.

A brief statement about how the software operates in the USER mode may be helpful (additional details can found in Sect. 2.4.2). Reference to Fig. 3.1 may be helpful while reading the following description of USER. Upon selection of the US ACTION, the user has the option to verify all the data input. Unless the user is a novice at using a computer interactively, this option is not necessary. Next, the output format is specified. Then the types of funds and commitments are specified. The user next must define the set* of data of interest. This is done by selecting a grouping code and then its characteristic (value). Several (up to ten) groupings may be used to define the set. A grouping code of GO will indicate the completion of the set definition. After the set is completely defined, DPIS searches the data base for all purchase requisition records belonging to the defined set. This is done by using the grouping code which determines the location in the purchase requisition record of the element to check. The value in that location is compared to the characteristic value. If the values do not agree, the next order is checked. If all the grouping checks are satisfied, the record is part of the defined set. The "cost"† is loaded with the value of the commitment data type selected. When cost or commitment data are requested, this "cost" value is used and would be printed if a list were requested. At this point, the user may select the batch option. When the response to the prompt is YES, all the commands and

---

*A set is a collection of purchase requests having common characteristics. As used in this report, it further restricts a grouping by the addition of a variable with a specific value.

†The cost data added is dependent on the type of commitment data selected by the user. If, for example, CB were selected, all the commitment (cost) data would be based only on the current balance value of each order in the set.

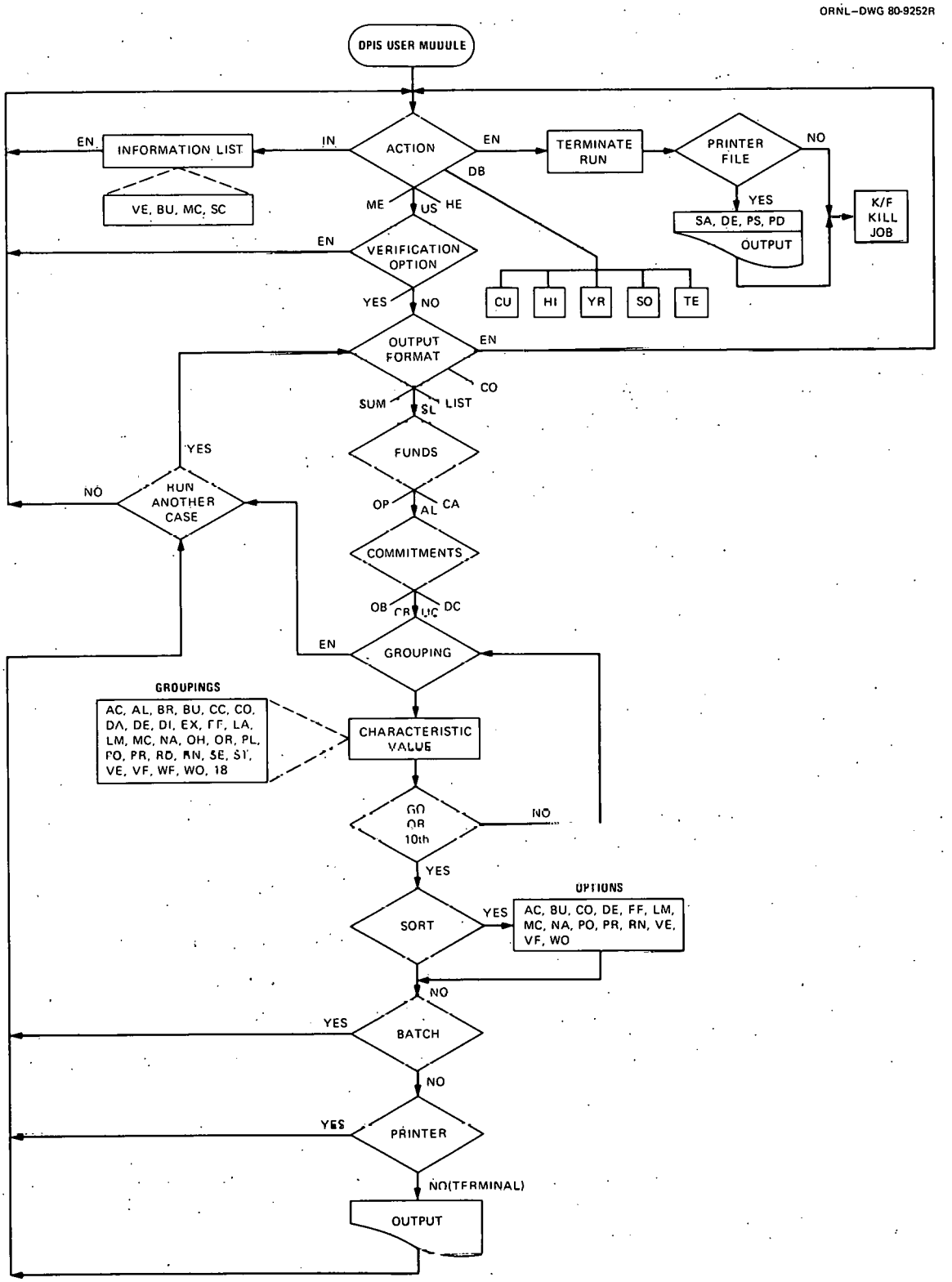

Fig. 3.1. DPIS user module option selection flowchart.

set definitions just input will automatically be put in the batch queue for processing. A NO response to the batch question will cause the data base to be searched for all matching records in an online mode. Control of the terminal is returned to the user only upon completion. After the set has been processed, the user is asked if another case is to be run. A YES will return control to the point where the output format is specified. The process is repeated until the user responds with NO or END to the output type or first grouping. Prompting is available for all options.

The input to the USER ACTION and the options available will be presented in the same sequence as the software processes the data and as DPIS asks the user for the selected option. A flow chart of this input is shown in Fig. 3.1. A summary of the options is presented in Table 3.1. The flowchart begins at the action level where the USER action was selected:*

```
ACTION DESIRED ? USER )
```

3.2.1 Verification

The first option offered the user is to verify the input data values:

```
VERIFICATION OPTION (Y/N) ?
```

YES turns the option on. After each value is entered it will be printed on the terminal, and the user will be asked to verify the value. If it is not correct the value can be reentered. A typical response is:

```
GROUPING CODE — 1 : DI )
DIVISION CODE ? 19 )
THE DIVISION NUMBER IS : 19
        CORRECT (Y/N) ? Y )
```

*The complete option USER can be input. However, only the first two characters US are required to define an option.

Table 3.1. Commands and key words

Code	Description
ACTION	Choice of the major type of *action*[a] to be used at Level 2.
AL	Any (*all*) type of funds (OP or CA) considered.
BATCH	Option which allows the user to define the information needed online and do the actual processing later as a *batch* job.
BU	*Buyer Code*. Two characters which indicate the buyer for the order.
CA	PR charged to *capital* (or equipment) funds.
CB	*Current balance*, which includes accruals or costing which occurred during the current month.
CO	*Commitment* Report output format.
DC	*Direct costing* which has occurred during the current month.
DI	List *division* names and numbers.
EN	Flag used to *end* or exit current level and return to the next highest level.
GO	A flag used to end activity at this level and process the commands given.
HE	*Help*, instructions for use of the DPIS/USER program.
IN	*Information* on coded data such as names and addresses of vendors (VE), buyer code (BU), status code (SC), and materials control (MC) information.
LI	*Lists* PR records in a specified grouping (no total commitment data).
MC	*Materials control* information showing the names and telephone numbers of persons and their corresponding materials control flag.
ME	*Messages:* allows the user to send meassages *to* the programmer or receive messages *from* the programmer on the status of the program.
NO	Gives the *number* of records in the data base.
OB	*Original obligation* of the order.
OP	PR charged to *operating* (or expense) funds.
PL	*Plant* code of delivery point or an indicator of a special type order.
PRINTER	Output is stored in data file for sending to a line *printer* after the run is completed.

Table 3.1 (continued)

Code	Description
SC	*Status code* information relating to the definition of the status flags in the USER program.
SE	*September* option. A special option used by Finance and Materials during the last month of the fiscal year.
SL	*Sum* and *list* of all purchase requests in a grouping and their combined cost (basic, tax, overhead, and total).
SU	*Sum* only will suppress the listing of PR records and print only the combined cost of the specified grouping.
UC	*Uncosted commitment* not including accruals or costing which occurred during the current month. The UC is consistent with the Operating Report.
US	*User* action will execute that portion of DPIS/USER which contains the options available to the general user.
VE	*Vendor* code information gives names and addresses of specified vendors.

[a]Key word is in italics. Most code words can be input as complete words (except those consisting of the first leter of two words). Only the first two characters of the key word are interpreted (e.g., Monthly and MO are the same).

```
GROUPING CODE — 2 : CO ↵
MINIMUM COST = 20000 ↵
THE MINIMUM COST IS 20000.00 CORRECT (Y/N) ? N ↵
MINIMUM COST =
```

The user can now enter the correct minimum cost.

A NO response to the verification question turns the option off. This is the mode most users will use (and is the default).*

3.2.2 Output format

At this point, one enters the beginning of the repeating cycle of USER, where the general output format is specified. First the user must specify the type of output:

*If no value is input, the default value will be used. NO is the default for YES/NO questions.

OUTPUT FORMAT :

LI — will list all the PR records belonging to the defined set.

SU — will suppress the listing of the PR records and give the sums of the cost data (vendor cost, Laboratory overhead, and tax) for the defined set. A monthly costing projection is also given. The SUM also includes the percentage of the total commitment which was based on the requestor's estimate. These estimates are the result of requisitions which have not had orders placed with a vendor. If the percent estimate is high, one cannot normally put much confidence in the total commitment. The monthly costing estimates are the sum of the uncosted commitment data and include the tax and overhead for each order. Also shown are estimates for the fiscal year, for all orders due after one year, and orders overdue. The current month is shown first. The month of costing is assumed to be the month of the delivery date (or the date wanted if the order has not been placed). A better method of estimating the month in which the commitment will be charged will be added later.

SL — will provide the summed cost data and the PR record listing (default). (See Fig. 3.2, Sect. 3.4, for an example.)

CO — will print the data in the Commitment Report format. (See Fig. 3.3 for an example.)

3.2.3 Type funds

Next the user is asked to specify the type of funds to consider. This is the type of funds the commitment will be charged to. Its effect is to restrict the grouping further as to the type of funds being used to pay for the procurement:

TYPE FUNDS ?

Types of funds are:

OP — operating funds only,

CA — capital funds only, and
AL — all funds (default).

3.2.4 Type commitment

The next request is for the type of commitment data:

```
TYPE COMMITMENT ?
```

The types of commitment data available are:

OB — original obligation (estimated or vendor quoted value),
UC — uncosted commitment, which is consistent with the last Operating Report (neglects current month's costing),
CB — current balance, which includes current month's costing, and
DC — sum of the direct costing for this month (UC — CB).

These terms are more completely defined in Sect. 2.4.3.

3.2.5 Groupings

The next step is to define the characteristics of the set of purchase requisitions for which information is wanted. DPIS's response is:

```
GROUPING CODE — 1 :
```

The grouping options are defined in Sect. 3.3. A prompt is available to remind the user of the options available. It can be obtained with a user response of ??. The prompt is:

```
GROUPING CODE — 1 : ?? ↵
ALLOWED RESPONSES ARE :
  * AC =ACCOUNT NUMBER
    AL =ALL PROCUREMENT DATA
  * BR =B&R ACTIVITY NUMBER
  * BU =BUYER CODE
  * CC =COST CENTER
    CO =COST RANGE
    DA =DATE DUE
    DE =ORDER DESCRIPTION
```

```
    * DI =DIVISION NUMBER
      EN =END THIS ACTIVITY
      EX =EXPEDITING LIST
      FO =FOB POINT
      GO =RUN REPORT
      LA =LABORATORY
      LM =LABOR/MATERIALS CODE
      MC =MATERIALS CONTROL FL
      NA =NAME OF REQUESTOR
      OH =OVERHEAD FLAG
      OR =ORDER STATUS
      PL =PLANT CODE
    * PO =PURCHASE ORDER
    * PR =PURCHASE REQUEST NO
      QU =END THIS ACTIVITY
      RD =RECEIVED DATE
    * RN =RELEASE NUMBER
      SE =CURRENT GROUP LIST
      ST =B&M STORES LIST
      VE =VENDOR CODE
      VF =VOUCHER FLAG
      WF =WORK FOR OTHERS
    * WO =WORK ORDER
    * 18 =189 NUMBER
  * FAST DATA LOOKUP
  GROUPING CODE - 1 :
```

DPIS is again waiting for the user to specify the first characteristic of the set. After the characteristic is selected, the user is asked to specify its value. DPIS will echo the "GROUPING CODE =" and wait for the value.

```
GROUPING CODE - 1 : (NAME) )
REQUESTOR NAME ?
```

A prompt is also available at the code level:

```
GROUPING CODE - 1 : PO )
PURCHASE ORDER ? ? )
PURCHASE ORDER MUST BE XNNNN FORMAT
PURCHASE ORDER ?
```

This procedure is repeated either until ten characteristics are defined or until the go (GO) code is entered to indicate completion of the set definition.

```
GROUPING CODE — 1 : NAME ↵
REQUESTOR NAME ? JAMES ↵
GROUPING CODE — 2 : COST ↵
MINIMUM COST = 0 ↵
MAXIMUM COST = 10000 ↵
GROUPING CODE — 3 : GO ↵
```

In this example, GO indicates the completion of the data set definition. Often a user is interested in data within a given range (say, cost between $10,000 and $20,000). Several of the grouping codes, which are normally to be thought of as ranges, will request input to define a range.

```
GROUPING CODE — 2 : DA ↵
EARLIEST DELIVERY DATE ? 10180 ↵
LATEST DELIVERY DATE ? 51480 ↵
```

There are occasions when a user will need to consider a "range" of values on a grouping code which does not have the range option. The concept of a "wild character" can be useful for those cases. A wild character, in effect, does not test the character in its position in the data entry, which will give a range of all values. To input a wild character, simply skip the space (enter a blank) where the wild character is needed.

```
GROUPING CODE — 1 : PR ↵
REQUISITION NUMBER ? S20  ↵
A RANGE OF S20000 THROUGH S20ZZZ FOR THE
  REQUISITION NUMBER WAS INDICATED.     CORRECT (Y/N) ? Y ↵
GROUPING CODE — 2 :
```

Note the two spaces skipped after S20. Any PR between S20000 and S20ZZZ will be included in the set.

Grouping codes which require a 1 character or number response do not have the wild character option. The reason is that, if the grouping were not used, it would provide the same results and with no processing time.

3.2.6 Sort

Requisitions belonging to the set defined can be printed in a sequential order specified by the user. Multiple sorts are allowed. When multiple sorts are used, the major specification is entered first and the minor last. Sorts can be processed on: AC, BU, CO, DE, FF, LM, MC, NA, PO, PR, RN, VE, VF, and WO:

```
SORT OUTPUT (Y/N) ?
```

YES indicates that the output will be sorted prior to printing.

NO — requisitions are printed as they are extracted from the data base (default).

To sort on name requires:

```
SORT OUTPUT (Y/N) ? Y )
PLEASE ENTER PRIMARY SORT FIELD : NA )
PLEASE ENTER SECONDARY SORT FIELD : GO )
```

GO is used to indicate the completion of the parameters to sort on. END will stop the input and ignore the sort request.

3.2.7 Report title

The user can specify a title which will be printed as part of the header information for the output. Up to 50 characters can be input. If a title is not needed a response of) is acceptable.

```
REPORT TITLE ?
) ------------------------------------------------
REPORT TITLE :
```

The dashes are printed out to indicate the length of the title field. The computer remains waiting at the beginning of the dashed line; anything the user types on that line will be echoed as the report title.

3.2.8 Batch

One of the most common criticisms of the old PROQ User Module was that the user had to wait on output. The problem was not the length of time involved, but rather the fact that the user could not leave the terminal. The batch option allows the user to define the information requirements interactively and let the lengthy process of finding and printing the data be done at night as a batch job.

When the batch option is selected, the program does all the work including putting the job in the batch queue. Control is quickly returned to the user so that the next case can be processed or the run terminated so the user can log off. Output for a batch job will be printed on a line printer and normally will be returned to the user by the next morning.

When the batch option is used, a control file will be created in the user's PPN disk area. These files are named using user's ID and a random number with an extension of .CTL. Do not delete these files; they will be deleted automatically after the run is completed. If the sort option was selected, the user's disk area must have a login quota sufficiently large to accomodate the System 1022 sorter. Failure to provide sufficient space will cause the batch run to fail and could cause the system to delete files in the user's area unless they are protected.

RUN CASE BATCH (Y/N) ?

NO — will start the processing of the case (default).
YES — will cause the case to be queued as a batch job.

3.2.9 Printer file

If the batch option was not selected the user is given the choice of printing the requested information on the terminal or on a line printer.

SEND OUTPUT TO PRINT FILE (Y/N) ?

NO — output will be printed on the user's terminal. Unless the terminal width is set at 132 characters, each requisition will require two lines (default).

YES — after all the records in the data set are located they are written into a printer file. Each purchase requisition will be printed as one line.

Upon completion of the run, the user is asked about the disposition of the print file.

ACTION DESIRED ? END ↵
JOB CREATED PRINT FILE JKL59.DAT .
DISPOSAL CHOICE ? ?? ↵
SELECT ONE OF THE FOLLOWING :
SA — SAVE THE FILE IN YOUR DISK AREA.
DE — DELETE THE FILE.
PS — PRINT THE FILE AND SAVE IT IN YOUR DISK AREA.
PD — PRINT THE FILE AND THEN DELETE IT.
DISPOSAL CHOICE ?

SAVE — the file will be left in the user's login area and will count in the logout quota. The file will be available for other uses (default).

PRINT — the file will be queued to the printer spooler for printing at a later time.

DELETE — once deleted the file will be destroyed. It will not be in the logout quota.

As can be seen in the prompt, the user can select a combination for the disposition. The seemingly strange file name is created by the program and reflects the user's ID and a random number.

3.2.10 Next option

DPIS is now ready to process the information request. All the purchase requisition records meeting all the criteria specified by the user are summed and/or printed as requested. Output from DPIS is described in Sect. 3.4.

The user is then asked whether another case will be run:

```
RUN ANOTHER CASE (Y/N) ?
```

NO — will return the user to the action level (default).

YES — the user is returned to the beginning of the cycle with a request for selection of the output format:

```
RUN ANOTHER CASE (Y/N) ? Y )
OUTPUT FORMAT:
```

3.3 User Groupings Codes

In this section each grouping is defined and some general instructions on its use and input are given. Examples of typical requests and the resulting output are presented in Sect. 5. Up to ten groupings can be used to define a data set. It is the user's responsibility to select combinations of groupings which are meaningful. Choice of the order of the groupings selected does not affect the response time if a fast-look item is included. (The order is rearranged by DPIS to optimize the processing time.) If none are, the grouping having the fewest probable entries should be entered first.

The following descriptions of the grouping codes contain the number and type of characters used to define the input value. Some of the features designed to help the user (see Sect. 3.2) apply here: (1) wild characters are allowed, (2) a "?" will provide the expected input format, and (3) a "??" will define the grouping code. A summary of the grouping codes is presented in Table 3.2.

If all values of a grouping code are desired, it should not be specified as a grouping code. For example, if all account numbers within a specific division are desired, only the DI grouping need be

Table 3.2. Grouping codes

Code	Description
AC	*Account* number[a] is the division account number, without the type expense code or blanks or dashes. Includes all work orders under that account.
AL	*All* procurement data in the data base.
BR	*Budget* and *reporting* identification number is utilized in reporting cost to DOE.
BU	*Buyer* code. A two-digit code that indicates the buyer, or denotes type of purchase.
CC	*Cost center* number is a six-digit number which will include all account numbers in the cost center.
CO	*Cost* grouping will contain all purchase requests having a commitment between a given minimum and maximum amount.
DA	*Date*, used to set upper and lower limits for all orders placed in a range.
DE	*Description*, used to describe all purchase request items on a requisition.
DI	*Division* includes all purchase requests purchased from the division's funds.
EN	Flag used to *end* or exit the current level and return to the next highest level.
EX	*Expediting* report can be given to Purchasing to determine status of critical items.
FO	*FOB* flag is used to designate the location of ORNL acceptance of the order.
GO	Flag used to end data-set definition (i.e., groupings) and select the requested data.
LA	*Laboratory* includes all purchase requests being charged to a Laboratory account.
LM	*Labor and materials code* is used to denote type of allowable charges.
MC	*Materials control* code identifies the requisitioner who is handling the requisition.
NA	Requestor's *name* on the request. The same spelling used on the purchase request must be given.
OH	A flag that denotes overhead status. Laboratory *overhead* is committed on the order.

Table 3.2 (continued)

Code	Description
OR	*Order* status allows the user to choose data from one of three categories; orders placed (OP), orders not placed (NP), or orders received (RE).
PL	The *plant* code denotes the plant to receive the order. It is also used to denote special purchase orders.
PO	*Purchase order* number assigned by the buyer when the order is placed.
PR	*Purchase request* number assigned by the division Procurement Office. The division files are often sequenced by this number.
QU	Flag used to *quit* or exit the current level and return to the next highest level (same as end).
RD	Date of last *receipt* on the requisition.
RN	*Release number* is an identifying number assigned to a specific order on a blanket purchase order.
SE	*See* current group list, allows the user to see the grouping codes from which he has already selected.
ST	BM *stores* flag denoting that delivery will be to BM stores rather than to requestor.
VE	*Vendor* code identifies the vendor the order was placed with. A code book which gives data on the vendor is available or see action level.
VF	*Voucher flag* denotes whether an order will be paid upon receipt.
WF	Flag which denotes that the order is charged to a *work for others* account.
WO	*Work order* number the purchase request is being charged to.
18	*189* number is a subset of the BR number which identifies a DOE-budgeted task.

[a]Key word is in italics. Most code words can be input as complete words (except those consisting of the first letter of two words). Only the first two characters of the key word are interpreted (e.g., Monthly and MO are the same).

used. All accounts belonging to that division will be included since no test will be made related to the account number.

AC — The account grouping will select all the purchase requests which are being charged directly to the specified account and those that are charged through a work order. The main use of AC is for the individual responsible for a division account to keep control of the funds obligated to outside procurement. The account number is given without the TE code or dashes (e.g., 44600602). When AC is selected, DPIS prompts with AC=. The response is an 8-digit account number.

AL — The "all" grouping will include all the records in the data base (subject to the type of funds selected). If another grouping code is also selected, AL will have the same effect as GO. A value for AL is not required.

BR — The budget and reporting (B&R) identification (or activity) is a DOE number to collect cost. The BR number may be specified as a number with as many as nine or as few as two characters. The latter condition will collect data at the resource level. BR can also be used to collect commitments against UCC-ND internal codes by left-justifying the number and adding zeros to make a 9-character number. The BR option is mainly used by financial personnel. The DPIS prompt is BR=. The response is from 2 to 9 characters.

BU — Buyer code is a two-digit number which identifies the buyer responsible for the purchase. The main use for this option is to group all purchases which are made by a specific buyer and which are expected to be late so that the buyer can be requested to follow up on the orders. DPIS will prompt with BU=. The response is a two-number code.

CC — The cost center account is used to collect the costs associated with several divisional accounts. CC will include all requisitions being charged to any account which is part of the CC specified. This CC account has the same format as AC. This option can be used by a section leader to obtain the total direct purchase commitments of the section. DPIS will prompt with CC=. The response is an eight-digit number.

CO — This option will list all purchase requests having a commitment between the values input. The "commitment" type used is that selected by the user. Its main use is to aid the division Finance Officer in identifying those orders of major cost and in checking on the exempt status (overhead) of high cost items. The prompt is for the minimum cost and then for the maximum cost. To obtain the familiar "requisitions costing N or greater," input:

MINIMUM COST = N ↵
MAXIMUM COST = ↵

Defaults are -9999999 and 9999999 respectively.

DA — The search is for all orders due within the specified date range. This option is used to provide a list of orders due shortly so the Procurement Office can contact the vendor and check the status. If the order has not been placed, the wanted date is used. The prompt is for the earliest delivery date and the latest delivery date. To obtain the old DA option of "all orders due on or before Dec. 31, 1979" input:

GROUPING CODE — 2 : DA ↵
EARLIEST DELIVERY DATE ? ↵
LATEST DELIVERY DATE ? 123179 ↵

Defaults are minimum date of 1/1/70 and latest date of 12/31/99.

DE — A search can be made on the description field. When DE is used, both the spelling and position of the characters are taken into consideration in the test for inclusion in the data set.

DI — The division response will result in all the active purchase requests for the division being summed. This will include purchases being charged to an account number or a work order. This request could result in considerable output if the list option is used. If a listing is needed, the printer copy option should be used. Use of this grouping will give the Division Director or his Finance Officer an up-to-date estimate of the cost commitment due to outside direct purchases. The response is a two-digit division number.

EN — The END command is used to terminate the current option and will return to the next highest level. If it is used while specifying a value for an option, the option will be ignored. To exit the User Module, END is input repeatedly until the monitor-ready prompt (.) is displayed on the terminal.

EX — This option will generate an expediting report for the entire data base. A separate page is created for each buyer and all orders from each vendor are grouped together. DPIS prompts by asking the user to specify whether to include only orders flagged as critical or all overdue orders. A second prompt is for the due date (see DA).

FO — The FOB flag denotes where UCC accepts the order, which will normally initiate a costing transaction by the financial system to cover the payment when it is made. Values are: 1 = destination, 2 = shipping point, 3 = shipping point with freight allowed, and 4 = other. DPIS will prompt with FF=. A one-digit number is expected.

GO — GO is used to indicate that the series of values being input is complete and DPIS should process the option. It is required for the grouping and sort selections.

LA — This will include all purchase requests being charged to a Laboratory account. Unless it is the only grouping, it will probably have little or no impact on the data set. No value response is required.

LM — The labor/material code denotes a category of expense. LM is associated with a work order or account number. Values are: 1 = labor only, 2 = material only, and 3 = either.

MC — The materials control flag is used by Materials Control to indicate the requisitioner who is handling the requisition. A list of requisitioners is available through the INFORMATION option. DPIS prompts with MC=. The response is a one-digit number.

NA — This grouping gives PR data associated with a specified requestor's name. The name is usually just the last name unless there are several with the same last name, in which case it is usually last name, blank, initials. If the name input is not in the same format as that on the purchase request, a match will not be found. DPIS will prompt with NA=. The response is up to ten letters of the name.

OH — The overhead flag is used to indicate the status of the Laboratory overhead commitment. OH = 1 indicates zero overhead. These orders are usually being charged to an overhead exempt account. Major materials orders which are exempt from overhead in excess of a fixed amount are listed with OH = 1. OH = 0 indicates that the overhead has already been assessed. OH = 2 indicates that the order will receive the standard Laboratory overhead rate.

OR — The order status grouping allows the selection of requisitions based on the status of the order. Three options are available:

NP — Each requisition not ordered (placed) is listed. The check made is on the purchase order number. If the PO number is absent, it is assumed that the order has not been placed.

OP — Each requisition which has been ordered (placed) is listed. The check is for the existence of a PO number.

RE — This gives a list of all the orders received (or partially received). Its main function is to provide a list of received items for the Work Order Office so that they can be verified with other financial records. This listing is then used to correct, if necessary, the data base so that it reflects the actual cost obligation. It does not include records flagged as deleted. (Note that listing received items does not reflect whether a payment or accrual has been made.)

PL — Plant code is a one character letter which either identifies the delivery location or a type of special order. X, Y, or K denotes the plant which will receive the order.

PO — A specific purchase order number is of interest if the user wants the status of an order, or, for example, to determine what an entry is which appears on the Consolidated Materials Report. The prompt for input is PO=. A five-digit purchase order number is input. [It does not contain the buyer code (BU), the plant (PL), or release number (RN).]

PR — This asks for a specific purchase request. Its main use is as a check on the status of a given purchase requesition. When selected, DPIS will respond with PR= and wait for the user to enter the (up to) six-digit PR number.

QU — Quit performs the same function as END. To terminate an option either QU or EN can be used.

RD — Received date is the date the order was received. In case of a partial receipt it is the date of the last receipt. This date may be off a day or two since it is set automatically upon data entry.

RN — The letter release number is used to identify orders placed on a blanket purchase order. To locate one of these records in the data base, both the PO and RN must be given as characteristics. DPIS will prompt with RN=. The response is a three-character code (one letter and two numbers or two letters and one number).

SE — SE is actually a command, usable at the grouping level, to allow the user to see the grouping codes already selected.

ST — This grouping will include those orders which were specified to be delivered to the BM Stores area. No response is expected.

VE — The vendor code identifies the organization with which the order was placed. Using this as one of the characteristics will group all orders placed with a single vendor. When coupled with DA, a list of orders due from a vendor is available for expediting. A vendor code list is available in the Materials Control Office. A specific vendor code can be identified through the INFORMATION option at the action level. DPIS will prompt with VE=. The response is a six-character code (one letter and five digits).

VF — The voucher flag is a code used by Accounts Payable to indicate the type of authorization needed to make a payment.

VF = 1 is an EDP order, and payment is initiated upon receipt of a receiving report.

= 2 is a DNP order and requires an authorization signoff on the receiving report before payment will be made.

WF — Work for Others flag is used to indicate orders being charged to a category of projects referred to as Work for Others (WF = 1).

WO — This option groups all purchase requests being charged to a given work order. The work order can be specified by from two to eight characters. When only the first five characters are given, all the different suborders (last three characters) are included in

the grouping. An eight-character set specifies a specific suborder. DPIS will prompt with WO=. Either an eight- or five-character response is given.

18 — The 189 number is a subset of the B&R activity identification number. It is not a unique number and must be accompanied by its B&R number. The prompt is 18=. A five-digit number is expected.

3.4 Output Description

Most of the interactive output which is printed on the terminal has already been described in the preceding sections. An actual example will be used to describe the output. Assume that the following information is needed: (1) a printer listing of all orders on account 44600602 placed by JONES JM for any type of funds (note that there may be several persons named JONES in the data base) and (2) the sum of the obligation and a projection for the monthly costing. The entire terminal request for this example is:

```
. ↵
. LOGIN 4241,42
JOB 53 UCCND PDP-10 TTY123/47
PASSWORD: ⟨ password ⟩ ↵
CHARGE = 18380
1106     02-JAN-80     WED
NO MAIL

. DO DPIS ↵

ACTION DESIRED ? USER ↵
VERIFICATION OPTION (Y/N) ? N ↵
OUTPUT FORMAT : SL ↵
TYPE FUNDS ? AL ↵
TYPE COMMITMENT ? UC ↵
GROUPING CODE — 1 : AC ↵
ACCOUNT NUMBER ? 44600602 ↵
GROUPING CODE — 2 : NAMF ↵
REQUESTOR NAME ? JONES JM ↵
```

```
GROUPING CODE — 3 : GO )
SORT OUTPUT (Y/N) ? N )

REPORT TITLE ?
   ALL ITEMS FOR AC 44600602 BY JM JONES )

RUN CASE BATCH (Y/N) ? N )

THERE WILL BE A BRIEF PAUSE WHILE DATA IS SEARCHED AND
     ORGANIZED TO YOUR SPECIFICATIONS

SEND OUTPUT TO PRINT FILE (Y/N) ? Y )
RUN ANOTHER CASE (Y/N) ? N )

ACTION DESIRED ? END )

JOB CREATED PRINT FILE JKL01.DAT .

DISPOSAL CHOICE ? SA
STOP

END OF EXECUTION
CPU TIME: 0.55 ELAPSED TIME: 3:23.73
EXIT
```

The output generated with the example request is shown in Fig. 3.2. At the top of the output is a list of the data input (set definition) to DPIS by the user. The next part of the output is the list option. LI places a header at the beginning of the listing of each purchase requisition record in the data set requested. The commitment data listed are that selected by the user. Elements of the purchase requisition record are defined in Table 3.3. Following the listing of PR records are the sums for the data set. Again, the meaning of the sum is also dependent on the type of commitment data selected by the user (in the example, "cost" is the uncosted commitment).

Sums printed are:

"COST" — Vendor cost (may include shipping).
OB — Obligation
UC — Commitment
CB — Balance
DC — Cost

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 16-May-80 PAGE 1

REPORT TITLE : ALL ITEMS FOR AC 44600602 BY JM JONES

ACTION CHOICE : LIST & SUM
FUNDS TYPE : ALL
COMMITMENT CHOICE : UNCOSTED COMMITMENT
DATA BASE USED WAS TEST data base

USER REQUESTED :

ACCOUNT NUMBER : 446C0602
REQUESTOR NAME : JONES JM

REQ	ACCT NO	WO NO	B U	P C	PO	RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2003	44600602	A7632M1D	73	B	13265	K25	N26308	SWITCH TOG	50.00	32280	32080	120179	JONES JM	0	0	PART	N AP	OP	64	0
S2004	44600602	44600602	72	B	03216	J03	K20500	CAPICATOR	250.00	91179	90579	71078	JONES JM	0	0	ORD	N AP	OP	64	0
S2005	44600602	A7632M1D	72	B	03240		K20500	MODULE	11000.00	101380	100180	121079	JONES JM	2	5	RECD	NO $	OP	64	0
S2007	44600602	A7010WAA						SOFTWARE	500.00	0	41280	120179	JONES JM	1	3	REQ	FULL$	OP	64	0

TOTALS :
COMMITMENT = 11800.00
TAX = 538.50
LAB OH = 3658.00
TOTAL COST = 15996.50 (ESTIMATED : 685.00 , 4.28 %)

NOTE : TAX AND OVERHEAD ARE ESTIMATES.
OVERHEAD RATE 31.0% , Y-12 TAX RATE 4.5%, X-10 TAX RATE 6.0%

CHARGES FOR OVERDUE ORDERS : 800.00

CHARGES FOR DURATION OF FISCAL YEAR : (TAX AND OVERHEAD NOT INCLUDED)

MAY 0.00
JUN 0.00
JUL 0.00
AUG 0.00
SEP 0.00

CHARGES BEYOND THE FISCAL YEAR : 11000.00

Fig. 3.2. User printer output.

Table 3.3. Purchase requisition record

Variable	Description
REQ	Purchase requisition number.
ACCT NO	Account number to which the WO is charged.
WO NO	Work order number: either the work order number or the division account number the purchase will be charged to.
BU	Buyer code.
PC	Plant delivery code.
PO	Purchase order number: nonblank entry indicates that the order has been placed. If a V is at the end, it is a DNP order.
RN	Release number: used to identify a specific order placed on a general purchase order number.
VENDOR	Vendor code: used to identify the vendor. A vendor/payee code directory which contains information on the vendor, keyed to the vendor code, is available.
DESCRIPTION	Identification: contains a brief description of the order.
"COST"	"COST" will have a brief descriptor of the type of commitment data selected, and the corresponding value for the order is listed. The value may contain shipping but does not include any overhead or use tax.
DEL BY	Date the vendor has given as the delivery date.
WANTED	Date the requestor gave for when the items will be needed.
REQD	Date purchase requisition was typed.
NAME	Requestor's name, usually just the last name. If initials are used to distinguish it from someone else with the same name, it will usually be "last name blank initials."
FB	Denotes FOB point (DN-destination, SH-shipping point, SP-shipping point and freight paid, or OT-other).
MC	Material control requisitioner code.
MCST	Material control's status: indicates the status of the order (MC = Material Control).
NMC	Requisition was not entered by MC.
REQ	Requisition has not been ordered.
OR'D	Order has been placed.
PART	Order has been partially recieved.
REC'D	Order has been received.

Table 3.3 (continued)

Variable	Description
ERROR	Record is in error and will be deleted.
CLOSED	Order fully received and costed.
APST	Accounts Payable status: indicates the status of the costing (direct or accrual) on the order (AP = Accounts Payable).
NAP	Order was not found in the AP data base.
NO$	No costing has occurred.
FULL$	Order has been fully costed.
PART$	Order has been partially costed.
FU	Type of funds code.
OP	Operating funds.
CA	Capital funds.
EX	Operating funds-overhead exempt.
TE	Type expense.
RECD	Date of last receipt.

TAX — Use tax based on "cost" of each order.

LAB OH — Laboratory overhead based individually on each purchase requisition (subject to a maximum value if Accounting has exempted, not applied to capital items).

TOTAL "COST" — Total cost for set. Includes "COST" + TAX + LAB OH.

ESTIMATED — Estimated cost. The total "cost" for all purchase requisitions where orders have not been placed with a vendor.

% — Percentage of estimate. This is an indicator of the accuracy of the "cost." It is the percent of estimated cost (ratio of ESTIMATED to COST).

The monthly costing estimates are printed next. These estimates are based on the uncosted commitment (UC) regardless of the type of commitment data the user selected. Each active order in the defined data set is included in the total. The current month is listed first. Commitment shown is the total commitment (estimated cost, tax, and overhead). The estimated month in which a charge for a given purchase requisition will be incurred is based on the vendor's delivery date (or the date wanted if the order has not been placed). Totals are also given for the past-due orders, orders due after the fiscal year, and the estimated cost for the remainder of the fiscal year.

The user should keep in mind that ten or more PR records may take considerable time to list (LI option) on the terminal. If more PR's are expected, the output should be sent to the printer. The time required to print the sum only (SU) option is not affected by the number of PR records found in the defined set.

4. MAINTENANCE FUNCTION

The objective of the maintenance function is to create, correct, and update the data base and to maintain consistency with the accounting system. Only those responsible for maintaining the data base are granted access to the MAINTENANCE (DPISMA) module. However, a brief description is presented on the MAINTENANCE process so that the general user will have an understanding of the data obtained from DPIS. There are also some reports available from MA which may be of interest to the general user.

4.1 Maintenance Process

A brief description of the procurement process was given in Sects. 2.1 and 2.2. Reference was made to four points in that process where data has to be entered into the data base: (1) when the requisition is opened, (2) after the order is placed with a vendor, (3) upon receipt of the order, and (4) after the costing transaction has occurred.

The software which is used to support the maintenance function is shown in Fig. 4.1. DPISMA is a module which is used for the first three inputs and for making routine corrections to the data base. An automated update option (Financial Update Module) is available to perform the fourth data base input.

Maintenance of the data base is done on a continuing basis. Input for ORNL divisions located at X-10 is done by ORNL Materials Control. Y-12 Materials Control inputs data for ORNL divisions located at Y-12. If the user detects an error in the data base, Materials Control should be contacted (telephone numbers are available in the *Message* option).

Maintenance is done on three data files:

1. DPISDB, which contains the purchase requisition records (this file is normally referred to as the DPIS data base);
2. WODB, which contains a record for each suborder of each work order being charged to ORNL and having a recent material purchase (this table is used to determine the account to which an order is being charged);

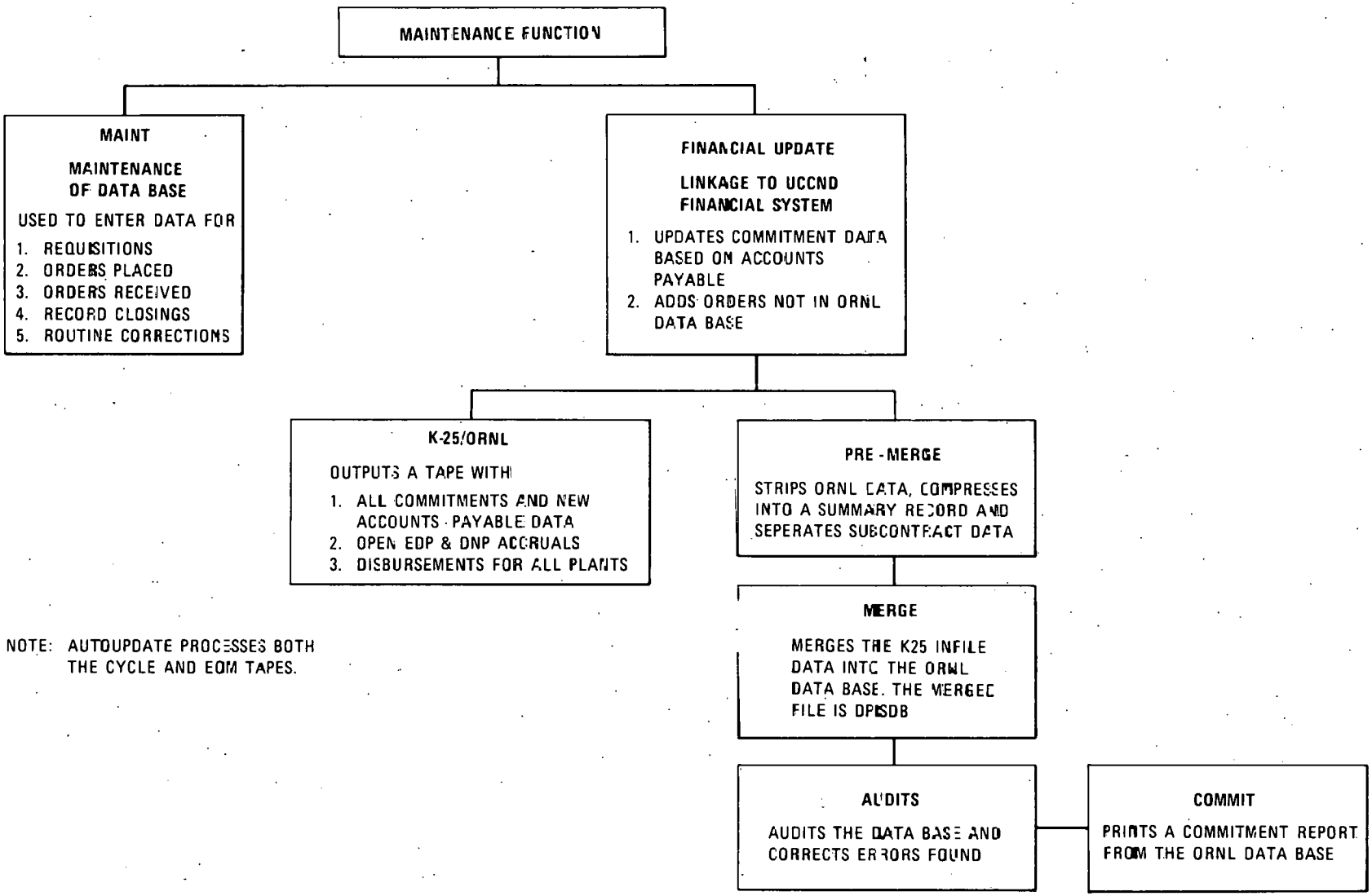

Fig. 4.1. Maintenance function.

3. CRSREF, which contains a record for each ORNL account (this table, used to determine the B&R, 189, cost center, and division numbers, is actually the ORNL Account Master).

4.2 Maintenance Reports

Requests for these reports should be sent to the ORNL Materials Control Office.

4.2.1 Purchase commitment report

This report can be generated each month and a copy sent to the section head or project manager responsible for the account (a copy is sent each month to the division finance officer). The major grouping is by account number. Subtotals are printed for each account. The report can be generated for either operating or capital funds. The format is the same as the DPIS CO output format. The commitment will be generated for a division by special request. An example is shown in Fig. 4.2. The date shown is the date the report was generated, which is also the effective date of the data base. Although the reports can be run at times other than the end of the month, careful consideration of the data must be given if it is not at the end of the month because data picked up from the financial system are corrected at the end of the month. An option will be available in the USER action to get the data set printed as a commitment report which allows users to generate their own reports.

4.2.2 Lead time report

The lead time report provides statistics on the lead time given Purchasing for all the active requisitions. Statistics are also available on the time period between opening a requisition and the vendor's delivery date. Statistics on the time required to place an order will be available soon. The statistics are based on all orders in the data base. An example lead time report is shown in Fig. 4.3. This report is available from ORNL Materials Control.

OAK RIDGE NATIONAL LABORATORY
PURCHASE COMMITMENTS REPORT
OPERATING FUNDS

4/22/80

DIVISION NUMBER 19 FUSION ENERGY
ACCOUNT NUMBER 44600602

44600602

WORK ORDER NUMBER	PURCHASE ORDER NUMBER REL	REQUEST NUMBER	DESCRIPTION	PAY CODE	TOTAL PURCHASE ORDER COST	ESTIMATED DELIVERY	PURCHASE ORDER BALANCE	REQUESTOR	MC*	AP*	OVER HEAD
44600602		S2002	OFFICE CHAIRS	EDF	100.00		100.00	CAIN	REQ	N AP	FULL
44600602	72B 03216 J03	S2004	CAPACITOR	EDF	250.00	9/11/79	250.00	JONES JM	ORD	N AP	FULL
44600602	000 12345	S5555	CAMERA DEV	DWF	10000.00	2/15/80	10000.00	SMITH	PART	NO $	FULL
44600602	73B 00321	S2997	CLOSED OP-602		30000.00	6/30/80	30000.00	JONES JM	PART	PART$	FULL
44600602	34K 07777	J8020	MINI-COMPUTER	EDF	100000.00	5/20/80	100000.00	BROWN	ORD	NO $	FULL
A7010WAA		S2007	SOFTWARE		500.00		500.00	JONES JM	REQ	FULL$	FULL
A7632M10		S2006	MANUAL		25.59		25.59	BLACK	REQ	NO $	FULL
A7632M10	73B 13265 K25	S2003	SWITCH TOG		100.00	3/22/80	50.00	JONES JM	PART	N AP	FULL
A7632M10	72B 03215	S2001	*PACK CONTROL		500.00	8/20/80	500.00	MILLER	ORD	NO $	FULL
A7632M10	72B 03240	S2005	MODULE		22000.00	10/13/80	11000.00	JONES JM	FULL	NO $	FULL

ACCOUNT SUBTOTAL	142425.59
TAX ESTIMATE	7918.54
OVERHEAD ESTIMATE	44151.93
ACCOUNT TOTAL	194496.06

*MC - MATERIALS CONTROL AND RECEIVING STATUS

*AP - ACCOUNTS PAYABLE COSTING STATUS

ACCOUNT NUMBER 44600602

Fig. 4.2. Direct purchase commitment report (operating funds).

LEAD TIME
(LT=DATE WANTED — DATE REQUISITIONED)

CURRENT DATE — 6 19 78

* PR= 25
USED= 25 (WITH DATES)

	COUNT		SUM	
RANGE	*	%	*	%
<-0	0	0	0	0
1-7	0	0	0	0
8-14	0	0	0	0
15-21	0	0	0	0
22-30	0	0	0	0
31-45	1	4	1	4
46-60	7	28	8	32
61-90	6	24	14	56
>90	11	44	25	100

DELIVERY TIME
(DT=VENDOR DATE — DATE REQUISITIONED)

CURRENT DATE — 6 19 78

* PR= 25
USED= 17 (WITH DATES)
8 VENDOR DELIVERY DATE NOT GIVEN

	COUNT		SUM	
RANGE	*	%	*	%
1-7	0	0	0	0
8-14	0	0	0	0
15-21	0	0	0	0
22-30	1	5	1	5
31-45	1	5	2	11
46-60	2	11	4	23
61-90	5	29	9	52
>90	8	47	17	100

Fig. 4.3. Lead time report.

4.3 Financial Update Module

DPIS is linked to the UCC-ND Accounting System by a group of programs usually referred to as the Financial Update Module. The main functions of these programs are to update the current committed cost data to reflect all costing to each order done by Central Finance and to add any commitment data which is not in the ORNL DPIS data base. This data transfer is one-way (i.e., no data are taken from the ORNL data base and used to update the Central Finance data base).

Another important feature of the Financial Update Module is that it has access to all orders placed which are being charged to the Laboratory and thus provides the means to include any orders which were not processed by the Materials Control Office. These records can be recognized by the lack of data such as requestor's name, wanted date, and meaningful description (the description may be a PR number or it will be blank). With this data the commitment becomes much more accurate. The Financial Update process is summarized in Fig. 4.1 and Fig. 2.2.

4.3.1 PRE-MERGE

Input to the Financial Update Module is the cyclic or the end-of-month K-25 raw data tape (Fig. 2.2). The K-25 tape contains data for all plants, and commitment data are at the purchase order item level. A series of programs, PRE-MERGE, is used to extract the financial data needed for DPIS. PRE-MERGE must eliminate non-direct purchase or subcontract data and then strip out the ORNL data on the basis of the account or work order numbers. The item data are next compressed into a single summary record for each purchase requisition. Accrual and payment data are added to the summary record when necessary and used to adjust the current balance. Finally PRE-MERGE strips out all subcontract data for input to the ORNL Subcontract Information System. The remaining data are used to write an AP (Accounts Payable) data file. This file is used as input to MERGE.

4.3.2 MERGE

MERGE is a process of trying to match purchase orders taken from the UCC-ND Accounting System with ones in the ORNL data base. Five parameters are used for the match: purchase requisition number, work order number, account number, purchase order number, and purchase order release number. Often there is a match except for one digit. This difference could be an actual difference so that there are two requisitions, or it could be the result of an input error. There are many opportunities for data input error to occur, including

1. The two sets of data are input by two different organizations (one online and one batch cards) using different formats, programs, and computers.
2. The data are input at two different stages in the procurement cycle which could be months apart.
3. Two different parameters are used for the recall or identification number: one uses the purchase requisition number, and the other the purchase order number.
4. The copy of the requisition form that the MC group must input data from is not always readable.
5. There is a possibility of mismatches caused by the MERGE software.

The consequence of two records not matching when they are in fact the same order is that the UCC-ND order gets added to the data base as a new order resulting in the order being, in effect, in the data base twice.

The duplicate records referred to in the preceding were a major problem in maintaining an accurate data base until AUDIT was incorporated into the Financial Update Module.

4.3.3 HP-MERGE

There is another merge type of function associated with DPIS which processes data input using a terminal, but the data are stored on a tape. The data input is done offline (i.e., without using the computer). The storage tape is part of the data-input terminal. Later the contents

of the tape are transmitted to the computer. A merge (HPMRGE) program adds the data to the data base or makes corrections to existing data in the data base.

4.3.4 AUDIT

The objective of AUDIT is to review the data base and to identify and fix, if possible, potential errors. The term "potential errors" is used because in some cases AUDIT can detect a condition which may be an error or one it could not correct. When this occurs, the record is logged in an Error Report, but no action is taken to fix the record. AUDIT can also identify errors which it does not know how to fix. These also result in only making note in the Error Report. In other cases AUDIT detects an error which it was programmed to fix and corrections are made to the data base. Records which are fixed are also logged into the Error Report. Obviously AUDIT cannot locate or fix all errors.

The AUDIT program is run after each MERGE run and can be run any time the status or accuracy of the data base is needed.

5. SAMPLE CASE

Section 3 introduced the user to the USER action. In this section examples are given to illustrate how to use the various options. The Sample Case is based on the data base described in Sect. 5.1. Some suggested uses of DPIS are shown in Sect. 5.2. Section 5.3 shows the resulting output.

5.1 Sample Data Base

The basic data base used in all the examples is shown in Fig. 5.1. This data base (test data base) is available to the user at the action level, when DB and then TE are selected. Actually, the data base consists of nine files which DPIS uses to retrieve information required by the user's request (Fig. 2.2). The first and major file contains the purchase request records. There is a record for each active purchase requisition. At times there are closed records in the file, but they are ignored by DPIS for all actions involving cost. A second file contains the ORNL Account Master. This file is used to obtain the B&R, 189, cost center, and division code numbers for a specific account number. Two files are used to send messages to and from users. Three files are used to provide descriptions about vendor, buyer, and MC requisitioner code numbers. An eighth file is used to record the run, and a ninth contains the general "help" information (Appendix B). A tenth file is used indirectly by the Maintenance module to obtain the type of expense, account, and labor/ material code numbers which are stored on the PR record. Purchase request records for the sample case are shown on the lower part of Fig. 5.1. The output was described in Sect. 3.4.

5.2 Suggested Uses

DPIS was designed so that the user is not restricted to a rigid set of predefined reports or questions. Instead, the user is allowed the flexibility to combine the grouping and characteristic values to define

```
D F I S  D A T A B A S E                                                                                                       PAGE  1
 REQ  ESTDE REQDE BUP    PO  REL VEND      WO          DESC       COST       MREQ NAME      S   AC        COSTC  LMTEIVF   COSTO    DTEORD
                  C                                                                         C                     FFF
      MWOM  DRECC     CC        A189                 B&R       DIC        RES
      AFHC      A                                                F

J1111  93179       044X-12345-L11V12345A7632M10          DELETED    9999.00 63179LOVIN JK  844600602     9999.00 166000     9999.00 63079
      901       004460-0016 2                   AF 12 01 01 0   190
J2222  13179       044X-12345-L12V12345A7632M10          DELETED    1000.00606319LOVIN JK  844600602     1000.00 166000     9999.00      0
      001       004460-0016 2                   AF 12 01 01 0   190
J8020  52080 4018034K-07777-    A0200044600602MINI-COMPUTER    100000.00122079BROWN        244600602  100000.00-364113  100000.00123079
      502       004460-0016 2                   AF 12 01 01 0   190
S2001  82080 8308072B-03215-    S20165A7632M10*PACK CONTROL       500.00121579MILLER       244600602     300.00 364100     500.00122079
      002       004460-0016 2                   AF 12 01 01 0   190
S2002      0 91080    -     -         44600602OFFICE CHAIRS       100.00101679CAIN         144600602     100.00 364013     100.00      0
      502       004460-0016 2                   AF 12 01 01 0   190
S2003  32280 3208073B-13265-K25B26308A7632M10SWITCH TOG            50.00120179JONES JM     344600602      50.00 164000     100.00121079
      002       004460-0016 2                   AF 12 01 01 0   190
S2004  91179 9057972B-03216-J03K2050044600602CAPACITOR            250.00 71078JONES JM     244600602     250.00-364010     250.00 81179
      002       004460-0016 2                   AF 12 01 01 0   190
S2005 10138010018072B-03240-    K20500A7632M10MODULE            11000.00121079JONES JM     444600602       0.00 164102   22000.00123079
      502       004460-0016 2                   AF 12 01 01 0   190
S2006      0121880    -     -         A7632M10MANUAL               25.59110179BLACK        144600602      25.59 064100      25.59      0
      002       004460-0016 2                   AF 12 01 01 0   190
S2007      0 41280    -     -         A7010WAASOFTWARE            500.00120179JONES JM     144600602     500.00 364301     500.00      0
      302       004460-0016 2                   AF 12 01 01 0   190
S2009  21480 2108074K-03216-    M00200A6010WBBTRANSDUCER         1000.00101579JAMES        444600721       0.00 354111    1000.00112379
      300       004460-0017 7                   AG 12 01 01 1   190
S2010  10180 2308074K-03300-K26M03000A6010WBBCONNECTOR             50.00120179JAMES        344600721      25.00 354112      50.00121079
      100       004460-0017 7                   AG 12 01 01 1   190
S2997  63080 7308073B-00321-    K3200044600602  CLOSED OP-602   20000.00 60178JONES JM     944600602       0.00 364400   30000.00 71578
      002       004460-0016 2                   AF 12 01 01 0   190
S3008      0 22080    -     -         A8767MAASLIDE PROJ          400.00101879JONES        144600013     400.00 164003     400.00      0
      100       00N/A       3                   KK 14 01 01 3   190
S3015  21080 2208049C-02000-    K60010AAJ10WAATERMINAL          15000.00112379JONES JL     244600610   15000.00-164112   15000.00113079
      302       004460-0016 3                   AF 12 01 01 0   190
S3016 12057911057949C-02100-    K80800G8576MAADISKETTES           500.00100179JONES JM     344600016     100.00 364110     500.00112579
      000       00N/A       5                   AG 12 01 01 1   190
S3017  31880 3208053K-03000-K25A1000044600016EXT CABLE            200.0012.279MILLER       444600016       0.00 364110     300.00121579
      000       00N/A       5                   AG 12 01 01 1   190
S3018  1308012307952K-04760-    A01010G8576MAATRANSISTOR            0.00112379JONES JM     444600016       0.00 164110     100.00120179
      000       00N/A       5                   AG 12 01 01 1   190
S3019      0 40180    -     -         A8765XAAION SOURCE        25000.00121379JONES        144600308   25000.00 364000   25000.00      0
      301       004460-0013 3                   KK 14 01 01 3   190
S5011 10028010018053K-00300-K27N26500K6635MAILIQ. HEL.          20000.00 70179JONES JL     244600001   20000.00 164110   20000.00101879
      000       01N/A       5                   AF 12 01 01 0   190
S5012      0 71580    -     -         44600001POWER SUPP        90000.00112379JONES JL     144600001   90000.00 364003   90000.00      0
      300       00N/A       5                   AF 12 01 01 0   190
S5013  20180 1178053K-00300-K30A07030K3865MAAVACUUM VALVE       50000.00121079JONES JL     244600602   50000.00 164110   50000.00122379
      000       014460-0016 2                   AF 12 01 01 0   190
S5014  10880 2018044M-05006-    B60000K3865MAAMICROCOMPUTER     10000.00120179JONES JL     244600602   10000.00 364001   10000.00121279
      000       014460-0016 2                   AF 12 01 01 0   190
S5555  21580120179000-12345-          44600602CAMERA DEV        10000.00 91879SMITH        344600602    7000.00 160123   10000.00101379
      502       004460-0016 2                   AF 12 01 01 0   190
S5996  60978 6017842N-00300-    K60010K6635MAI  CLOSEDCAP-001   25550.00 40178JONES JL     944600001       0.00 164310   25550.00 91678
      000       01N/A       5                   AF 12 01 01 0   190
S6022  31080 3108033M-07685-    AC3000K7321W11CRUCIBLE           8000.00110179BLUE         244600016    8000.00 166410    8000.00120179
      000       01N/A       5                   AG 12 01 01 1   190
S7021      0 41080    -     -         J7321XAAHOT PRESS         15000.00120579BROWN        444600721   15000.00 166000   15000.00      0
      000       014460-0017 7                   AG 12 01 01 1   190
S7023      0 11080    -     -         J7321XAALABOR & MA        19000.00113079BLUE         144600721   19000.00 166010   19000.00      0
      000       014460-0017 7                   AG 12 01 01 1   190
```

Fig. 5.1. Sample data base.

the information required. Attempting to point out all the possible uses is not only impossible, but also defeats the basic design objective. However, a few examples may be in order to demonstrate how the grouping codes can be combined to retrieve information of a specific nature. Some other examples were presented in Sect. 2.3.

Example 1: Find all orders costing $20,000 or more being charged to the Fusion Energy Division.

```
. DO DPIS ↵

ORNL DIRECT PROCUREMENT INFORMATION SYSTEM
VERSION : 2-A

ACTION DESIRED ? DB ↵

Date base now selected is Current month ORNL

Do you wish to select another (Y/N) ? Y ↵

Your data base options are :
CU...Current month ORNL
HI...Historical files (monthly)
SO...September Option data base
YR...Previous fiscal year data base
TE...Test data base

Your choice ? TE ↵

Action desired ? US ↵
Verification option (Y/N) ? N ↵
Output format : LI ↵
Type funds ? AL ↵
Type commitment ? OB ↵
Grouping code - 1 : DI ↵
Division code ? 19 ↵
Grouping code - 2 : CO ↵
Minimum cost = 20000 ↵
Maximum cost = ↵
Grouping code - 3 : GO ↵
SORT output (Y/N) ? N ↵

Report title ?
    EXAMPLE 1 ↵

Run case BATCH (Y/N) ? N ↵

There will be a brief pause while data is searched and
    organized to your specifications

Send output to Print file (Y/N) ? N ↵
```

Example 2: How much will account 44600602 be costed before October 1 for direct purchases (operating funds).

```
Action desired ? US )
Verification option (Y/N) ? N )
Output format : SU )
Type funds ? OP )
Type commitment ? UC )
Grouping code - 1 : AC )
Account number ? 44600602 )
Grouping code - 2 : DA )
Earliest delivery date ? )

Latest delivery date ? 9/30/80 )
Grouping code - 3 : GO )

Report title ?
   EXAMPLE 2 )
```

Add the commitment from DPIS to the material cost given in last month's Operating Report.

Example 3: A question needs to be asked of the vendor. The buyer files data on the order by the PO number and the division by PR number.

```
Output format : LI )
Type funds ? AL )
Type commitment ? UC )
Grouping code - 1 : PR )
Requisition number ? S2001 )
Grouping code - 2 : GO )
SORI output (Y/N) ? N )

Report title ?
   EXAMPLE 3 )
```

The printed record will contain the PO number. This approach will also work when the PO is known and PR is needed, by using the PO grouping.

Example 4: A division needs to know who are the major users of its Procurement Office.

```
Output format : LI )
Type funds ? AL )
Type commitment ? UC )
Grouping code - 1 : DI )
Division code ? 19 )
Grouping code - 2 : GO )
```

```
SORT output (Y/N) ? Y )
Please enter primary SORT field : NA )
Please enter secondary SORT field : GO )

Report title ?
   EXAMPLE 4 )
```

This will give an alphabetical listing (by requestor) of all active requisitions being charged to the division.

Example 5: A task is nearing a critical time when all material needs to be ready for assembly. Purchasing has agreed to expedite and needs a list of the orders in question.

```
Output format : LI )
Type funds ? AL )
Type commitment ? OB )
Grouping code - 1 : AC )
Account number ? 44600602 )
Grouping code - 2 : DA )
Earliest delivery date ? )

Latest delivery date ? 12/30/80 )
Grouping code - 3 : GO )
SORT output (Y/N) ? Y )
Please enter primary SORT field : BU )
Please enter secondary SORT field : VE )
Please enter third SORT field : GO )

Report title ?
   EXAMPLE 5 )
```

The list will have all orders for each buyer grouped together, and with that group all orders to a given vendor will be together. This is close to the expediting (EX) option, except that EX will put each buyer on a separate page and has the option of listing only those orders which have been specified as critical.

Example 6: Estimate the additional cost which will be charged (this FY) on a 189 task (2) on Project X.

```
Output format : SU )
Type funds ? AL )
Type commitment ? CB )
Grouping code - 1 : BR )
B&R number ? AF1201010 )
Grouping code - 2 : 18 )
```

```
189 code ? 2 )
Grouping code - 3 : DA )
Earliest delivery date ? )

Latest delivery date ? 9/30/80 )
Grouping code - 4 : GO )

Report title ?
   EXAMPLE 6 )
```

Example 7: The division Procurement Office wants to check on all requisitions which have not been ordered where the requestor's wanted date is within two weeks (current date is 5/1/80).

```
Output format : LI )
Type funds ? AL )
Type commitment ? UC )
Grouping code - 1 : DI )
Division code ? 19 )
Grouping code - 2 : DA )
Earliest delivery date ? )

Latest delivery date ? 5/14/80 )
Grouping code - 3 : OR )

Please select one of the folloiwng :
         OP....ORDERS PLACED
         NP....ORDERS NOT PLACED
         RE....ORDERS RECEIVED
 Enter : NP )

PO, BU, & RN are now locked out of user selection also

Grouping code - 4 : GO )
SORT output (Y/N) ? N )

Report title ?
   EXAMPLE 7 )
```

Example 8: During the review of the monthly financial data, a project manager sees an accrual against an unfamiliar purchase order (00300K30) and would like to know what the order is for.

```
Output format : LI )
Type funds ? AL )
Type commitment ? UC )
Grouping code - 1 : PO )
Purchase order ? 00300 )
```

```
Grouping code - 2 : RN )
Release number ? K30 )
Grouping code - 3 : GO )
SORT output (Y/N) ? N )

Report title ?
    EXAMPLE 8 )
```

The order could be found with just the PO number, and if there were several releases on that PO, they would all be listed.

Example 9: A project engineer is trying to determine when a sheet of aluminum will be delivered. Neither the PR nor the PO number is known, but it should have been charged to (WO) A7632M10.

```
Output format : LI )
Type funds ? OP )
Type commitment ? UC )
Grouping code - 1 : WO )
Work order ? A7632M10 )
Grouping code - 2 : GO )
SORT output (Y/N) ? N )

Report title ?
    EXAMPLE 9 )
```

If there were uncertainty in the suborder number, WO = A7632 could have been used.

Example 10: It is getting close to the end of the year and a cost center manager wants to estimate the direct purchase commitment and the costing during this period.

```
Output format : SL )
Type funds ? OP )
Type commitment ? UC )
Grouping code - 1 : CC )
Cost center ? 44600016 )
Grouping code - 2 : DA )
Earliest delivery date ? )

Latest delivery date ? 9/30/80 )
Grouping code - 3 : GO )
SORT output (Y/N) ? N )

Report title ?
    EXAMPLE 10 )
```

The due before date (DA) could be varied, e.g., ±1 week, to determine the sensitivity to vendor being a week off on the delivery date. Another refinement would be to consider the FOB point (i.e., FOB destination involves transportation).

5.3 Example Output

Output resulting from the examples of Sect. 5.2 is shown in the remainder of this section. The data base shown in Sect. 5.1 was used.

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMPLE 1

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : ORIGINAL OBLIGATION

USER REQUESTED :

DIVISION NUMBER : 19
COST RANGE 20000.00 - 9999999.00

REQ	ACCT NO	WO NO	B U	P C	PO RN	VENDOR	DESCRIPTION	OBLIGATION	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2005	44600602	A7632M10	72B03240			K20500	MODULE	22000.00	101380	100180	121079	JONES JM	2	5	RECD	NO $	OP	64	0
S5011	44600001	K6635MA1	53K00300K27			N26500	LIQ. HEL.	20000.00	100280	100180	70179	JONES JL	0	0	ORD	NO $	CA	64	0
S5012	44600001	44600001					POWER SUPP	90000.00	0	71580	112379	JONES JL	3	3	REQ	N AP	OP	64	0
S5013	44600602	K3865MAA	53K00300K30			A07030	VACUUM VALVE	50000.00	20180	11780	121079	JONES JL	0	0	ORD	NO $	CA	64	0
S3019	44600308	A8765XAA					ION SOURCE	25000.00	0	40180	121379	JONES	0	3	REQ	N AP	EX	64	0
J8020	44600602	44600602	34K07777			A02000	MINI-COMPUTER	100000.00	52080	40180	122079	BROWN	3	5	ORD	NO $	OP	64	0

Example 1.

REPORT TITLE : EXAMPLE 2

ACTION CHOICE : SUM ONLY
FUNDS TYPE : OPERATING
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

ACCOUNT NUMBER : 44600602
DELIVERY DATE : 10170 THRU 93080

TOTALS :

COMMITMENT =	111400.00	
TAX =	5522.00	
LAB OH =	34534.00	
TOTAL COST =	152456.00	(ESTIMATED : 822.00 , 0.54 %)

NOTE : TAX AND OVERHEAD ARE ESTIMATES.
OVERHEAD RATE 31.0% , Y-12 TAX RATE 4.5%, X-10 TAX RATE 6.0%

CHARGES FOR OVERDUE ORDERS : 10300.00

CHARGES FOR DURATION OF FISCAL YEAR : (TAX AND OVERHEAD NOT INCLUDED)

APR	500.00
MAY	100000.00
JUN	0.00
JUL	0.00
AUG	500.00
SEP	100.00

CHARGES BEYOND THE FISCAL YEAR : 0.00

Example 2.

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMPLE 3

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

REQUISITION NUMBER : S2001

REQ	ACCT NO	WO NO	B U	P C	PO	RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2001	14600602	A7632M10	72	B0	3215		S20165	*PACK CONTROL	500.00	82080	83080	121579	MILLER	0	0	ORD	NO $	OP	64	0

Example 3.

REPORT TITLE : EXAMPLE 4

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

DIVISION NUMBER : 19

1) SORTED BY : NA NAME OF REQUESTOR

REQ	ACCT NO	WO NO	B U	P C	PO RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2006	4460C602	A7632M10					MANUAL	25.59	0	121880	110179	BLACK	0	0	REQ	NO $	OP	64	0
S7023	4460C721	J7321XAA					LABOR & MA	19000.00	0	11080	113079	BLUE	0	0	REQ	N AP	CA	66	0
S6022	4460C016	K7321W11	33M07685			A03000	CRUICIBLE	8000.00	31080	31080	110179	BLUE	0	0	ORD	PART$	CA	66	0
S7021	4460C721	J7321XAA					HOT PRESS	15000.00	0	41080	120679	BROWN	0	0	RECD	N AP	CA	66	0
J8020	44600602	44600602	34K07777			A02000	MINI-COMPUTER	100000.00	52080	40180	122079	BROWN	3	5	ORD	NO $	OP	64	0
S2002	44600602	44600602					OFFICE CHAIRS	100.00	0	91080	101679	CAIN	3	5	REQ	N AP	OP	64	0
S2009	44600721	A6010WBB	74K03216			M00200	TRANSDUCER	1000.00	21480	21080	101579	JAMES	1	3	RECD	NO $	OP	54	0
S2010	44600721	A6010WBB	74K03300K26			M03000	CONNECTOR	50.00	10180	23080	120179	JAMES	2	1	PART	NO $	OP	54	0
S3019	44600308	A8765XAA					ION SOURCE	25000.00	0	40180	121379	JONES	0	3	REQ	N AP	EX	64	0
S3008	44600013	A8767MAA					SLIDE PROJ	400.00	0	22080	101879	JONES	3	1	REQ	N AP	OP	64	0
S5011	44600001	K6635MA1	53K00300K27			N26500	LIQ. HEL.	20000.00	100280	100180	70179	JONES JL	0	0	ORD	NO $	CA	64	0
S5012	44600001	44600001					POWER SUPP	90000.00	0	71580	112379	JONES JL	3	3	REQ	N AP	OP	64	0
S5013	44600602	K3865MAA	53K00300K30			A07030	VACUUM VALVE	50000.00	20180	11780	121079	JONES JL	0	0	ORD	NO $	CA	64	0
S5014	44600602	K3865MAA	44M05006			B80000	MICROCOMPUTER	10000.00	10880	20180	120179	JONES JL	1	0	ORD	N AP	CA	64	0
S3015	44600610	AAJ10WAA	49C0200C			K60010	TERMINAL	15000.00	21080	22080	112379	JONES JL	2	3	ORD	NO $	OP	64	0
S3016	44600016	G8576MAA	49C0210C			K80800	DISKETTES	500.00	120579	110579	100179	JONES JM	0	0	PART	NO $	OP	64	0
S2003	44600502	A7632M10	73B13265K25			N26308	SWITCH TOG	50.00	32280	32080	120179	JONES JM	0	0	PART	N AP	OP	64	0
S3018	44600016	G8576MAA	52K0476C			A01010	TRANSISTOR	0.00	13080	123079	112379	JONES JM	0	0	RECD	NO $	OP	64	0
S2007	44600502	A7010WAA					SOFTWARE	500.00	0	41280	120179	JONES JM	1	3	REQ	FULL$	OP	64	0
S2005	44600502	A7632M10	72B03240			K20500	MODULE	11000.00	101380	100180	121079	JONES JM	2	5	RECD	NO $	OP	64	0
S2004	44600602	44600602	72B03216J03			K20500	CAPICATOR	250.00	91179	90579	71078	JONES JM	0	0	ORD	N AP	OP	64	0
S2001	44600502	A7632M10	72B03215			S20165	*PACK CONTROL	500.00	82080	83080	121579	MILLER	0	0	ORD	NO $	OP	64	0
S3017	44600016	44600016	53K03000K25			A10000	EXT CABLE	200.00	31880	32080	121279	MILLER	0	0	RECD	NO $	OP	64	0
S5555	44600602	44600602	00012345				CAMERA DEV	10000.00	21580	120179	91879	SMITH	3	5	PART	NO $	OP	60	0

Example 4.

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMP_E 5

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : ORIGINAL OBLIGATION

USER REQUESTED :

ACCOUNT NUMBER : 44600602
DELIVERY DATE : 10170 THRU 123080

1) SORTED BY : BU BUYER CODE
2) SORTED BY : VE VENDOR CODE

REQ	ACCT NO	WO NO	B U	P C	PO RN	VENDOR	DESCRIPTION	OBLIGATION	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2007	44600602	A7010WAA					SOFTWARE	500.00	0	41280	120179	JONES JM	1	3	REQ	FULL$	OP	64	0
S2002	44600602	44600602					OFFICE CHAIRS	100.00	0	91080	101679	CAIN	3	5	REQ	N AP	OP	64	0
S2006	44600602	A7632M10					MANUAL	25.59	0	121880	110179	BLACK	0	0	REQ	NO $	OP	64	0
S5555	44600602	44600602	00012345				CAMERA DEV	10000.00	21580	120179	91879	SMITH	3	5	PART	NO $	OP	60	0
J8020	44600602	44600602	34K07777			A02000	MINI-COMPUTER	100000.00	52080	40180	122079	BROWN	3	5	ORD	NO $	OP	64	0
S5014	44600602	K3865MAA	44M05006			B80000	MICROCOMPUTER	10000.00	10880	20180	120179	JONES JL	1	0	ORD	N AP	CA	64	0
S5013	44600602	K3865MAA	53K00300K30			A07030	VACUUM VALVE	50000.00	20180	11780	121079	JONES JL	0	0	ORD	NO $	CA	64	0
S2004	44600602	44600602	72B03216J03			K20500	CAPICATOR	250.00	91179	90579	71078	JONES JM	0	0	ORD	N AP	OP	64	0
S2005	44600602	A7632M10	72B03240			K20500	MODULE	22000.00	101380	100180	121079	JONES JM	2	5	RECD	NO $	OP	64	0
S2001	44600602	A7632M10	72B03215			S20165	*PACK CONTROL	500.00	82080	83080	121579	MILLER	0	0	ORD	NO $	OP	64	0
S2003	44600602	A7632M10	73B13265K25			M26308	SWITCH TOG	100.00	32280	32080	120179	JONES JM	0	0	PART	N AP	OP	64	0

Example 5.

REPORT TITLE : EXAMPLE 6

ACTION CHOICE : SUM ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : CURRENT BALANCE

USER REQUESTED :

B&R = AF1201010
189 NUMBER : 2
DELIVERY DATE : 10170 THRU 93080

TOTALS :

BALANCE	=	168200.00	
TAX	=	9972.00	
LAB OH	=	33542.00	
TOTAL COST	=	211714.00	(ESTIMATED : 822.00 , 0.39 %)

NOTE : TAX AND OVERHEAD ARE ESTIMATES.
OVERHEAD RATE 31.0% , Y-12 TAX RATE 4.5%, X-10 TAX RATE 6.0%

CHARGES FOR OVERDUE ORDERS : 70300.00

CHARGES FOR DURATION OF FISCAL YEAR : (TAX AND OVERHEAD NOT INCLUDED)

APR	500.00
MAY	100000.00
JUN	0.00
JUL	0.00
AUG	500.00
SEP	100.00

CHARGES BEYOND THE FISCAL YEAR : 0.00

Example 6.

ORNL PROCUREMENT SYSTEM VERSION 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMPLE 7

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

DIVISION NUMBER : 19
DELIVERY DATE : 10170 THRU 51480
ORDERS NOT PLACED

REQ	ACCT NO	WO NO	B U	P C	PO	RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2007	4600602	A7010WAA						SOFTWARE	500.00	0	41280	120179	JONES JM	1	3	REQ	FULL$	OP	64	0
S3008	4600013	A8767MAA						SLIDE PROJ	400.00	0	22080	101879	JONES	3	1	REQ	N AP	OP	64	0
S3019	4600308	A876EXAA						ION SOURCE	25000.00	0	40180	121379	JONES	0	3	REQ	N AP	EX	64	0
S7023	4600721	J7321XAA						LABOR & MA	19000.00	0	11080	113079	BLUE	0	0	REQ	N AP	CA	66	0

Example 7.

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMPLE 8

ACTION CHOICE : LIST ONLY
FUNDS TYPE : ALL
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

PURCHASE ORDER : D0300
RELEASE NUMBER : K30

REQ	ACCT NO	WO NO	B U	P C	PO	RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S5013	44600602	K3865MAA	53	K	00300	K30	A07030	VACUUM VALVE	50000.00	20180	11780	121079	JONES JL	0	0	ORD	NO $	CA	64	0

Example 8.

O R N L P R O C U R E M E N T S Y S T E M V E R S I O N 2-A DATE 18-Apr-80 PAGE 1

REPORT TITLE : EXAMPLE 9

ACTION CHOICE : LIST ONLY
FUNDS TYPE : OPERATING
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

WORK ORDER : A7632M10

REQ	ACCT NO	WO NO	B U	P C	PO	RN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2001	44600602	A7632M10			72B03215		S20165	*PACK CONTROL	500.00	82080	83080	121579	MILLER	0	0	ORD	NO $	OP	64	0
S2003	44600602	A7632M10			73B13265K25		N26308	SWITCH TOG	50.00	32280	32080	120179	JONES JM	0	0	PART	N AP	OP	64	0
S2005	44600602	A7632M10			72B03240		K20500	MODULE	11000.00	101380	100180	121079	JONES JM	2	5	RECD	NO $	OP	64	0
S2006	44600602	A7632M10						MANUAL	25.59	0	121880	110179	BLACK	0	0	REQ	NO $	OP	64	0

Example 9.

REPORT TITLE : EXAMPLE 10

ACTION CHOICE : LIST & SUM
FUNDS TYPE : OPERATING
COMMITMENT CHOICE : UNCOSTED COMMITMENT

USER REQUESTED :

CC : 4460-0016
DELIVERY DATE : 10170 THRU 93080

REQ	ACCT NO	WO NO	B U	P C	PO PN	VENDOR	DESCRIPTION	COMMITMENT	DEL BY	WANTED	REQD	NAME	F B	M C	MCST	APST	FU	TE	RECD
S2001	44600602	A7632M10			72B03215	S20165	*PACK CONTROL	500.00	82080	83080	121579	MILLER	0	0	ORD	NC $	OP	64	0
S2002	44600602	44600602					OFFICE CHAIRS	100.00	0	91080	101679	CAIN	3	5	REQ	N AP	OP	64	0
S2003	44600602	A7632M10			73B13265K25	N26308	SWITCH TOG	50.00	32280	32080	120179	JONES JM	0	0	PART	N AP	OP	64	0
S2004	44600602	44600602			72B03216J03	K20500	CAPICATOR	250.00	91179	90579	71078	JONES JM	0	0	ORD	N AP	OP	64	0
S2007	44600602	A7010WAA					SOFTWARE	500.00	0	41280	120179	JONES JM	1	3	REQ	FULL$	OP	64	0
S3015	44600610	AAJ10WAA			49C02000	K60010	TERMINAL	15000.00	21080	22080	112379	JONES JL	2	3	ORD	NC $	OP	64	0
J8020	44600602	44600602			34K07777	A02000	MINI-COMPUTER	100000.00	52080	40180	122079	BROWN	3	5	ORD	NO $	OP	64	0
S5555	44600602	44600602			00012345		CAMERA DEV	10000.00	21580	120179	91879	SMITH	3	5	PART	NO $	OP	60	0

TOTALS :
COMMITMENT = 126400.00
TAX = 7197.00
LAB OH = 39184.00

TOTAL COST = 172781.00 (ESTIMATED : 822.00 , 0.48 %)

NOTE : TAX AND OVERHEAD ARE ESTIMATES.
OVERHEAD RATE 31.0% , Y-12 TAX RATE 4.5%, X-10 TAX RATE 6.0%

CHARGES FOR OVERDUE ORDERS : 25300.00

CHARGES FOR DURATION OF FISCAL YEAR : (TAX AND OVERHEAD NOT INCLUDED)

APR	500.00
MAY	100000.00
JUN	0.00
JUL	0.00
AUG	500.00
SEP	100.00

CHARGES BEYOND THE FISCAL YEAR : 0.00

Example 10.

Appendix A
USING A TERMINAL

Use of the MIS module in an interactive mode requires access to a terminal. The instructions presented in this appendix are very elementary. Sources are available which will provide additional information of more advanced terminal use. Some typical references are: *ORNL Programmer's Notebook, Getting Started with DEC System-10,* Digital Equipment Corporation, DEC-10-XGSDA-A-D; and G. E. Giles, *How to Use the PDP-10 System,* August 1977. These can be ordered through the Computer Sciences Division Library (4500-N, E-208; 4-5317).

Use of the PDP-10 computer at X-10 requires a project-programmer number (PPN) and an associated password. If you do not have a PPN, the first step is to establish an account at the computing center. Instructions for doing this can be obtained from the *ORNL Programmer's Notebook,* or by calling Accounting and Records (4-5215). With a computer account number, the PPN can be obtained from Systems Support (6-7952).

A.1 Getting Familiar with a Terminal

Either a cathode ray tube (CRT with a screen) or a hard copy (with a roll of paper) terminal can be used. The keyboard is similar to a typewriter. Some exceptions are:

- Numbers and letters are different (i.e., the number 1 cannot be entered as a lower case L).
- The RUB or DEL key is used to delete the most recently typed character. If the key is pressed again, it will again delete the previous character. This may be continued until all undesired characters have been removed.
- A ↵ is used to indicate pressing the RETURN key. It must be pressed to transmit the completed line to the computer.
- Use can be made of a control (CTRL) key, which is used in conjunction with another key (i.e., Control-R which is written as CTRL-R or ^R).

- ^U will delete the line currently being typed.
- ^R typed before the RETURN key is pressed will retype the current line up through the last character typed. Pressing RETURN will then transmit the line.
- ^C (sometimes two are needed) will return the user to monitor level.
- ^O will temporarily suspend the typeout, although the data processing continues. Typeout will resume (if the end of the file being typed has not been reached) at a later point in the file after another ^O is typed.
- ^S will temporarily suspend the typeout and, indirectly, suspend data processing.
- ^Q will resume a suspended typeout at the point where it was suspended.

A.2 Setting Switches

Several switches are normally found on terminals. If present, they should be set as follows: Full Duplex, Speed = 300 baud (30 cps) for most hard copy devices and for any terminal using a modem (phone couples) or = 1200 baud for hardwired CRTs, online, and power on.

A.3 Establishing Contact

Next, contact with the computer must be established. If the terminal has an acoustic coupler, a telephone is used to call the computer (4-7474). When the high-pitched tone signal appears, the phone is placed on the modem cradle, and the user waits for the carrier-detector light to come on. If the terminal is hardwired, this step is not necessary.

The first terminal action must be to type a carriage return (↵) to tell the auto-baud detect equipment what speed is being used. When the program recognizes the terminal speed, the terminal is connected first to Network Control, which allows the user to select the computer to be used. A response of "1," "10," or a carriage return will connect

the user to the PDP-10 computer at X-10. A line giving the time and TTY number followed by PLEASE LOGIN OR ATTACH will be printed, followed by a line with the monitor prompt, a ".". When the system prints a period, the user may LOGIN. For example,

```
)                                        (auto-baud detect signal)
UCCND NETWORK CONTROL                    (indentified by Network Control)
WHICH SYSTEM? 1)                         (system 1 is the PDP-10)
UCCND PDP-10 13:34:49 TTY4 LINE #1075 SYSTEM 3118/1319
PLEASE LOGIN                             (identified by monitor)

.LOG 6143,43)                            (your response:  mmm,nn or mmm/nn)
JOB 44 UCCND PDP-10 TTY4/1075
PASSWORD: (password))                    (your password will not be printed)
CHARGE = 16957
1335     23-Jan-80     WED
NO MAIL.
.
```

A new user may wish to use the LOGIN command, which prompts for the PPN with "#". If there is an error in typing (perhaps of the password, which does not appear on the printer), the computer will prompt with another "#":

```
)
.LOGIN)
JOB 18 UCCND PDP-10 TTY115/1075
#6143,43)
PASSWORD: (password))
?LGNIET INVALID ENTRY - TRY AGAIN
#6143,43)
PASSWORD: (password))
CHARGE = 16957
1102     24-JAN-80     THUR
NO MAIL.
.
```

A.4 Running Programs

After logging in, a user is ready to run programs, including the DPIS. To run DPIS, a user gives the command in response to the monitor's ".":

```
.DO DPIS )
```

A.5 Logging Off

When all desired programs have been run, the user can log off by responding to the monitor's "." with K/F. After the monitor prints out a short statement of usage and charges, the process is complete, and the user is logged off:

```
.
.K/F )
JOB 18, USER [6143,43] LOGGED OFF TTY115     1103     24-JAN-80
SAVED ALL FILES (300 BLOCKS)
CPU TIME = 0.00 MINUTES
CON TIME = 0.02 HOURS
KILO CORE = 0.00 HOURS
JOB COST = 0.08 DOLLARS
CHARGE NO = 16957
PRIME RATES
```

If an acoustic coupler has been used, the user may turn off its power and hang up the telephone. If the terminal is not to be used again for a while, it should be turned off.

Appendix B

DPIS HELP FILE

While running DPIS the user can access a help file which provides some general instructions on how to use DPIS. The two basic instructions needed are shown below. The first starts DPIS running and the second is the actual command, given at the Action level, used to get the help file.

.DO DPIS ↵

ORNL PROCUREMENT SYSTEM VERSION 1-A

ACTION DESIRED ? HELP ↵

WELCOME TO DPIS's NEW USER MODULE.

GENERAL INSTRUCTIONS

1. A ? will give you help.
2. A ?? will give you detailed help.
3. END will cause you to stop the current option and return to the previous level.

   NOTE: If a grouping code is END (as it used to be), the input is terminated but the case will NOT be processed. To end the case and get it processed use GO.
4. For each case the following options are available.

   a. Verify input — allows the user to see and change if necessary all input date (related to option selection).
   b. Output (same old SUm and LIst)
   c. Type funds (no change — OP or CA)
   d. Commitment type (OB,UC,CB,DC)
   e. Sort — multiple sorts are allowed
   f. Batch — after defining case interactively, the case can be processed as a batch job.
   g. Printfile — can be printed and/or saved.
5. Grouping codes are more flexible:

   a. Ranges are available on cost and date.
   b. Wild-card characters can be used on most codes:

      AC=446003 (missing last 2 digits) will give
      = 44600300 through 446003ZZ

6. Need information on:

   a. who a vendor is,
   b. who the buyer is,
   c. who the requisitioner at Materials Control is, or
   d. what the status code means,

   then try the new INFO at the ACTION level.

7. Got a complaint?

   a. Send a message to the DPIS systems group:
   b. at the ACtion level select:

      1. ACTION=ME
      2. ME=FRom (from you to us)

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