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INVENTORY MANAGER'S WORKSTATION
FOR THE AVIATION SUPPLY OFFICE

by

George A. Marentic

December 1988

Thesis Advisor: Thomas P. Moore

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Each inventory manager at the Aviation Supply Office Philadelphia, PA is presently required to manage approximately 700 line items. To allow the inventory manager a more efficient method of reviewing and using the data and reports from the Uniform Inventory Control Point (UICP) computer system, a distributed computer system is necessary. By downloading the the appropriate inventory data from UICP to a local computer system, a decision support system (DSS) can be be implemented using existing off the shelf hardware and software. The ability to replace the present copious paper reports with concise computer-ized information and import that data into electronic spreadsheets for further analysis can greatly improve the inventory manager's effectiveness. To this end,

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- The ability to use UICP data with a decision support system.
- A user interface that is easy to understand and learn.
- A local data base which supports working group requirements.
- Basic office automation.

This thesis will cover the selection of the hardware and software, data identification and management and DSS development. A prototype system called the IM Workstation was developed for this thesis and used to produce the thesis document. COBOL and ALIS ELF macro program listings are provided.

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Inventory Manager's Workstation for the Aviation Supply Office

by

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requirements for the degree of

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ABSTRACT

Each inventory manager at the Aviation Supply Office Philadelphia, PA is presently required to manage approximately 700 line items. To allow the inventory manager a more efficient method of reviewing and using the data and reports from the Uniform Inventory Control Point (UICP) computer system, a distributed computer system is necessary. By downloading the the appropriate inventory data from UICP to a local computer system, a decision support system (DSS) can be be implemented using existing off the shelf hardware and software. The ability to replace the present copious paper reports with concise computerized information and import that data into electronic spreadsheets for further analysis can greatly improve the inventory manager's effectiveness. To this end, this thesis provides inventory managers at ASO with access to the following functions:

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I. INTRODUCTION

A. BACKGROUND

Each inventory manager at the Aviation Supply Office, Philadelphia, PA is presently required to manage approximately 700 line items. The inventory manager's job is to ensure that sufficient consumable and repair parts are available in the Navy Supply System to satisfy requests for material from both end users and stock points. The present management system they use is management by exception, which is aided to a great extent by the Uniform Inventory Control Point (UICP) computer system resident on an IBM 3090 mainframe. The UICP system performs various automatic inventory reviews, manages the current stock status, and contains various technical and supporting data needed to manage and procure the spare parts. UICP produces various formal printed reports. These reports are provided to the inventory manager for his or her review and as a trigger to perform specific actions[1].

ASO Inventory Managers have access to the UICP database via IBM 3270 series terminals. The UICP database structure contains approximately four thousand data elements (DENS). Thirty-nine individual data retrieval programs are available to the item manager under the A02 information retrieval application [Ref. 1]. Appendix A contains a complete listing of all the A02 programs. Each program acts as an independent retrieval application, although there is a large amount of data element

---

[1] Validate proposed buy quantities, review if items are in long supply.

redundancy between these thirty-nine programs. For example DEN C003 (Cognizance Symbol) is used in 6 different programs (AS, BK, CD, CH, EF, NA)[2].

The usefulness of the A02 programs are further limited by the cryptic output to IBM 3270 terminal screen displays which use data element (DEN) numbers rather then english descriptions of the data fields. Figure 1 shows the screen display from a typical A02 program. For example, instead of showing "Cognizance Symbol" or the commonly

```
USER ID: OZBG0PG       PROGRAM AS VERSION B00  OUTPUT                  88/08/03
                           MASTER DATA FILE DATA                       17:16:28

000971444  RFI  ALL                                                  B45: 00000

C3    C3D    C3A    C42     C3B     B2       B1         A11    CNS    EDS
1R            M     1095    BX      4N5XX    W----      4291    N      N

A5:  340       A6:  4      B11A:  9.36 B19: 6296    B21: 2602    B74: 650.38

A1        A12      A8B     A21A     A14      A25  B46A      A6A       A23   A3I
          O H    DUE-IN  DUE-OUT  TOT PR  REORDER STPDT  RD OBSV    RD FOR BALCD

SYS         5    18295        0    1111

QQQ         0        0        0      40        0              0     1.717
P31         0        0        0       0        0              0     0.247 87212
            2        0        0       3        0              0     0.254 8818Z
            2        0        0       5        0              0     0.000 8818Z
            0        2        0       4        0              0     1.229 8816Z
            0        0        0       0        0              0     1.755 85144

 PF1=VALID KEYS     PF19=PAGE FORWARD     PF20=PAGE BACKWARD
PRESS PF19 TO SEE ADDITIONAL PAGES
```

Figure 1 Example of an A02 Application, Display Screen.

[2] Two letter abbreviations are used to refer to the A02 programs. These abbreviations refer to the original UICP COBAL batch retrieval programs.

used term "COG" on the display, the data element number "C3"[3] is shown. Furthermore there is no way for an item manager to save this output information on-line or to move it to other computer programs (e.g., a spreadsheet or database type program) for analysis. The only procedure available to the managers is to press the print screen button on the IBM 3270 terminal which will cause an image of the screen to be sent to a local printer. If the program has multiple screens, the manager has to print each screen individually. A problem exists for the managers because between 10 to 16 of them share a single printer, and the print screen process doesn't send screen images to a print queue. The printed output from the various managers thus becomes intermixed, requiring a time consuming identification and hand sorting process [Ref. 2].

The formal UICP printed reports are handled by the inventory manager in the method shown in Figure 2. When the inventory manager receives a report generated by the UICP program, he or she needs to access the on-line A02 program to retrieve various management information which isn't provided by the UICP report, or which the manager believes have to have aged since the UICP report was generated. The item manager then reviews the available information and makes his or her decisions. Since many of the item managers decisions are based upon knowledge gained from the various senior managers who trained them, there is a lack of consistency in the decision making process applied to the UICP reports. Additionally the present manual methods make it extremely difficult for the item manager's superiors to ensure that the decisions are in accordance with the inventory control point's policy.

---

[3] C3 is used instead of the actual data element name C003

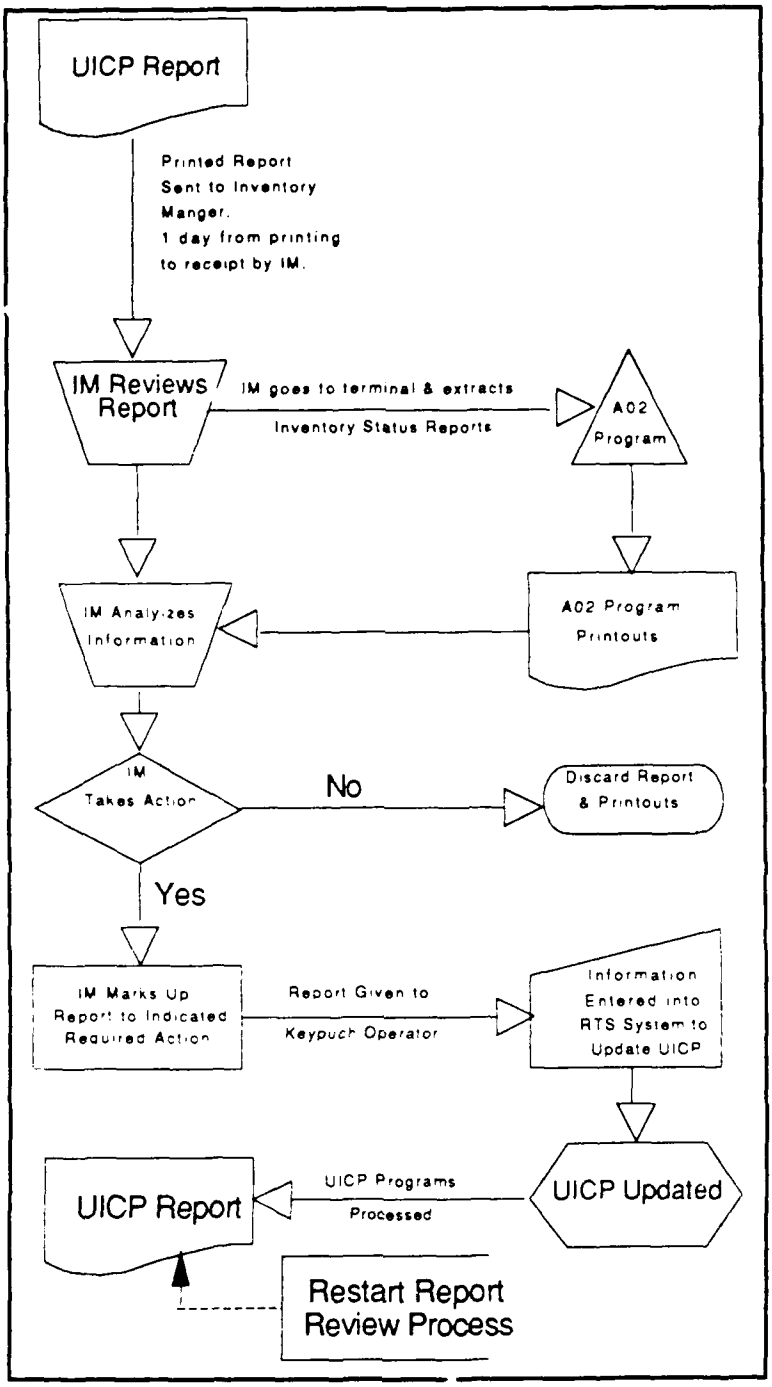

Figure 2 Flow of UICP Printed Reports

After the item manager's decisions are made, the printed reports are annotated to reflect their decisions and then forwarded to a data entry clerk who enters the data

into the UICP program. The system is updated and the management cycle is started again when new exception reports are generated.

As previously mentioned, the inventory manager presently does not have access to a computerized decision support system (DSS). The inventory manager can access the UICP database outside the A02 programs and perform ad hoc queries using a database package called FOCUS, but the process is extremely slow and requires computer programming skills. A paper report can be requested, but the report data can not be imported into a DSS for analysis. A DSS could be used to evaluate the report's data or ensure the manager's actions are consistent and conform to standard operating procedures.

Russell L. Ackoff of the University of Pennsylvania, in his article, "Management Misinformation Systems," [Ref. 3:p. 147] stated "My experience indicated that most managers receive much more data (if not information) than they can possible absorb even if they spend all of their time trying to do so. ... I have seen daily stock status reports that consists of approximately six hundred pages of computer printout. The report is circulated daily across managers' desks." This is an almost exact corollary to ASO's inventory managers' situation. They have access to over 4,000 data elements via thirty-nine applications, plus several immense printed reports. The reports contain a large amount of the data available from the on-line applications. "Unless the information overload to which managers are subjected is reduced, any additional information made available by an MIS cannot be expected to be used effectively." [Ref. 3:p. 148]. In the case of the inventory managers, the volume of available information and the difficulty of extracting and working with the data can be counter productive.

B. THESIS OBJECTIVE

To allow the inventory manager a more efficient method of reviewing and using the data and reports from UICP, a distributed computer system is necessary. By downloading the appropriate inventory data from the main database to a local computer system, a decision support system can be implemented using existing off the shelf hardware and software to assist the inventory manager. The ability to replace the present copious paper reports with concise computerized information and import that data into electronic spreadsheets for further analysis can greatly improve the inventory manager's effectiveness. To this end, this thesis provides a limited number of inventory managers at ASO with access to the following functions:

- Interactive access to the main UICP database.
- The ability to use UICP data with a decision support system.
- A user interface that is easy to understand and learn.
- A local data base which supports working group requirements.
- Basic office automation.
- Action tracking and management information.
- Electronic mail.

A prototype system called the "IM Workstation" was developed for this thesis.

C. APPROACH

To accomplish the thesis objective described above, work was done in the areas listed below. Each of these areas will be briefly described in the remainder of this chapter, and more thoroughly covered in subsequent chapters.

- Hardware selection
- Software selection
- Data identification and management
- Program and decision support system development

- System integration
- On site testing

For each area I reviewed the present environment and tried to find the best combination of hardware and software that would support the desired functions. To understand the present environment I traveled extensively to the Aviation Supply Office (ASO) in Philadelphia, PA and worked with various ASO personnel. The result of these trips was an understanding of the inventory manager's present working environment. In order to design a decision support system which would meet the needs of the item managers at ASO, I had to learn about the types of information they use to make decisions, and determine how much of this information was available from UICP. This insight into the inventory manager's needs can be merged with computer technology and can be used to improve their efficiency and the quality of their work environment.

D. METHODOLOGY

The following list describes the methodology which was used to approach each of the areas mentioned in the previous section:

1. Hardware Selection

Study the ASO environment and select the best hardware type that would support the overall requirements.

2. Software selection

Review the available integrated office automation software and select the one which best supports the requirements of:

- Access to the UICP database from within the office automation software.

- Ability to import a subset of the UICP database and use the data within the office automation software to form a decision support system.

- A user interface that is as easy to understand and learn as the Xerox PARC / Open View interface standard. (The Xerox standard is the industry accepted standard. Examples of systms using this standard are the Apple Macintosh, Microsoft Windows, IBM Presentation Manager.)

- Electronic Mail which can be transmitted between the inventory managers and other groups and organizations.

3. Data identification and management

Interview inventory managers and analyze the UICP data products they use. Determine which data elements, provided by the UICP products, they need to perform their duties. Learn how the inventory managers process the information they obtain, and how they use it to make decisions.

4. Program development

Use the selected software product to develop the DSS.

5. System integration

Integrate the IM Workstation into the IBM 3090 mainframe environment. Provide the following telecommunications access: Remote Job Entry (logical unit one (LU 1); TTY terminal access (LU 2); and Block terminal (LU 6.2).

II. DECISION SUPPORT SYSTEMS

A. INTRODUCTION

To understand what a decision support system (DSS) is and how it could be used to support the ASO inventory manager we will discuss the:

- Theoretical framework.
- Components of the DSS.
- System Integration.
- Measures of effectiveness.

B. THEORETICAL FRAMEWORK

In designing a DSS, usefulness and ease of use are the most important characteristics. Usefulness is the degree to which a DSS assists a decision maker in performing his/her tasks. Does the DSS allow the decision maker to be more efficient and make better, more effective decisions? Ease of use is important because no matter how good a DSS is, if it is difficult to use or not understood, the targeted users will not use it or will not trust it. Sprague and Carlson present a framework for designing a DSS that considers this user-oriented approach [Ref. 4]. They characterize a DSS as a computer based system which helps decision makers confront ill-structured problems through direct interaction with data and analysis models. Sprague and Carlson's framework uses Representations, Operations, Memory Aids, and Control Mechanisms to define the capabilities of the DSS. The DSS should provide the capabilities of a Dialog component, a Data component and a Model component (Figure 3). Each of these components will be discussed later in this chapter.

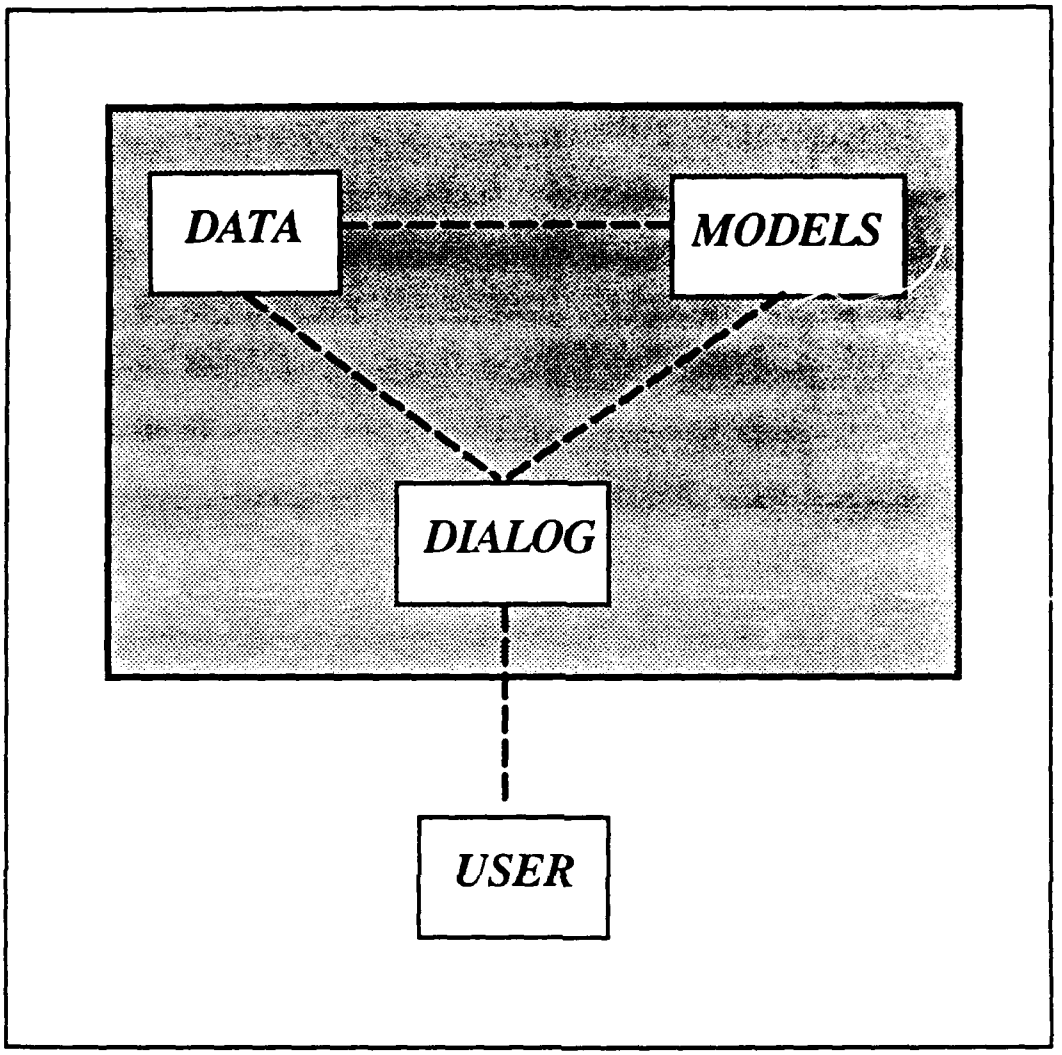

Figure 3 Components of a DSS

The current system used by inventory managers somewhat resembles Mason's databank design as shown in Figure 4 [Ref. 5]. The information system provides reports based upon the data it is analyzing. The decision maker is then required to act upon the reports based upon his own experiences and knowledge. The drawbacks of the databank type of system shown in Figure 4 are evident in the current inventory system. Reams of paper, containing much irrelevant data, are produced by the UICP

program on the IBM 3090. The inventory manager's response, to this volume of information, is to ignore much of the data and manage by exception. Decision making tasks are performed by the inventory manager without the aid of an automated support system and the quality of his or her decisions are a function of his or her experience. While procedures and guidelines are provided to the inventory manager, in a manual system their personal preferences and individual experience strongly influence how they solve the problem. These decisions may lack consistency when you look at inventory managers as a group. Tversky & Kahneman state that how choices/decisions are framed for the decision maker can influence his or her decision [Ref. 6:pp. 453-458].

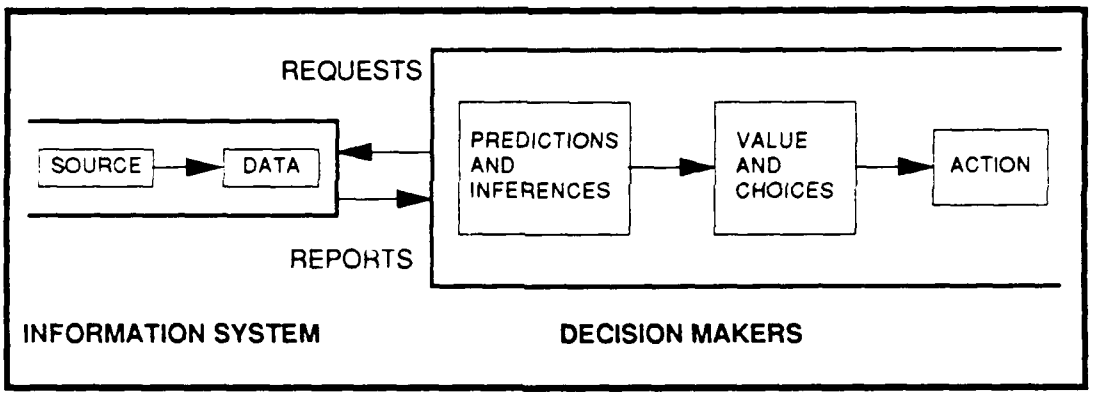

Figure 4 Mason's Databank Design

The DSS will make predictions, draw inferences, evaluate, and recommend a choice of action. The DSS can have choices couched in such a way that inventory managers make their decision in accordance with standard operating procedures rater than their own preferences without realizing it. For the inventory manager (IM) these decisions could be in the areas of quantity to buy or to issue. While the DSS can assist the inventory

manager in making a correct decision, taking action will still be the responsibility of the decision-maker.

In the current system, the supervisor also does not have an effective method of determining if the inventory manager is making efficient use of the data provided. By the time a supervisor realizes that one of his or her managers has been ignoring the data from the reports, the damage is done and could take years to correct. The same computer that provides the DSS for the inventory manager could also provide a DSS for the supervisor that is linked to the same database. This supervisory level DSS could be used to monitor the inventory manager. This monitoring would ensure that the inventory manager is taking advantage of the data provided from the mainframe models through the DSS. For example, a supervisor could check to see if inventory manager's are using the DSS to review stock numbers called out by the supply demand review (a UICP mainframe model).

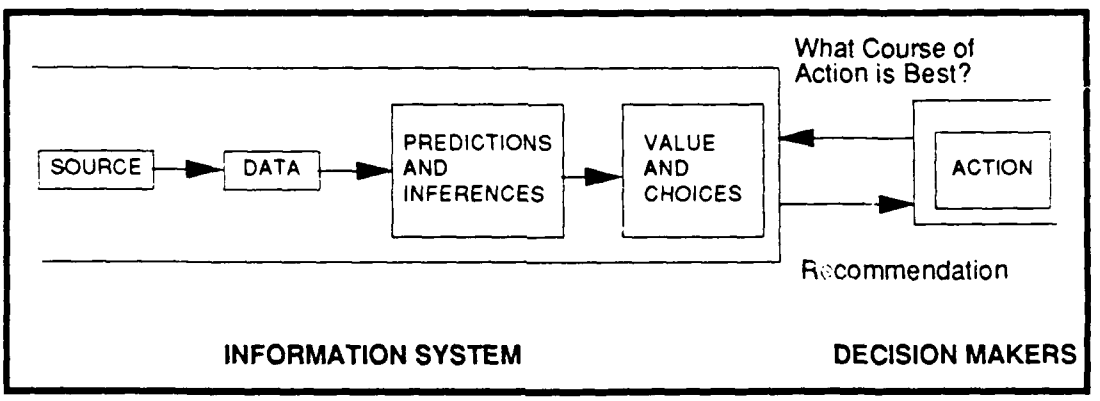

Figure 5 Mason's Decision-Making System

The DSS for inventory managers, proposed in this thesis, is similar to Mason's decision-making system [Figure 5]. "A DSS does not replace or compete with other systems; instead, it extracts from other systems the information that is essential to

the process of decision-making." [Ref. 7:pp. 115-121]. For the inventory manager, the DSS provides a method of accessing the data on the mainframe and receiving the outputs in an electronic form (as opposed to paper) such that the information can be further analyzed. For example, the DSS would allow the importing of data generated by the supply demand review (SDR) into a preformatted spreadsheet. This spreadsheet would allow the manager to adjust variables such as expected demand and examine the effects of inventory levels on expected buy quantities. Once the manager decided upon the appropriate quantity to buy, the DSS system could generate a procurement request and forward it via a network for action. This action could trigger several reports that would be added to the inventory manager's electronic stock number notebook.

An interface between the mainframe models and the DSS would provide a action tracking system that would act as a holding file for reviews recommended by the models but not yet conducted by the inventory manager. This file would show the inventory manager what work is still outstanding and would also allow the supervisor to monitor reviews that have been in the action tracking system for an extended period of time without action having been taken. Thus this DSS would serve multiple levels of users. The most important feature of this DSS is that managers are allowed to work interactively with the data. The DSS will assist them in making decisions but will not replace their judgment. As discussed by Keen, if a task can be completely automated, there is no need for the manager to be involved at all with the decision process. A DSS should be used with "semi-structured" tasks in which some functions can be best handled by the computer system and others by the manager [Ref. 8:pp. 88-99].

C. COMPONENTS OF THE DSS

As shown in Figure 3, the three Components of a DSS, as defined by Sprague and Carlson, [Ref. 4] are:

- Dialog
- Data
- Models

The union of these three components provides the necessary interface between the user and the master data base. Not only is this an extraction of data from the mainframe, but it is also a methodology for how the data is effectively used once it is at the user's disposal. Each of the three components for this specific DSS will be addressed in turn.

1. Dialog Component

An important part of the interface is the dialog component. The dialog component is concerned with how the information is displayed to the user, and how the user interacts with the DSS. Alexander considers a well-designed, graphical output to be one of eight critical success factors in developing an effective DSS [Ref. 7:pp. 115-121]. A graphical user interface such as that recommended by Xerox's Palo Alto Research Center (PARC) will provide the user with representations that are easily understood. Xerox's recommendations for the "Star User Interface" included [Ref. 9:pp. 242-282]:

- Icon based user interface.
- Black letters on a white screen.
- Multiple Windows.
- Mouse based pointing system

- What you see is what you get (WYSIWYG) display.
- Standardized interface between various applications.
- Pull down menus.

This standard has been best implemented in the Apple Macintosh series of computers. This dialog interface is also available on several other systems such as Digital Research's GEM operating system and ALIS, a multi-user, UNIX based office automation package. In order to accommodate multiple users and the varying skill and experience levels of the users, an effective and easy to use DSS should be chosen. This will allow the user to select the options he or she prefers or requires. For this reason, the DSS used in this thesis was the ALIS software which has the Xerox "Star User Interface".

ALIS was also selected because it has the necessary tools to build and support a DSS. It contains the following functions:

- Word Processing
- Spreadsheet
- Database
- Graphics

This system allows the spreadsheet and database to be pre-scripted[1] to import mainframe data and provide the tools for the inventory manager to analyze the data and make a decision. The interrelationship of data and models to the dialog component will be discussed in greater depth in the following sections. Chapter 3 will discuss the selection of the ALIS software system in more depth.

---

[1] The attributes and design of a standard document can be predefined and saved for future use.

2. Data Component

The next component to consider is the data component. In the current system, the data resides on an IBM 3090 mainframe. While this mainframe can hold a huge volume of data, the item manager must be able to easily determine which data items are needed and to obtain this selected data easily. With the UICP system containing over 4,000 data elements, the complexity associated with extracting the data from UICP means it is only possible for individuals with extensive programming experience to access the data. Access to this data is only available to the item manager via the limited A02 application programs.

In building a DSS, Keen [Ref. 8:pp. 88-99] suggests asking some key questions such as:

- What is the decision or task?
- What information is used?
- In what way is the information used to reach the decision or task?

Interviewing the inventory managers will hopefully reveal the information needed to build the DSS. The objective of the interview is to determine what data the inventory managers use, what data they perceive that they need but do not have, and what data they perceive that they need but, in reality, do not use. This could be accomplished by interviewing a group of inventory managers. They would be asked to describe:

- What procedures they do and actions they take.
- What data and reports they use in performing those procedures.
- What data and information they use from the present reports or print-outs.

By including both open-ended questions, directed questions, and observations, we would hope to determine most of their needs for data, while at the same time avoiding some of the erroneous assumptions described by Ackoff [Ref. 3:pp. 147-156] such as: more data is better and the manager needs what he wants.

But interviewing the inventory manager is not an end in itself. While the inventory managers have stated how they work with and use the data, their actions might not be in accordance with present policy. As discussed by Huber [Ref. 10:pp. 567-579], care must be taken not to reinforce a lack of procedural compliance that could be introduced into the system from these interviews. The end result of the DSS design process is to develop a system that blends the managers cognitive style with proper procedure. The resulting DSS presents a computer based system that is procedurally correct but representative of the manager's cognitive style.

Once the total spectrum of mainframe data elements is boiled down to a usable kernel, day to day data needs and exception data from the models can be identified. The goal is to generate a data file each night that can be down loaded to the inventory manager's working group computer. This data file should be able to provide 85 to 90 percent of the daily data requirements of the inventory manager. The mainframe models generate items for review, e.g., levels and supply demand review (SDR). Present UICP methods take the few, new pieces of information and, using day to day data, generate a printed report. The DSS will only require the new data elements and the merging will occur at the inventory manager's level. This will be a much more efficient use of mainframe computer resources.

Through the use of a multi-user / multi-tasking minicomputer the inventory manager will be able to use the DSS to access this data and use it more efficiently. Not only does this method of data movement reduce interactive queries on the mainframe but it also provides the inventory manager with a structured way to manipulate the data.

3. Model Component

The third component in the design is the model component. The interviews, in addition to determining the data requirements, will provide an insight into how the inventory managers perform their tasks and, hopefully, how the processes involved could be improved and made more effective. Gorry and Scott Morton [Ref. 11:pp. 55-70] suggest that the types of models to use will vary with the skill and experience level of the manager, as well as their training and background. The type of operations (and models which will perform these operations) can be determined through the interviews.

As part of building the DSS model, the inventory managers must understand it or have an opportunity to review an explanation of its functions. Brennan and Elam [Ref. 12] suggest that the DSS must be able to answer the "why" as well as the "what if". They also suggest that the output be presented conceptually rather then in a data-oriented way to assist in the understanding of the information being presented. An example of information being presented in a conceptual, rather then a data oriented style would be the DSS providing a line graph plotting buys versus demand. The graph would replace a report with the two columns of numbers showing buys and demands.

Tversky and Kahneman [Ref. 6:pp. 1124-1131] stress that it is not enough to give the manager the information he needs. The information must be presented in a such a way as to overcome misconceptions, biases and fallacious thinking. Further, the manager must trust the DSS. The end result will be more consistent than that obtained with the inventory manager using printed report, pencil and calculator to compute requirements.

It is clear that the success and effectiveness of this DSS is greatly dependent upon its ability to elicit information from the inventory managers. It is, of course, important to know what data is required by the managers. This data forms the data base component. How and in what way the data must be manipulated is also important and forms the model base component of the system.

In the current system, data is available, but access is slow and inflexible. The data and models which are necessary for the inventory manager to perform his job need to be accessible quickly and easily. To avoid overwhelming the inventory manager with more data and more options than he can realistically use, some limits must be placed on what is made available. It is not feasible to provide all the information that the manager might ever need. Rockart [Ref. 13:pp 81-93] suggests a methodology in which chief executives define their needs by clarifying what they view as critical success factors. A similar approach can be taken here to clarify the needs of the inventory managers.

D. SYSTEM INTEGRATION

Once the components of the DSS have been defined, the shell to provide system integration must be specified. The shell will provide the tools to implement the DSS

and in this case, also perform Office Automation (OA). While the DSS will assist the inventory manager in making more effective decisions, much of the inventory manager's day is spent doing more mundane tasks such as preparing memos and letters, performing quick "what if" analysis, and maintaining their inventory manager's. OA consisting of word processing and spreadsheet and database capabilities which will reduce the length of time these tasks require and improve the quality of the output from these activities.

The DSS program is integrated into the OA system. The inventory manager perceives the DSS as another application choice like the existing applications. Therefore, in addition to a word processing, a spreadsheet and a personal database, a choice of Inventory assistance would be available. The more the DSS appears as a part of the OA, the less chance that the inventory managers will perceive the system as an attempt by management to control them, and more as a tool to assist them. Despite the fact that the DSS will actually yield the greatest improvement in the inventory manager's effectiveness, the inventory manager will perceive OA as being most helpful. This is due to the dislike that inventory manager's have for the disproportional amount of time spent performing these mundane secretarial tasks. Once this burden is reduced, the benefits provided by the inventory assistance applications will be realized.

A final capability provided by the OA system would be an electronic mail system (E-Mail). The present inventory control point (ICP) mail system is a separate application. In order for an inventory manager to send or receive mail on the current 3270 terminals, they must leave the application they are in and start the E-mail package. The E-mail on the IM Workstation would allow the inventory manager to pause, send or

receive mail, and then resume their work. Not only is less time wasted, but the inventory manager's thought process is not interrupted. Additionally the integrated system would allow memos, letters, spreadsheet, and data files created by the system to be mailed.

E. MEASURES OF EFFECTIVENESS

Another item that must be considered for this, or any, DSS is the measure of its effectiveness. Some DSS benefits summarized by Keen [Ref. 14] include: fast response to unexpected situations, ability to carry out ad hoc analysis, control, cost savings, better decisions, time savings, and making better use of data resources. While some of these measures of effectiveness are difficult to quantify and even harder to quantify in terms of a return on investment, I believe there will be measurable benefits associated with an inventory management DSS. The effectiveness could be measured by:

- Inventory manager satisfaction with the workstation.
- Number of line items managed per inventory manager.
- Number of exception actions per inventory manager.
- Inventory manager product quality.
- Satisfaction of higher level managers and the inventory manager's supervisors.
- Changes which occur in the quantity and nature of information transferred between people in the organization.

Satisfaction with the DSS perhaps cannot be quantified, but certainly it must be measured in some method. Over the long term, maybe employee turn-over may provide some indications of satisfaction with the system.

III. HARDWARE AND SOFTWARE SELECTION

A. INTRODUCTION

The selection of the correct hardware and software to implement the DSS was one of the most challenging areas of this thesis. While ASO had already planned a hardware architecture, as discussed below, it was chosen several years ago and didn't contain all the elements needed to implement a DSS. During the hardware and software selection phase the benefits of certain hardware and software combinations were constantly compared against the planned architecture. The decision to select alternative hardware and/or software which was different from that in the planned architecture had to show that the alternative provided sufficient benefits to make a departure from the plan worthwhile. Additionally, the desire of the Department of Defense to have full and open competition made the selection of a proprietary (unique to a certain manufacturer's) hardware and operating system solution inadvisable. If a computer system can only be provided by a single vendor, then a competitive procurement between several vendors is not possible. Therefore, the software selected to implement the DSS must be exportable to as wide a range of hardware and operating systems as possible.

B. PLANNED ASO HARDWARE ARCHITECTURE

To give the inventory manager a more efficient method for reviewing and using the data and reports from the UICP, the "resolicitation" effort was started by the Naval Supply Systems Command. The resolicitation effort provided state of the art computer hardware to replace the obsolete computers used to run the UICP system. The transition phase of resolicitation involved relocating the main database onto state

of the art hardware and improving data management with a 4th generation database management system (DBMS). This phase is nearing completion. The next step is the business support phase. The main goals are to:

- Introduce new technology (hardware and software).
- Support non-UICP processes.
- Promote end-user development.
- Automate and facilitate manual processing.

The software technology to support this effort is shown in Figure 6:

Level	Operating System	Network	DBMS	Development Tools
Host	MVS	SNA	IDMS	ADS COBAL
Distributed / Departmental	VM	SNA	SQL	4GL CASE
PC / Departmental	DOS Multi-Task	SNA Token Ring	SQL	4GL CASE

Figure 6 Software Technology for the Business Support Phase

The data strategy to support this effort is shown in Figure 7:

Host	UICP Corporate Shared
Distributed / Departmental	Corporate Data Down Load Departmental Data Decision Support Data
PC / Departmental	Individual/Work Group Data

Figure 7 Data Strategy for the Business Support Phase

The hardware technology for the host and distributed departmental levels is IBM 370 series computers (IBM 9370, IBM 3090, IBM 4381, IBM 3033) or equivalent. At the inventory manager level, the current plan calls for installing IBM Personal Computers (PC). A PC would be installed at each inventory manager's desk. These PCs would be linked via an IBM token-ring connected to a PC acting as a file server. The token-ring also would be connected to a IBM 9370 minicomputer and further linked to an IBM 3090 mainframe computer. This linkage would allow the PC to access the information on the larger machines. Inventory data and management information would be distributed to the 9370 at the departmental level and further divided for each work group and placed on the local server. When the inventory manager (IM) has a need for a specific item of data, he would select the appropriate program to retrieve this data. The local PC will send a request to the server to provide the program (the executable code) and it would be transferred to the inventory manager's PC and executed. Next the PC can request the server to provide data from a file resident on the servers hard disk. The data is is provided by the server and used by the PC to satisfy the requirement. The inventory manager's PC would treat the server as an extension of itself.[1]

C. HARDWARE

The characteristics used as a criteria for selecting the hardware and operating system were those characteristics that would best support the development of a DSS. The most important characteristic of the hardware is that it should require minimum

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[1] Charts and strategy plan from presentation made by Ms Sandra Graves, ASO, Code PL - RB, November 1987 to the ICP Strategic Planning Group.

knowledge of computer operating and network systems from the user. Another characteristic is that the hardware should provide reasonable response times for data base applications. The selected computer should take advantage of mature technology, that is in general use. The capacity of the mass storage system, should be able to support several months of operation and should be easily expandable. The operating system should be multi-tasking so the inventory manager does not have to wait for printing and mail operations to be completed before continuing to use the system. Access to the SNA network and the IBM 3090 are vital. The inventory manager should have 3278 terminal emulation available on the IM Workstation, so that software on the IBM 3090 can be accessed. The ability to transfer files between the IBM 3090 (MVS/TSO) and the IM Workstation file server is also required. Data transferred from the mainframe to the local computer will be used with the DSS, and DSS program outputs will be sent to the IBM 3090 for transaction processing. A final requirement is the ability to provide remote access[2] for Inventory managers to their local files and data bases. It is intended that the IM Workstation will provide the inventory manager with the following:

- Interactive access to the main data base.
- The ability to use the data with a decision support system.
- Basic office automation.
- Tracking of individual inventory manager actions.
- Electronic mail.
- A local database which supports the working group's requirements.

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[2] Using the DSS via a laptop computer connected by modem to the local system while attending a meeting away from ASO.

- An easy to understand/learn user interface.
- A user interface which is easy to understand and learn.

The following sections will discuss the technical and management issues involved with the PC LANs as presently planned for use by the inventory managers. The major issues which will be discussed are:

- Security.
- The limitations of MS-DOS.
- Limitations of other software (on a local area network).
- PC LAN server performance and disk drive input and output.
- LAN stability.
- Data base management.
- PC LAN Management.
- PC LAN inefficiencies.

1. Security

It is probably the most critical concern of any computerized system. MS-Net (Also known as the IBM PC LAN) has extremely limited logon and access security. Commands to start the server, including passwords, are kept in ordinary DOS batch files, which could be viewed by knowledgeable network users [REF. 15:p. 1].

In one installation there was no dial-up capability; only those computers that were hard wired into the network had access to the files. The manager of the PC LAN made this decision because the security inherent in all local-area network systems is, in his opinion, unsatisfactory [REF. 16:p. 41]. A local-area network of 10 personal computers, according to some computer system managers, is a minicomputer system. A network of 40 personal computers, connected to a 400 M-byte file server, should be considered a mainframe. Therefore, all the controls, check and balances, as well as security issues, used to govern a mainframe computer system should be applied to this

local-area network [REF. 17:p. 63]. Since IBM's MS-NET does not provide this level of security the value of the LAN is affected. Further, the ability to download data onto floppy disks is a data security concern.

2. MS-DOS Limitations

MS-DOS is a single-user operating system, therefore it is difficult to make multi-user functions available [REF. 18:p. 24]. Under MS-DOS, interactions between the network software and applications software are extremely complex and, in many cases, only sketchily understood by programmers and service representatives [REF. 19:p. 32]. Also if the software has to create or delete intermediate files during the running of the program, the user must have rights to create and delete these files and must be permitted to write to the appropriate drive. Some installation programs won't run because internal batch files are trying to copy files to drives which don't exist in the network configuration. [REF. 19:p. 32]. MS-DOS limits the size of hard disk partitions to 32 megabytes (Mb). Since the amount of data that will have to be stored on the server for the inventory managers could exceed the 32Mb limit, several partitions, labeled A through Z, would have to be set up. But a problem exists because some applications packages do not let users access hard disk partitions above the "F" level. Even if a software product is rich in both features and functionality, the software's use on a PC LAN could be rejected due to this driver limitation [REF. 18:p. 24]. The use of multiple drive partitions increases the difficulty for the end users, forcing them to be well versed in MS-DOS operations to effectively use the network. This level of expertise isn't typically found in an inventory manager.

Unlike MS-DOS, a multi-tasking system allows more than one activity to occur at the same time. In the case of a local area network, true multi-user software would allow two individuals to share the same data at the same time. Should one of those individuals edit the information, the network, in conjunction with the applications software, would lock the record to ensure that the integrity of the data was maintained. A LAN controls access to single user software a little differently. Although the LAN software may include record locking features, the single user software does not. Both users can still view the same record. However, should one individual decide to edit a record, the entire file locks making all of IT'S data unavailable to others until the operation is completed [REF. 19:p. 24]. Unlike a single-user version, network versions (or "network-aware" software packages) offer file- and record-locking features and allow users more flexibility in terms of peripheral sharing, document sharing, and document merging, according to some consultants [REF. 18:P.25]. But even network (or "network-aware" software packages) are constrained. For example a problem with the networking version of dBase III stems from the limitations of the record lock function of MS-DOS, under which dBase is written. The MS-DOS function not only locks a record in use, but also erects a barrier so users cannot get at any data that pertains to that locked record. These steps make it difficult for users who have opened a database with a locked record, to make use of all the data within the database. In essence, what this does is block the part of the logical base below that record from other users [REF. 20:p. 35]. Record locking will slow down or deny the inventory managers access to the data on the server's hard disk.

Another problem with MS-DOS involves the 640 Kilobytes (K bytes) of random access memory (RAM) that the operating systems is able to use. For example the single-user and network versions of dBase III Plus are the same product, except the network version has the "network-aware" features. While the dBase program is the same for both versions, to use dBase on a network, users must purchase the dBase III Plus LAN Pack in addition to dBase III Plus. While the memory requirement for dBase III Plus is normally 384K bytes of RAM for a standalone PC, a PC on a token-ring network using the LAN Pack, requires 512K bytes or more of RAM [REF. 18:p. 25]. For business purposes, the 640K bytes of RAM currently offered by MS-DOS is "woefully inadequate today and will certainly be worse tomorrow... The 640K bytes of RAM is such a limitation that some AT users have to reboot their systems between applications because of overcrowding from RAM-resident software." [REF. 21:p. 27]. Since the main application the inventory manager would probably be using on a PC LAN is a data base program, the limited memory on the PC will allow only a limited amount of data to be stored on the PC. This lack of data in RAM will necessitate frequent requests for data from the server thru the network and therefore reduce the response time of the program.

The final MS-DOS limitation I will discuss is a function of IBM's method of supporting the file server. While some software vendors, like Novell, have a special operating system for the file server which optimizes IT'S input and output performance, IBM operates the file server under MS-DOS. Users who use IBM's network package will see occasional disk errors and protection interrupts. This is caused by the

incompatibilities between the server's capabilities running single user DOS, and the multiple functions expected of the network software [REF. 22:p. C/17].

As an operating system for stand alone PCs, MS-DOS is adequate. But when a PC is part of a LAN, MS-DOS's limitations become a liability. My observation of PCs installed on LANs at the Naval Postgraduate School have shown that while MS-DOS on a standalone PC is difficult to use, when the PC is in the LAN environment, IT'S limitations make it too difficult for anyone but the most expert user, to use effectively. Even shell programs that try to insulate the users from the operating system require the user to have an extensive knowledge of the disk structure and size limitations.

3. Software Limitations (On Local Area Networks)

Besides the limits imposed by MS-DOS, the network environment imposes additional constraints on users and software. Users seeking such (LAN) software face several confusing obstacles, including the following:

- The variety of application software for networks is limited.
- The software that is available fails to support all LANS.
- The software may behave differently on different networks, so performance varies [REF. 18:p. 25].

Many popular PC applications written specifically for PCs will not work on networks. The problem is that most PC applications are written only for single-user systems. They do not have multi-user functions such as file and record locking. For example Ashton-Tate has introduced a multi-user version of dBase III. The dBase LAN

version is not a very great improvement over the single-user version because Ashton-Tate is trying to make it do things it was never meant to do.

Software developers are presently converting minicomputer applications to create PC LAN versions of the minicomputer application. Some of these conversions of minicomputer software have been done quite successfully, because the minicomputer version of the application has had five to 10 years to mature and the inital design planned for a multiuser environment [REF. 23:p. 31].

With token-ring LANs, your choice is either NetWare from Novell Inc. or a LAN software program, with lesser overall performance, from one of Novell's competitors. The lackluster performance of IBM's PC LAN program, combined with its large memory requirements, may have been the principal causes of NetWare's popularity [REF. 24:p. C/8]. Compared to IBM's PC LAN, programs react differently under NetWare's proprietary LAN operating system. With different LAN operating systems, all running under MS-DOS, software companies must write their programs for a generic network interface standard called Netbios. As a result, program performance is degraded rather than being optimized to a specific standard.

As the emphasis for connectivity increases, the scope of PC LANs has changed. Originally, the PC LAN was intended to allow PC's to share high cost printers, exchange files and share expensive disk drives. Now PC LANs are being integrated into a hierarchical network where they are required to handle complex data base applications and perform vertical data integration. IBM wants Personal Computer users to have a strong demand for upstream communications to minicomputer and mainframe

processing. You can't do that with Netbios[3], though, so IBM wants users to move to the LU6.2[4] network interface standard. However, dropping Netbios for LU6.2 will require some sacrifices, because there are few off-the-shelf applications written which will function under LU6.2. By contrast, there are a large number of applications written for Netbios [REF. 25:p. 18]. At this time, choosing the correct network operating system and application program is very difficult. What the standard for network operating systems will be in the future is hard to predict. The problems of limited software selection, the lack of a standard for network operating systems and uneven software performance makes the task of installing a PC LAN a difficult task at best.

4. PC LAN Server Performance & Disk Drive Inout/Output

On PC LANs, the two main activities that are centralized are disk access and network management. The LAN industry has adopted the file server system of management in which workstation requests for data or programs are processed by a server machine. The server then accesses the disk. The file allocation table and the question of when and where data may be written are managed by a single server on the LAN [REF. 26:p. 39]. The key issue for a file server is the speed of IT'S disk I/O [input/output]. The disk delays that concern server designers generally fall into two classes: access and transfer times. Access time is the average delay between the time the disk system receives the request and when the information starts to flow to or from

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[3] The communications protocol used to connect the PC to the network.

[4] IBM's advanced communications protocol used by the systems network architecture (SNA) to link mainframe computers together.

the disk. IT'S made up principally of the time needed to move the head to the right track (the seek time) and the time spent waiting for the correct sector to spin around to the head (the rotational latency). Transfer time is the actual interval it takes to move the information on or off the disk [REF. 27:p. C/23].

If you look at the bottlenecks in a machine that's acting as a server, there are typically two: one is the network subsystem; and the other is the disk subsystem. Both of these subsystems have a fair amount of application code which is needed to control them, and by simply making the processor faster you can improve performance [REF. 28:p. C/22]. One method that has been used to improve disk performance is to have multiple drives and spread files over physically separate drives. That way, you can have several [disk-transfer] tasks going on simultaneously [REF. 27:p. C/2]. While this method will work, it is typical of the complex manipulations used on PC LANs. The impact is that the user faces a computer system which is increasingly difficult to use.

In heavy-use environments, the next areas to examine for performance constraints are the network controller card and the disk controller card. You look at the amount of intelligence[5] on the disk controller card and the network card. When heavy network loads are present, even a computer with a fast CPU can't afford to wait for each card to perform its function and therefore will have to start working in parallel [REF. 28:p. C/28]. The server machine for multiple users requires greatly expanded capabilities over a single-user machine. The server machine requires multiple concurrent communications, as well as heavy file usage and multi-tasking to work effectively. But the present

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[5] The control a card can exercise over its functions, independent of the central processing unit (CPU).

MS-DOS operating system can't do multi-tasking which therefore imposes a limit on LAN performance.

The servers and workstations are linked to the network by a network controller card. A controller card (one is installed in each workstation and server) is more critical to the operation of a file server than it is to a workstation, due to the large number of disk input/output activities on the server [REF. 29:p. C/17]. IBM's token-ring network uses the same adapter card that is used in a workstation, this can lead to input/output performance problems. While the token-ring network is rated by IBM at 4.0 Mbps, a recent test showed the transfer rate from an IBM 3090 mainframe in connection with a 3275 terminal controller to a PC to be only 0.2 Mbps [REF. 30:p. C/1]. Such a low transfer rate could affect the ability of the PC LAN to provide a conversational level of service.[6]

The IBM token-ring network does not use a specially built server, but rather makes use of an IBM PC-AT class machine as a server. Even though software for most PC networks can run on ordinary workstations, several manufacturers and independent consultants recommend the use of a specially built, dedicated file server for a network's control coordination and storage. These vendors claim the advantages of a dedicated file server range from increased ease of installation and greater security, to better packaging and faster performance [REF. 29:p. C/17]. The use of an IBM PC-AT class machine, running under MS-NET, would lead to a less than optimal level of system

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[6] A conversational level of service is a speed such that the user does not notice an excess delay between the entering of a request and the response.

performance. It does not have the ability, when running MS-DOS, to perform the multi-tasking functions needed for successful server operations.

5. LAN Stability

LANs are less stable (prone to crashes and errors in data integrity) than stand-alone PCs. Using complex background software, the networking operating system fools the workstations into believing they have additional disk drives, printers, serial ports, etc. Even without "terminate and stay resident" (TSR) type programs, an occasional application that has not been written in strict compliance with MS-DOS will have difficulty working correctly on any PC network. When the PC is connected the network and and TSR's are used, many more applications have problems.

TSR's illustrate the major difficulty in LAN management. Whenever multiple software packages and multiple types of hardware work together, integration becomes an important, but complex task. It is tempting to solve the problems as they occur. But this is only a stopgap measure. The best solution to the integration problem is early planning and a comprehensive management program [REF. 31:p C/53].

Even carefully designed security procedures will never protect the integrity of a network completely. The best security is a current archival record of the hard disk. How often the system is backed up and whether the entire system or only changed files are archeived will depend on the size of the databases and the volume and patterns of data additions [REF. 19:p. 32]. Considering the large number of local area networks which will be installed at ASO, not only will this involve each server but also any workstation with a hard disk. This will be a difficult task to actually perform and manage. If backups are not performed religiously, the network could be destabilized

through lost and corrupted data. The result will be that the validity of data will be questioned and trust in the system lost.

A ring network connects each computer in a circular configuration. Under heavy loads transmission speeds are faster than those found in a eathernet (bus) LAN. One disadvantage to a ring network is that any disruption in the network, such as an equipment failure or the addition of a new workstation, can cause the entire network to shut down [REF. 19:p. 21]. As a result the network is sensitive to cable damage. In the ASO environment, where a large number of the inventory managers do not have modular furniture, the chance of cable damage is very possible. The token-ring network cabling is very complex. IT'S installation is a major effort and requires a large number of cable runs. Inherent to this intricate system is a very high cost for procurement and installation. Moreover once such a network is installed it is very difficult to move.

An additional area that can influence system stability is outside[7] software. The availability of MS-DOS programs adds a new dilemma to the computer management problem. The low prices of PC software packages will tempt inventory managers, with a PC on their desk, to buy a program that will help them do their job (or balance their checkbook). So long as an application remains restricted to a local users desk, then software standardization isn't a problem. But, when it becomes a company wide application you have to have centralized control over the software being used [REF. 32:p. 53].

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[7] Software not provided by the organization or included in the software configuration management system.

The most perplexing software is the terminate and stay resident (TSR) kind. Terminate and stay resident (TSR) programs such as Sidekick are mixed blessings for LAN managers. They provide convenience for users and tools for improved LAN management, but they also cause program crashes and general network instability. TRS problems fall into four general categories: insufficient memory, interrupt contention, command-key contention, and if several TSR's and an application need to share the main 640K-byte block of memory, their may be insufficient space left for larger applications. The dangers of uncontrolled TSR's are intolerable because resulting crashes could damage databases or corrupt directories.

Since TSR's cannot be banned, they have to be managed. However, TSR management can be a sensitive issue. Users may select a favorite TRS before the LAN is installed. When told to stop using it or to change to another product, the users can become rebellious [REF. 31:p. C/5]. And because of the PC's independent nature, it is frequently difficult for MIS to control software use.

Overall the PC LAN, as it exist today, is a very delicate structure. In a production environment like ASO, where stability and up time are vital, the sensitivity of PC LANs to IT'S environment could have a serious impact on productivity. Additionally, excessive down time can have a negative impact on the user. If the inventory manager finds the computer system to be unreliable, or if IT'S more trouble to use than IT'S worth, he or she won't use it.

6. Data Base Management

The main issue with a database placed on a PC LAN is the security of the data. This security involves both denying unauthorized access, and preventing unintentional

damage to the data base. In spite of carrying out conservative security procedures, data on any PC network is vulnerable, due to the lack of true multi-user software and to the large number of users accessing the databases [REF. 19:p. 34].

Another issue with data base management on a PC LAN is whether or not the level of data base work that will be done by the inventory managers will exceed the level of efficiency of the network. Sometimes it is desirable for activities to be centralized. Application processing, for example, usually involves manipulation of small amounts of data and is handled in the distributed workstations. Application processing, however, may not be efficient for data base management and large processing jobs. Some data base operations are more efficiently performed in a central processor. This is not an issue in smaller data base systems, but as the size of data bases and the number of workstations increases, so does the need for centralized processing [REF. 33:p. 39].

PC LANs are presently not mature enough to handle large production size data bases. "You can have a shared data base on a LAN server, but PC LAN-based DBMS's, while they have made great strides, don't yet equal minicomputer based DBMS's," [REF. 34]. The PC LAN-based DBMS's suffer from the problems of record locking and bottlenecking at the file server. In addition the slow speed of token-ring network data transfers from the server or minicomputer will cause the DBMS to have less then acceptable performance. Most data base uses will require a conversational interaction (5 seconds or less) or an inquiry/response interaction (20 seconds or less) [REF. 35:p. 4]. My experience with various token-ring LANs at the Naval Postgraduate schools is that these types of response goals will be unattainable.

7. Installation

The installation of PC LANs is a very complex task. Each installation is almost a custom-tailored job [REF. 36:p. C/8]. "'In practice, though, LANs are quite tricky little devils,'" warns Ian Ebel, president of Microserv Technologies Corp., a LAN consulting firm. "'If you don't know what you're doing, they can cause you a lot of headaches and grief.'" [REF. 23:p. 31].

John Schmidt, systems analyst at American Hardware insurance Group in Minneapolis, installed three IBM token-ring LAN's a year ago and says that the big surprise was how much time was consumed. "The network hardware wasn't difficult, but software gave us problems," Schmidt says. "At first we used IBM's LAN operating system but found it difficult to fine-tune to give us maximum performance. We opted for Novell, Inc's Netware operating system instead." [REF. 37:p. 27].

One of the first things people will want to do with their LAN is to share a high-speed laser printer. Just about every network administrator has a horror story to tell about his or her printer. The stories range from simple connection difficulties, to getting control over the print-job stream and fonts. Just getting the printer connected can sometimes be a chore [REF. 38:p. C/9]. For example, one woman's station had a laser printer attached to it. To allow other people on the network to have access to the laser printer, she had to be on the network constantly because so many people wanted to spool to the laser printer. With no administrator present, many users were incorrectly spooling to one of her disk drives. She was constantly losing files or getting her PC locked up and finally decided not to boot up on the network [REF. 39:p. 41].

8. PC LAN Management

Even after a PC LAN is installed, it requires a great deal of attention. Unlike the stand-alone PC, a PC LAN is not self sufficient due to IT'S dependence on the server for application programs and data storage. While an individual might have trouble using the PC on his/her desk, (constantly jamming it up through operator error) when you link that person's PC to the network you're going to multiply their mistakes many times over. In fact the more competent users may refuse to be on the PC LAN because the mistakes of others slow them down. Patience is the byword when it comes to local-area networks. When the LAN goes down, lots of people want their spreadsheet and databases brought back up. The stakes are higher when data is on a LAN because the information on the server is inaccessible [REF. 40:p. C/8]. "People expect an installation to be an immediate solution. In all honesty, IT'S the beginning of the solution, not really the solution itself." [REF. 39:p. 41].

Initial network installation is hard enough, but networking is now generally so complex that clients need to be constantly updated and supplied with new network resources to keep them current and competitive. Once you emerge from the initial network installation, you can run right into trouble. Suddenly you have data center designs, structural designs, gateways and communications with remote systems. These are network design elements that users rarely foresee [REF. 37:p. 27].

The final issue concerning the management of PC LANs concerns network administrators. At ASO, the network administrator will probably be an inventory manager who will have this job as a collateral duty. It is very important to have well trained network administrators. Unlike mainframe and minicomputers, the administra-

tion of a PC LAN is an hour to hour operation. The same flexibility that made the PC popular is also it achilles heel. It is too easy under the present PC LAN operating systems for the user to corrupt data in the system or cause the network to crash. The network administrator must be on hand as much as possible to maintain the network. If you don't have competent network administrators, the project is going to fail [REF. 39:p. 41].

An additional management issue is that those LAN managers who can successfully avoid the pitfalls and create productive, stable LANs are in high demand. The job market for PC LAN managers is destined to grow rapidly and the talent pool is quite small. With decisions becoming ever more difficult, corporations need LAN experts with a successful track record. Promotions and attractive offers from headhunters will gradually become the LAN manager's standard fare [REF. 39:p. 41]. This could have a detrimental effect on the effectiveness of the PC LAN, as successful LAN managers leave inventory management for higher paying jobs just managing PC LANs. Taking all the various factors into account, the installation of PC LANs is still black magic. The PC LAN has evolved a great deal since IT'S inception, but it has yet to reached maturity. The installation and management of PC LANs is still filled with many pitfalls and headaches. Choosing a PC LAN for a production environment is still very questionable decision.

Based upon the above discussion of the technical and management problems associated with personal computers on a token ring network, there was sufficient justification to to depart from ASO's planned hardware architecture. Management of the PC LAN would be so difficult that the effective implementation of a DSS would

not be possible. It was decided that the hardware best suited to provide inventory manager's with a DSS and individual workstations would be a minicomputer based system. Minicomputers have excellent security, their operating systems are not limited by RAM or partition disk size. The software for minicomputers is designed to operate in a distributed, multi-user environment, the files are managed so that access for authorized users is unlimited and updates are logically controlled. The performance of the minicomputer, especially when configured with diskless client workstations, is superior to any PC LAN configuration. When the issues of system stability and management are also considered, a minicomputer system is the only answer. Figure 8 is a part of a connectivity decision chart excerpted from PC Magazine [REF 65]. PC Magazine is mainly concerned with PCs on various LANs, but their decision chart shows that the best decision when you do not have a large investment in DOS based PCs and do have a heavy data load is to consider using minicomputers.

The choice of which minicomputer to use was narrowed by the following constants:

- It should use a non-proprietary operating system.
- It has a high resolution, 19 inch monochrome display.
- It would work with the selected DSS software.

Hardware to fulfill the specified parameters was available from several manufacturers:

- International Business Machines (IBM)
- Digital Equipment Corporation (DEC)
- Sun Micro Systems (SUN)

Each of these manufacturer's computers uses a version of the UNIX operating system. While each version is slightly different, they all support the DSS software. Each of

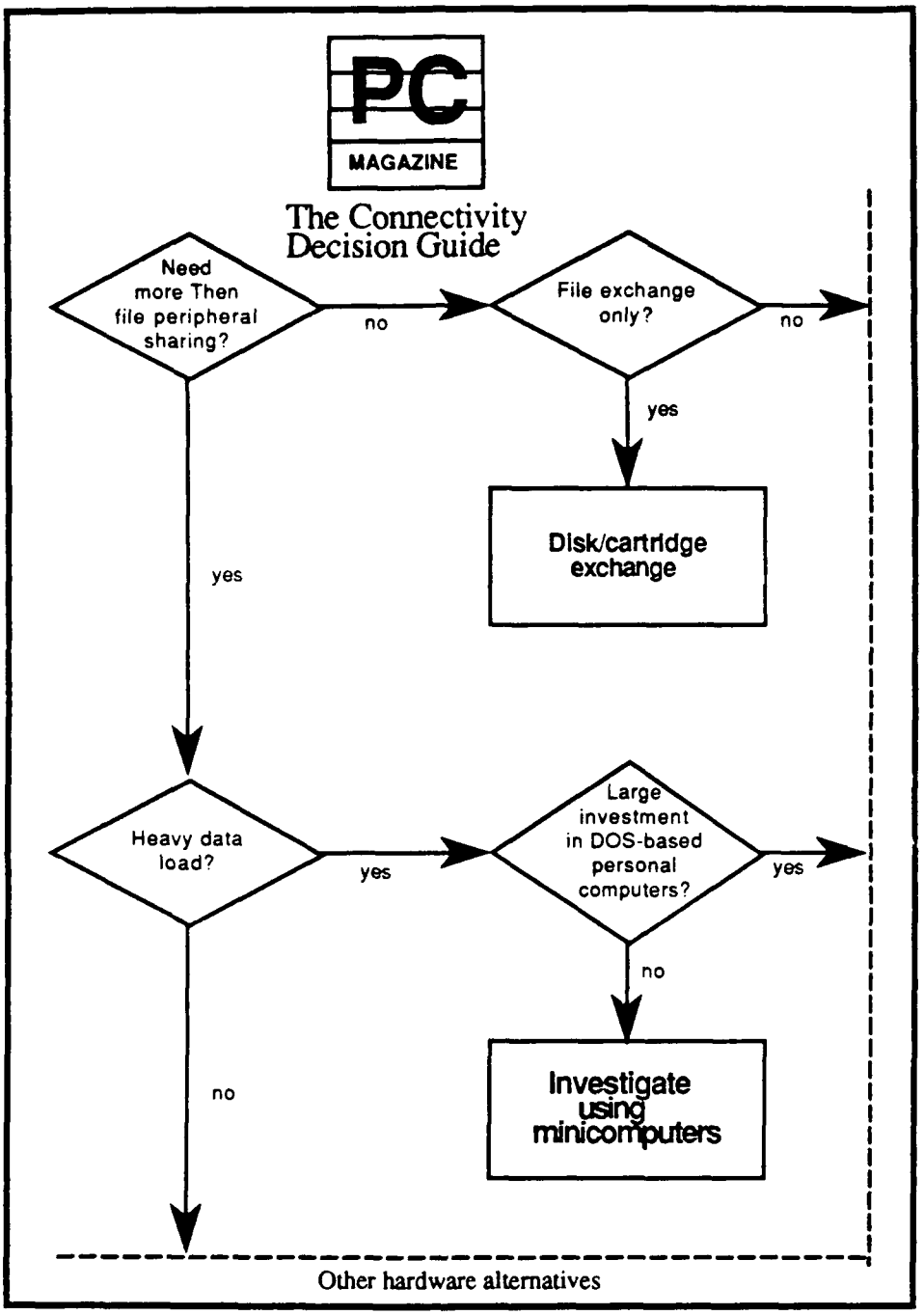

Figure 8 PC Magazine Connectivity Decision Guide

the computers supports workstations with a high resolution, 19 inch monochrome display. All the workstations are linked to the server via an ethernet using the

Network Files Systems (NFS) protocol. NFS was developed by SUN, but licensed for a minimal fee to IBM and DEC. It has become the industry standard for ethernet connectivity.

IBM offers the RT PC, with different versions acting as the server and workstation. IBM's version of UNIX is called AIX . DEC offers the VAX 3600 as the server and micro-VAX 2000 as the workstation. DEC's version of UNIX is called ULTRIX. SUN offers the SUN 3/280 as the server and the SUN 3/50 or 3/60 as the workstation. SUN's version of UNIX is called "SUN OS".

Functionally each machine offers similar performance, capabilities and capacities. The IBM machine was not selected for the DSS development during this thesis because version 2.0 of ALIS (The selected DSS software) was not yet available for the RT PC when the hardware was procured. The reason for selecting the SUN system over the DEC was that the Naval Postgraduate School already had a large installed base of SUN systems and could provide technical and repair services for the workstation that would be procured for DSS development. For a large scale installation, any of the systems would be fully functional. The ALIS software is such that it can be developed on one system and transported to a different system without conversion. The exportabilty provided by using an open operating system supports full and open competition and keeps the DoD from being tied into a single vendor.

The following hardware was procured for DSS development:

- SUN 3/50 workstation with high resolution, 19 inch monochrome display, 4mb RAM and ethernet port.
- 141 mb fixed disk with 60 mb 1/4" streaming tape device.
- QMS-PS 800 Postscript laser printer.

- Zenith data systems 2400 baud modem.

This hardware fully supported the DSS software development. While the UNIX operating system has a reputation for not being user friendly, the new graphical user interface being provided by SUN called Open Look has removed much of the unfriendliness. Open Look is a version of X-Windows. X-Windows was developed by the Massachusetts Institute of Technology (MIT) under a grant from IBM and has become an industry standard. DEC and IBM both offer X-Windows.

D. SOFTWARE

As discussed in the Chapter 2, the DSS is built using a shell. In selecting the shell, I wanted a highly integrated Office Automation package, i.e. one that provides word processing, spreadsheet, database management and a macro programming language. The software packages identified as possible candidates were:

- SmartWare, by Informix Software, Inc.
- Q-Office+, by Quadraton System, Inc.
- ALIS, by Applix, Inc.
- Officepower, by Computer Consoles, Inc.
- R Office+, by R Systems, Inc
- Uniplex Advanced Office System, by Uniplex Business Software.

To become a possible candidate, the software had to run on a Unix based computer. While various integrated packages like IBM's "AS/400 office" and DEC's "All-in-1" were possible candidates, they are based on proprietary operating systems. Each of the possible software packages listed above can operate on over twenty different UNIX based systems. I reviewed each of packages for the following features:

- Access to the UICP database from within the office automation software.
- Ability to import a subset of the UICP data base and use the data within the office automation software to form a decision support system.
- A user interface that is easy to understand and learn which complies with the Xerox PARC / Open View interface standard.
- Electronic mail which can be transmitted amongst both the inventory managers and other groups and organizations.
- Highly integrated office automation system with a consistent user interface containing word processing, spreadsheet, data base and a macro programming system to develop the DSS with.

After studying information, manufacturers and computer publications, it appeared that SmartWare and ALIS were the most promising. The other packages either did not contain a spreadsheet or electronic mail or both. Additionally, many of the packages did not allow for a total integration of data between the modules. The reason ALIS was selected over SmartWare was that it provided two key features that SmartWare did not. ALIS provides a graphical user interface that complies with the Xerox standard and an extensive programming language that allowed control of both the integrated packages and the UNIX operating system. The final step taken before selecting ALIS, was to contact ALIS users within the DoD[8]. ALIS was highly recommended by Mr. Dana Brewer of the Office of the Secretary of Defense. Appendix B contains an in-depth description of ALIS and its various features and configurations.

This thesis document was created using ALIS. The thesis is a compound document containing spreadsheet and graphic editor insets. The format of the

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[8] The prime point of contact was the Office of the Secretary of Defense which has a 300 user system. Additionally the US Air Force uses ALIS for IT'S Local Office Network System (LONS). LONS is presently installed at several US Air Force bases in the Eastern United States.

document was controlled by a style guide and printed on a postscript printer. From receipt of the ALIS software, I was productively using it within two days and felt completely competent with it within a week. It has performed flawlessly and has provided all the capabilities advertised by Applix, Inc.

IV. UICP DATA ELEMENT SELECTION

A. INTRODUCTION

The first task in developing the IM Workstation's DSS was to identify the data elements most important to the inventory manager's work and to find out how the data elements are being used. The optimal way to identify the data elements and their uses would have been to perform a structured analysis. The structured analysis would then result in a physical data flow diagram showing the present business methodology. This could then be restructured into a logical data flow diagram which would take the present system and transform it into a streamlined view of the business which could be programed. In a production environment, such as ASO, completely stopping old (and established) ways of working and changing to a completely new system would be unacceptable. I decided to follow a multi-staged process:

- Determine the UICP applications and data elements the inventory managers consider necessary to perform their mission.
- Document the managers actual use of the selected information.
- Determine how to import the selected information into the Decision Support System (DSS).
- Construct a DSS based upon the managers requirements.

This chapter will discuss the first two steps in this process. The subsequent two chapters will discuss data extraction and the building of the DSS modules.

B. APPLICATION AND DATA ELEMENT DETERMINATION

The most critical element of my thesis was the identification of the UICP applications and data elements that the inventory managers use to support their daily work

effort. The outstanding cooperation of the personnel at ASO made this identification work much easier than I first anticipated.

To support the determination of the data elements and their uses, the director of Weapons Management identified one of his most competent branches, WMB51, to work with this project. The branch head selected his seven most competent and experienced inventory managers. The managers were asked to identify the A02 data products they used on a regular basis.

If they need the information on a regular basis[1] to answer a phone query, to process a requisition or to review a recommended buy they should identify the A02 product they would use. From the choice of 39 A02 products, the managers selected the ones that they would use on a regular basis. While each manager could have selected all 39 of the products, they only picked between 6 and 12 products. The mean

A02 PRODUCTS

MANAGER	AS	BA	BB	BD	BJ	BK	CB	CD	CH	CL	EF	NA	NB	RS	WA	#
1	✓					✓		✓		✓		✓		✓		6
2	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	12
3	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓	11
4	✓					✓		✓	✓	✓		✓		✓	✓	8
5	✓					✓		✓		✓	✓			✓		6
6	✓					✓		✓	✓	✓	✓	✓	✓	✓		9
7	✓					✓		✓		✓	✓	✓	✓	✓		8
#	7	1	2	1	2	7	1	7	4	7	3	6	3	6	3	

Figure 9 A02 Products Selected by Each Inventory Manager

[1] A regular basis was considered to be at least once a week.

number of A02 products chosen was 8.5. Figure 9 shows the A02 products selected by each manager. Figure 10 provides a graphical display of the selection distribution. As Figure 10 shows, the managers actually use only a small number of the data products available. Secondly, the managers were in agreement as to which products were the most important. The managers selected six high usage programs that they felt were vital to the performance of their jobs. These key products were named, AS, BK, CD, CL, NA, and RS[2]. They actually represent the heart of the inventory management process.

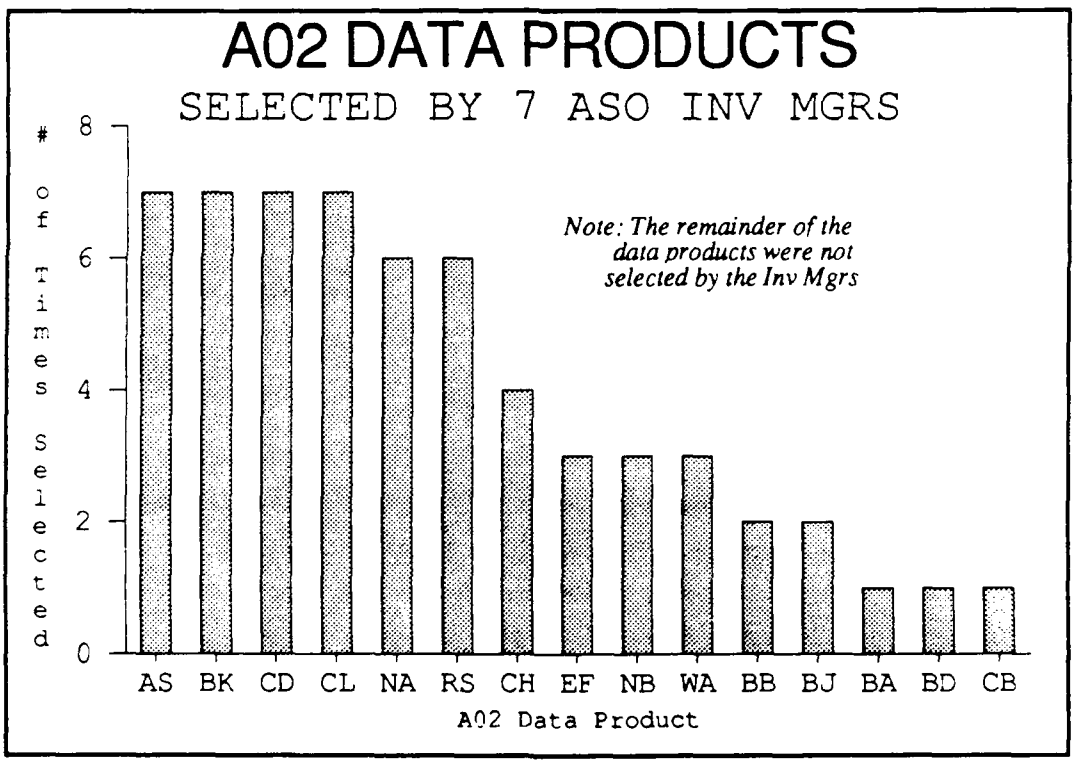

Figure 10 A02 Products Selected by 7 ASO Inventory Managers

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[2] Appendix A contains a definition of each A02 product.

The information provided by these A02 products forms the basis of the inventory manager's ability to answer the following questions on a daily basis:

- What stock is available for issue?
- What stock is on order, and when is delivery expected?
- What requisitions are backordered?
- What is the status of a specific requisition?

During the interviews, the inventory managers stated that they usually have to use two or more of the A02 products to answer any of the above questions. The inventory managers said that the process of retrieving the information was very time consuming. Furthermore, they said that the only way to work with the data was to print each screen from the current IBM 3270 terminals individually and place the printouts side by side on their desks. This allows them to correlate the data from one A02 program with that of another, to obtain the information they need.

The next step was to identify those data elements in each A02 product which were being used and those which were extraneous. It turned out that only a very few of the data elements from each report were used. Inventory managers stated that many of the reports could be reduced in sized and data from various reports combined to better fit the needs of the managers.

Sprague and Carlson's text, Building Effective Decision Support Systems, states that "Almost every study of decision making and DSS indicates that decision making involves reducing / abstracting from large amounts of data. Data reduction involves sub-setting, combination, and aggregation of records and fields in a database." [Ref. 41:p 99] Therefore, if an effective DSS was to be constructed, an abstracting of data from the UICP database and A02 products was required.

The managers were asked to select from each A02 product the data elements (DENs) they used. They were also requested to identify any additional data elements that are not part of a selected A02 product, but are required to perform their analysis. The managers selected 110 data elements. Of these, 50 were selected by at least four of the seven managers. What this implies is that the managers only use or need 110 of the 3,992 data elements available in UICP. Appendix C contains a listing of the 110 data elements selected and the A02 products which use each data element. This represents 2.7% of the data elements in the UICP database. While this indicates that a very low percentage of the database is being used by the inventory managers, many of the unselected data elements are required for other functions. These data elements are used to compute supporting information, provide purchase requirements and maintain provisioning technical data. Additionally, while the prime mission of the Aviation Supply Office is inventory management, many of the supporting management codes, such as procurement, provisioning, and component repair management make use of these other data elements.

In addition to the on-line products, information is provided to the inventory managers on a cyclic[3] basis in the form of several printed reports. The inventory managers expressed a desire to have this information on line as part of the DSS. The reports they indicated they wanted data from were the Consolidated Stock Status Report (CSSR) and the Supply Demand Review (SDR) report.

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[3] The interval could be quarterly, or as the product of a periodic review inventory model.

V. DATA EXTRACTION

A. INTRODUCTION

The UICP database, resident on the IBM 3090-400 mainframe, is a complex series of on-line data files and off-line tape files. To modify or replace the present A02 products would involve an extensive amount of reprogramming and the associated database integrity checks and testing. This process would take several years to do properly. The best approach is to leave the A02 products unchanged and extract from the UICP database only that information required by the IM Workstation to perform day to day functions. By limiting the number of active interfaces with the UICP database, many of the interface problems are eliminated. According to David Alexander "a DSS does not replace or compete with other systems; instead, it extracts from other systems the information that is essential to the process of decision-making." [Ref. 7:p 116] This chapter will discuss the methodology used to extract from the UICP database data elements identified by the inventory managers and discussed in the previous chapter. The COBAL programs to extract the data elements from UICP were written by Paul Rosen of ASO's planning division. He was assisted by Bill Leanza and Elmer Nagrampa, management interns from the Naval Supply Systems Command (NAVSUP). Mr. Rosen and the NAVSUP interns dealt with the issue of extracting the data elements, while this thesis work developed the minicomputer software to use the data elements once they were downloaded to the minicomputer.

B. DATA ELEMENT EXTRACTION

The majority of the data elements identified by the inventory managers were located in the UICP database files accessed by the UICP Supply Demand Review model

(B10). This model reviews stock levels and computes recommended quantities for procurement. The printed output of this model contains not only the recommended procurement quantities but also a large amount of management data. The management data included in the printed output contains many of the required data elements. Appendix D contains the COBAL program called NSN5B, that extracts the data from B10JX1 record types (D, F, H, J, L, N, P, R, T, V, and Z) in the UICP database and creates thirteen data files which can be moved to the IM Workstation.

The NSN5B program was difficult to write because the structure of the B10JX1 record was not known. The documentation for the record's structure was incomplete and out-dated. The key to performing an extract was finding the exact file location of each data element. To build a complete map of the record's structure, an extensive amount of research and subsequent effort was required. The various information then had to be correlated to build the map. Once the location of the data elements within the record were known, the programming effort continued without difficulty.

The NSN5B program first opens the B10JX1 record and performs a subroutine which extracts information for only those stock numbers managed by WMB51 branch. This extract is done using logistic routing codes (LRC).[1] NSN5B then goes to the specific file location for each data element and reads that data element into working storage. The information is stored and referenced by it DEN number. Upon reading all the required data elements for each stock number, the information is written to the appropriate file for later transfer to the minicomputer. This routine continues until

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[1] The logistic routing code identifies the specific inventory manager who manages a particular item.

information for each stock number has been extracted. Then, NSN5B closes B10JX1 and each of the created data files. The information in the data files is then manipulated to ensure each record is properly format (e.g.; currency fields, quantity fields). The data file Outfile4 called contains the ready and not-ready for issue stock status information. The information is reorganized so that it presents, for each reporting activity, "ready for issue" (RFI), then "not-ready for issue" (NRFI) and finally "all purpose codes" (pur-all) stock status information in a single display line. Upon completion of this routine, NSN5B is finished and the data files are ready to be down loaded.

C. DATA FILE STRUCTURE

The thirteen data files which result from NSN5B are organized to correspond to the various sections of the NSN Snapshot. Ofile1, Ofile2 and Ofile3 contain technical reference data. Ofile4 contains the current stock status information. Ofile5 contains material due-in from contacts information. Ofile6 contains planned program requirements data. Ofile7 contains alternate national item identification numbers (NIINs) data. Ofile8 contains application data. Ofile9 contains information on backordered requisitions. Ofile10 contains part number reference data. Ofile11 and Ofile12 contain reference material if the item is managed by a non-Navy activity. Ofile13 is a supporting file used to construct Ofile4. Appendix E contains a sample listing of each file and Table 1 summarizes them. The exact placement of each data element within the file can be read from the program listing of NSN5B in Appendix D.

The reference key to the data files is that characters 1 to 9 of each line represent the NIIN. This allows the data from the different data files to be correlated. Data

Table 1 FILES CREATED BY PROGRAM NSN5B

File	Description	Type
Ofile1	Technical Reference Data	Single Field
Ofile2	Technical Reference Data	Single Field
Ofile3	Technical Reference Data	Single Field
Ofile4	Current Stock Status	Repeating Field
Ofile5	Due-in From Contracts	Repeating Field
Ofile6	Planned Program Requirements	Repeating Field
Ofile7	Alternate NIIN Data	Repeating Field
Ofile8	Application Data	Repeating Field
Ofile9	Backordered Requisitions Data	Repeating Field
Ofile10	Part Number Reference Data	Repeating Field
Ofile11	Non-Navy Management Data	Repeating Field
Ofile12	Non-Navy Management Data	Repeating Field
Ofile13	Temporary, Builds Ofile4	Repeating Field

files like Ofile4 have multiple lines of data for the same NIIN. The program reading the data file can tell when the data for that NIIN has been completely read when the first nine characters of the next line do not match the NIIN being worked with. This key reference system allowed variable length data to be handled in the same simple method used for fixed length data files.

D. REQUISITION DATA

The data for requisition processing is pulled straight from the Document Status File (DSF). Due to the fixed field features of requisitions, they are relatively easy to work with. A subroutine program pulls those requisitions from the file that match the logistic routing codes for the item managers in WMB51. The resulting requisitions are passed as one data file to the minicomputer. The files are then read and used by the requisition process module.

E. CYCLIC HISTORICAL DATA

Due to the same difficulties experienced when NSN5B was written, poor or nonexistent documentation has caused the extracting of historical data from the cyclic data sheets to be a very difficult task. Mr. Rosen and the NAVSUP interns are presently working to solve this problem. It is expected that by early January 1989, they will have an appropriate extraction program ready.

VI. DSS CONSTRUCTION

A. INTRODUCTION

This chapter will discuss the how the data elements extracted from the UICP database and how the office automation and programming features of ALIS were used to create the DSS. The following areas will be discussed:

- Information usage
- NSN Snapshot construction
- Inventory management menu construction.
- NSN Notebook construction.
- Requisition processing construction.
- Cyclic view construction.
- Supply demand review processing.
- Style guides and office automation.

The discussion of each area will cover the major functions of each module in the DSS. The computer programs for the completed modules are provided in the appendices. Due to time constraints, the requisition processing, cyclic view, and supply demand review programs were not completed when this thesis was published.

B. INFORMATION USAGE

Following the determination of which A02 products, data elements and data from printed reports were most important to the inventory managers, an understanding of how to organize this information was needed. Most computer implementations take the pre-computer, manual paper system and copy the present methods and reproduce it with a computer program. Rather than take this approach, the following groups of functions were examined:

- Answering customers' questions when they call for the status of a requisition or the quantities of stock on hand.
- Using historical data to analyze future requirements.
- Processing requisitions for stock issue.
- Processing supply demand review outputs from the UICP computer model B10 .
- Maintaining miscellaneous information about each stock number.
- Answering correspondence, preparing buy packages and general office automation

The NSN Snapshot was designed by ASO personnel to allow them to answer customer queries rapidly, assist the processing of requisitions and to provide a uniform method of looking at stock status. The NSN Snapshot is intended to deal with current information. To supplement the NSN Snapshot and provide the inventory manager with information about historical patterns, a module called the Cyclic view is being designed. The Cyclic view presents historical data taken from the Consolidated Stock Status Report. The combination of NSN Snapshot and Cyclic view information will provide a basis for the manager to analyze the recommended buys from the Supply Demand Review process. With the extracted data elements resident in the DSS, buy computations can be done by the item managers without having to input the data from printed reports.

To allow information presently kept by the inventory managers on ASO 730 cards[1] to be maintained in a uniform manner, the NSN Notebook program was written. The NSN Notebook is intended to provide a consistent repository for non-UICP

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[1] Paper record cards maintained by each inventory manager, for each stock number. They contain miscellaneous information not kept in the UICP database (ie points of contract).

database information that is required by the inventory managers. Examples of the information to be kept in the NSN Notebook for each stock number are:

- Pending stock number change information.
- Contract expedite information.
- Points of contact.

Not only does the NSN Notebook provide a consistent method for maintaining this type of information, but it also allows all members of the branch to have access to the information. To facilitate the uniform processing of requisitions, the requisition processing module was built. An additional area to be implemented deals with the processing Supply Demand Reviews and their associated buy computations. The following sections will discuss the designing and programming of each of these modules and how they are used to implement the DSS.

C. NSN SNAPSHOT CONSTRUCTION

The NSN Snapshot was designed by ASO inventory managers to give them the ability to rapidly answer customer queries and provide concise management information. The NSN Snapshot has its information displayed in seven areas or views. Figure 11 shows a sample NSN Snapshot. The top view contains the provisioning and technical data pertaining to each stock number. It contains such information as the name of the item, standard price, replacement price, part number reference and wear out rate. The purpose of the first view is to give the inventory manager, in one area, the item's key management information. This key information includes the value of the item, how it is managed by the UICP database, and whether it is a repairable or consumable. View 2 provides the current observations of quarterly demand, and other related information. This information gives the inventory manager an insight into the amount of demand

the part is presently experiencing, how many parts are required but cannot be presently provided and how many parts are due in from the manufacturers. View 3 provides application data. Application data tells the inventory manager what equipment uses this specific part and in what quantities.

View 4 provides a listing of parts by geographical location and their associated condition (ready for issue, not ready for issue but in repair, or not ready for issue and awaiting repair). This view is referenced on the NSN Snapshot as PTAS Data. The name PTAS comes from the command for the original retrieval program that was accessed from a tty device[2]. The inventory managers wanted the data arranged across one line to make it easy to work with. The present A02 program design requires a separate A02 product to provide the data associated with each column of the PTAS data. The way the PTAS data is presented in the snapshot makes it much easier to work with than the dissimilar paper outputs from A02. View 5 provides information on material which is due in from manufacturers, including the planned delivery date to the stock point. View 6 informs the inventory manager of any requisition for the item that have been placed in a backordered status awaiting material delivery. The last view, view 7, provides the inventory manager with information on planned program requirements. This allows him to easily see what material will be requested in future months, so he can ensure that it is available when required.

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[2] If the manager wanted to know the status of ready for issue parts they would input "PTAS!RFI!ALL!001231234" on the tty and the system would return a printout that was very similar to Figure 1.

As shown by Figure 11, the NSN Snapshot is a long document. To allow the inventory manager to view the information, the ALIS environment presents the document in a window. The window can be scrolled to reveal specific areas of the NSN Snapshot or exploded to show it as one window making use of the complete 19 inch display area. Overall the NSN Snapshot provides clear and concise management information for each stock number. It provides the inventory managers with the data they need to properly manage an item and support customer requests.

The NSN Snapshot is the key element of the IM Workstation for the inventory managers DSS. While on the surface the NSN Snapshot might appear as only a clean way to present data on the screen, it actually represents much more. By having the information presented in a well organized manner, it actually influences how the inventory managers perform their work. In many cases, if the inventory managers needs today the information which will be contained in the NSN Snapshot he would have to perform extracts from six A02 products. Not only is this process time consuming and tedious, but there is no guarantee that the inventory manager will make the effort to obtain all six A02 products. The inventory manager might use old printouts or try to recall the information from his or her own memory. This could lead to an improper decision being made because the it was based on partial information. The present failing of the UICP database is not the quality of the database or its models, but rather the difficulty of extracting and working with the data. Therefore, a main feature of the NSN Snapshot is that it will make the UICP database accessible. The value of the information from UICP will be further aided by organizing the data in a logical manner which will exp. "te the decision making process.

View 5

Due-Ins

Total = 26

Document ID	Document / Call	CLIN	From	To	QTY Contracted	QTY Shipped	Purpose Code	Condition Code	EST Delivery Date
DDK	N0065182350507 /			NVZ	2	0	A	A	88366
DDK	N0065182451723 /			NVZ	2	0	A	A	89011
DDK	N0024482360550 /			NDZ	1	0	A	A	89061
DDK	N0024481970437 /			NDZ	1	0	A	A	89061
D9C	NWHN3261785135 /			NDZ	1	0	A	G	88301
D9C	NWHN3270025135 /			NDZ	3	0	A	G	88295
D9C	NWHN3270165135 /			NDZ	1	0	A	G	88301
D9C	NWHN3270445135 /			PTZ	1	0	A	G	88302
D9C	NWHN3270755135 /			PTZ	3	0	A	G	88302
D9C	NWHN3270795135 /			PTZ	1	0	A	G	88302
D9C	NWHN3270865135 /			PTZ	1	0	A	G	88310
D9C	NWHN3270905135 /			PTZ	1	0	A	G	88310
D9C	NWHN3270935135 /			PTZ	2	0	A	G	88310
D9C	NWHN3270965135 /			PTZ	1	0	A	G	88310
D9C	NWHN3271005135 /			NDZ	1	0	A	G	88307
D9C	NWHN3271005135 /			PTZ	1	0	A	G	88310
D9C	NWHN3271145135			NDZ	1	0	A	G	88301
D9C	NWHN3271145135 /			PTZ	2	0	A	G	88316

View 6

Back Orders

Total BB= 12

DOC	QTY	PRI	PR	FD	BBD	STATUS
N0065182350507	2	770	05	26		BB
N0065182451723	2	770	05	26		BB
N0014672581683	1	770	06	26		BB
R0911682571807	1	AE9	06	VZ		BB
R0911682571829	1	AE9	06	VZ		BB
N0024481370193	2	770	15	26		BB
N0024481380423	1	770	15	26		BB
N0024481970437E	1	770	15	26		BB
N0024482360550	1	770	15	26		BB

View 7

Planned Program Requirements

Total DDA= 6 Total 101= 0 Total 501= 36
Total BPR= 20 Total 301= 0

DOC ID	Document	PC	SUPAD	QTY	REQD	PROJ
BPR	N6299562850134	W	VV1086	1	99999	799
BPR	N6105162560049	W	VV0986	1	99999	799
BPR	N0024473230022	V	87SDLM	4	99999	799
BPR	N0014673230012	V	8/SDLM	3	99999	799
BPR	N0024662270135	W	VV0886	1	99999	799
BPR	N6312682030223	W	VV0688	1	99999	799
BPR	N0018873420227	W	VV1287	2	99999	799
BPR	N6111982170254	W	VV0888	1	99999	799
BPR	N0065163560412	A	VV1286	3	99999	799
BPR	N0042181340296	W	VV0388	1	99999	799
BPR	N0014651350020	W	P25OSI	1	99999	799
BPR	N0014651400025	W	VV0585	1	99999	799
DDA	N0038381O5W621	A		6	99999	PH9
501	V0916753600143	W	OSIXXX	6	99999	Q48
501	N6261352130040	W	VV0685	1	99999	P41
501	R0911671920136	W	OSIXXX	17	99999	Q46
501	R0719861700104	W	OSIXXX	2	99999	R4X
501	N0021870790035	W	VV0387	1	99999	PVZ
501	N0026271880057	W	VV0887	1	99999	PVZ
501	V5284160820153	W	OSIXXX	8	99999	Q39

Figure 11 Sample NSN Snapshot Display (Page 2)

Appendix F shows the NSN Snapshot with the DEN numbers inserted in the place of the data.

The NSN Snapshot is actually an ALIS compound document. The view presented to the inventory manager is a document composer window. The data presented is actually from a spreadsheet. Figure 12 shows how the document and spreadsheet are integrated together.

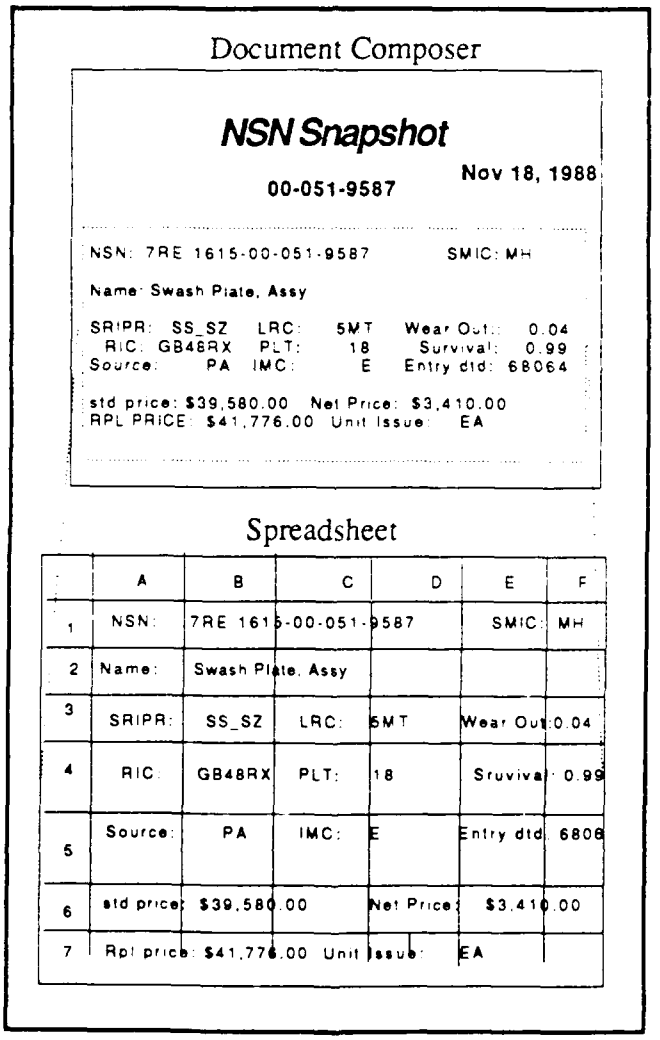


Figure 12 Compound Document, NSN Snapshot

To create the NSN Snapshot the following steps are used:

- Program NSN5B is run on the IBM 3090. (1 am, nightly)
- The NSN5B data files are transferred from the IBM 3090 to the Sun 3/160 server. (2 am, nightly)
- The Sun 3/160 executes a batch program that logs in a phantom user on the server. The phantom user enters ALIS. (2:30 am, nightly)
- As the phantom enters ALIS, the login macro is executed. This macro builds or updates the NSN Snapshot as appropriate and then logs out the phantom user.

Figure 13 provides a detailed flow chart of the actual thought process and edit checks of the phantom user's login macro. A separate NSN Snapshot is created for each stock number. The NSN Snapshots are filed, by NIIN (01-123-1234), in a central file area. The NSN Snapshots are accessible on a read only basis to the inventory managers. Appendix G contains the login macro command document. When the phantom user has finished, the NSN Snapshots are located in a central filing area. From the central filing location, the NSN Snapshot can then be accessed on a read only basis by the inventory manager. When the inventory manager calls up the NSN Snapshot for a specific stock number, he or she is actually receiving a compound document inset with a live spreadsheet. This live spreadsheet could then be used to support the processing of Supply Demand Reviews. A section in the spreadsheet could be added that makes use of NSN Snapshot data to perform buy calculations.

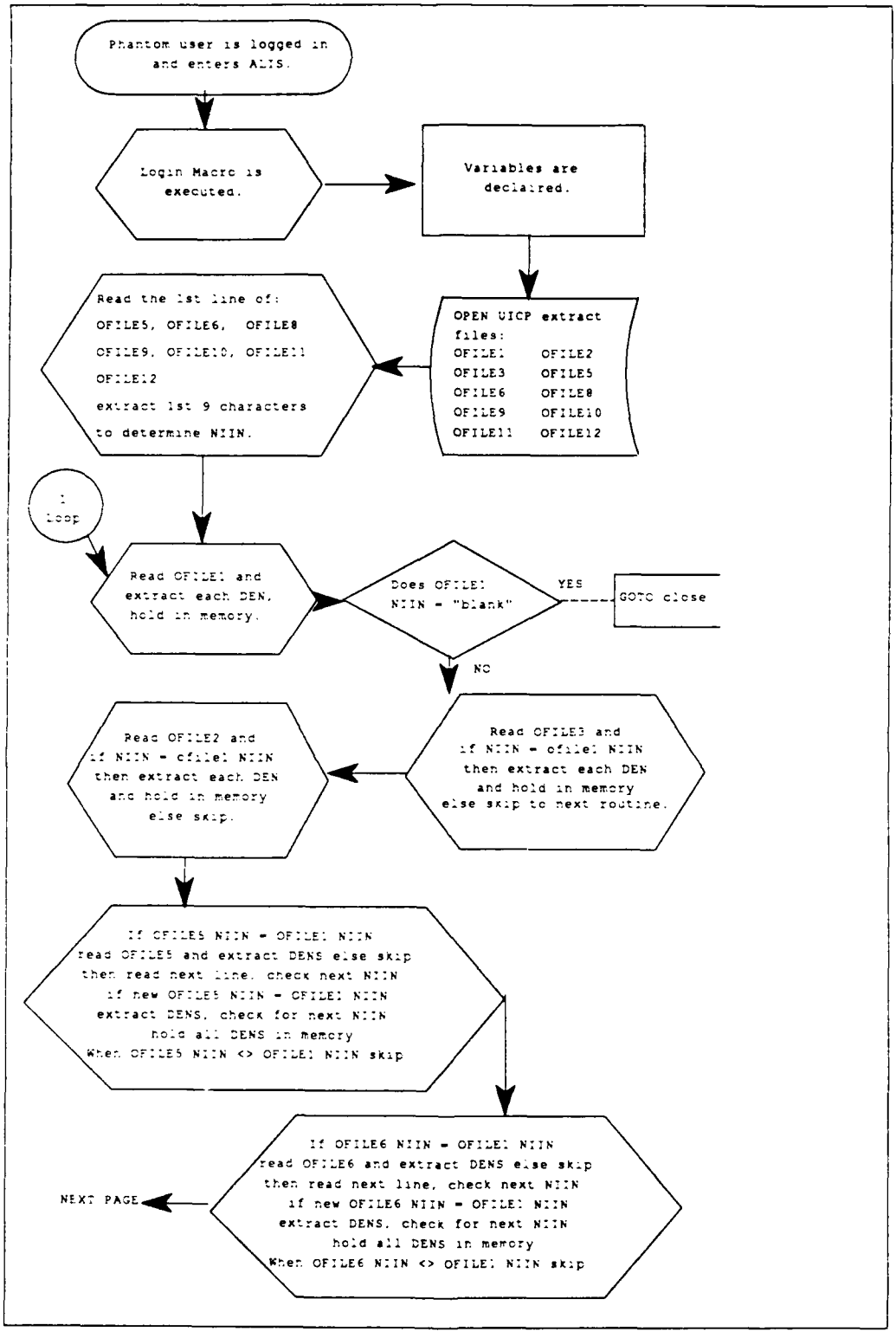


Figure 13 NSN Snapshot Construction (page 1)

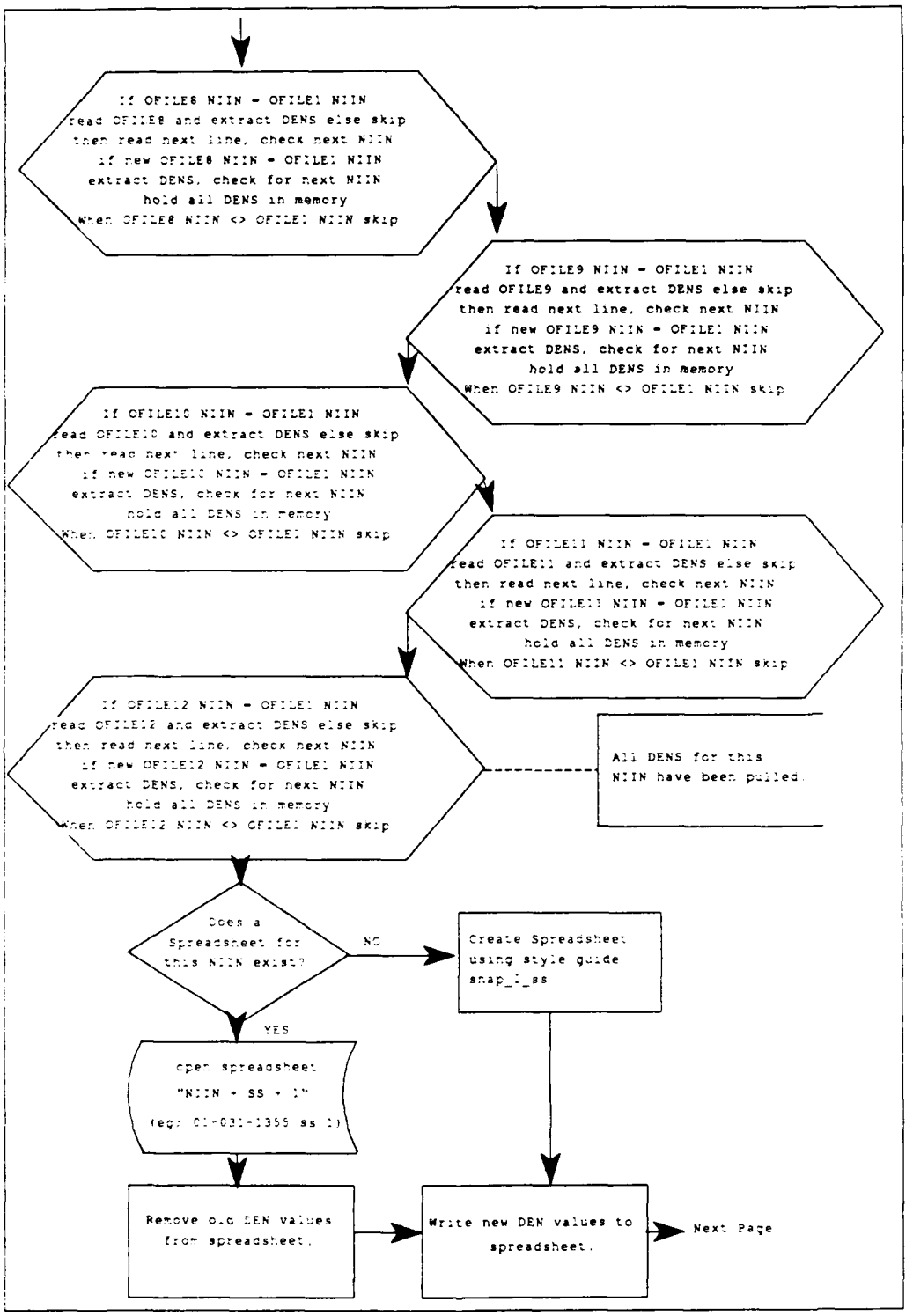


Figure 13 NSN Snapshot Construction (page 2)

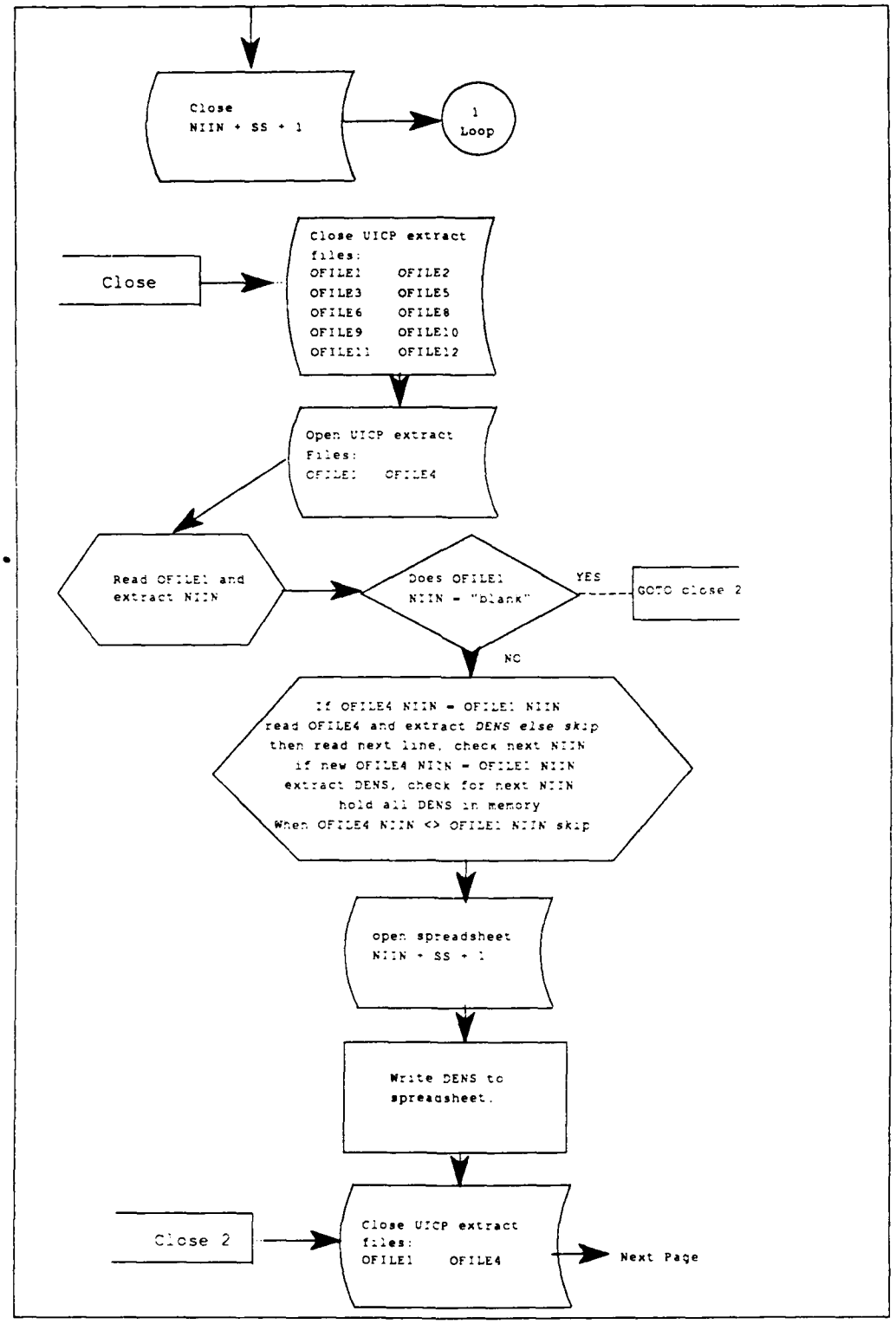


Figure 13 NSN Snapshot Construction (page 3)

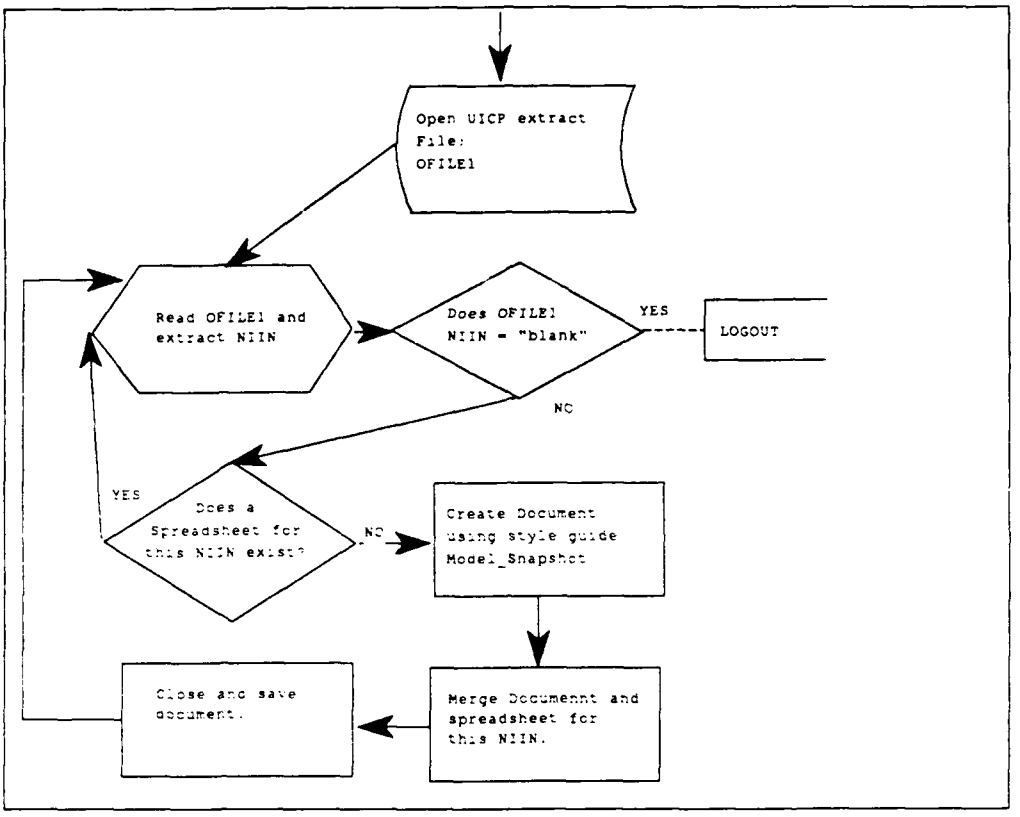


Figure 13 NSN Snapshot Construction (page 4)

D. INVENTORY MANAGEMENT MENU CONSTRUCTION

To make the DSS easier to use, a special inventory management menu was constructed. It allows the inventory manager to rapidly access inventory management data. When the inventory manager types the key sequence <Command Key>, "M" the "Inventory Management" menu appears. It offers the choices of:

- NSN Snapshot
- Requisition Processing
- NSN Notebook
- Cyclic View

Figure 14 shows how the menu appears to the inventory manager.

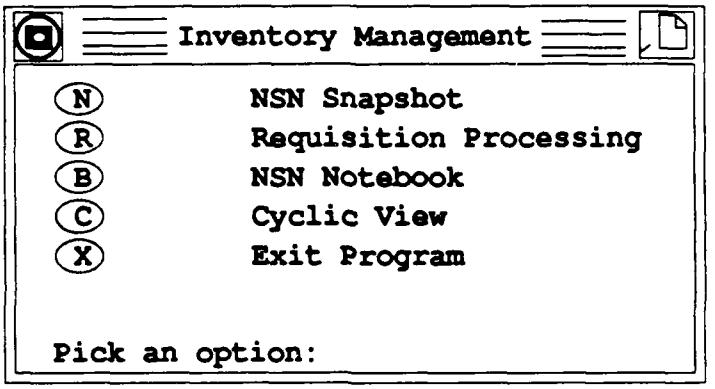


Figure 14 Inventory Management Menu

After the menu appears, the inventory manager types the key letter, or clicks on the circled letter with the mouse. A window then appears requesting the stock number of the item of interest. In the case of the NSN Snapshot, the program changes the directory to the shared library and extracts the NSN Snapshot for the item requested. The program is now completed and the inventory manager has the NSN Snapshot for the requested stock number in an open window. The inventory manager can then work with the requested NSN Snapshot or request additional NSN Snapshots for other stock numbers. The window can also be set aside (as an icon) for future use. A maximum of 20 windows can be open on the ALIS desktop at a time. Appendix H contains the various macros used to build the Inventory Management Menu.

E. NSN Notebook

Miscellaneous information like pending technical changes or details of a contract expedite action is maintained by the inventory managers in an ad hoc manner. In many cases, the information is kept on an intermittent basis. Additionally, a standard format for recording the information onto the 730 cards does not exist. The information is lost to his or her fellow workers, when the inventory manager is not available, because

the paper records are kept as a personal notebook. The inventory managers stated that this information needs to be available to all the members of the inventory manager's team and his or her supervisors.

The NSN Notebook was designed to replace the paper records that the inventory managers are presently keeping. The NSN Notebook provides inventory managers with a consistent method of storing and retrieving miscellaneous management information. The NSN Notebook is also an element of the DSS. By providing convenient, fill in the blank menus, the inventory manager has an easy way of recording the information. The fill in the blank menu provides a standardized method of gathering data. By providing prompts like: (Contract Number:_____) the inventory manager is reminded that this information is valuable and needs to be saved. Therefore the information is saved in a consistent manner, and because it is in a central file, the information is accessible to all members of the management group.

When the NSN Notebook is selected from the Inventory Management Menu, the inventory manager is prompted to enter the NIIN for the he wishes to work with. Next the inventory manager is offered the choice of nine NSN Notebook functions such as viewing the Notebook data or entering new data for the NIIN. Figure 15 shows the notebook input selection menu and the various input menus.

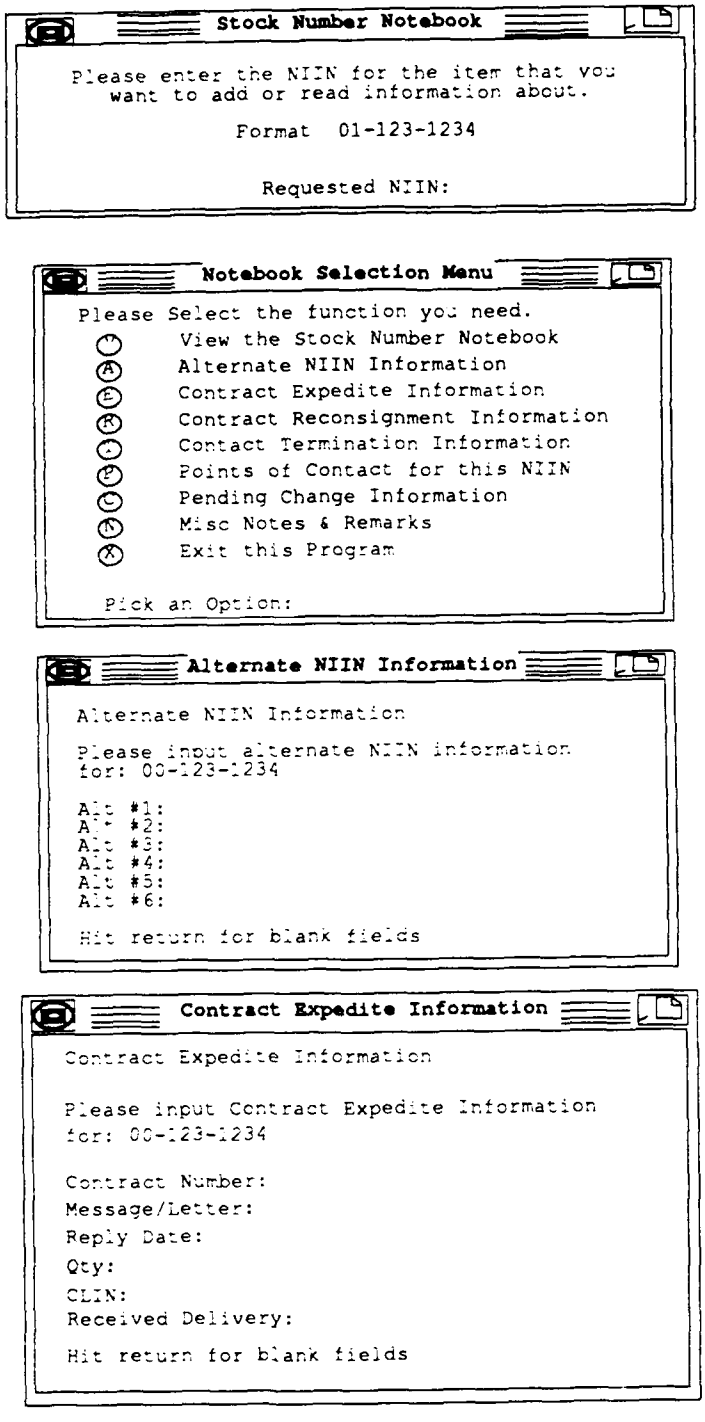
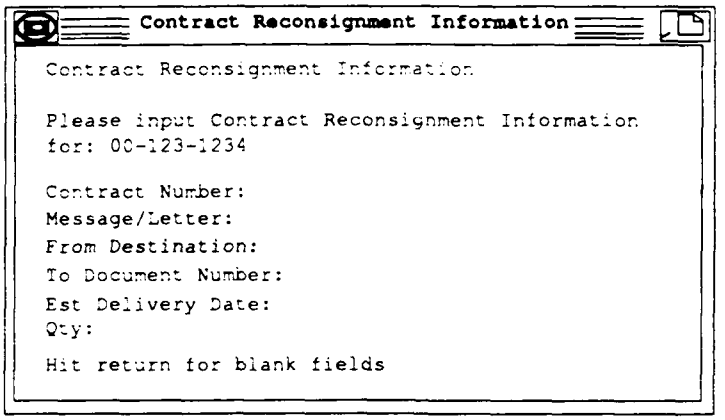
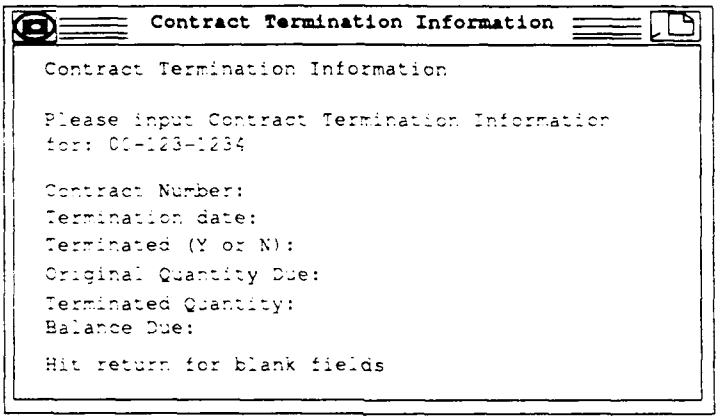


Figure 15 NSN Notebook Menus (Page 1)





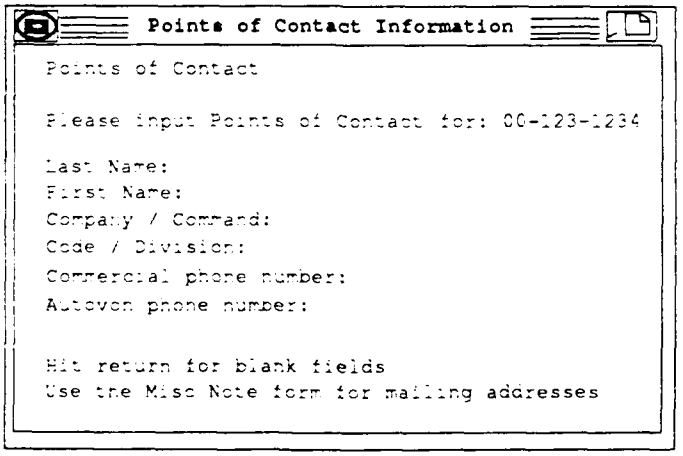
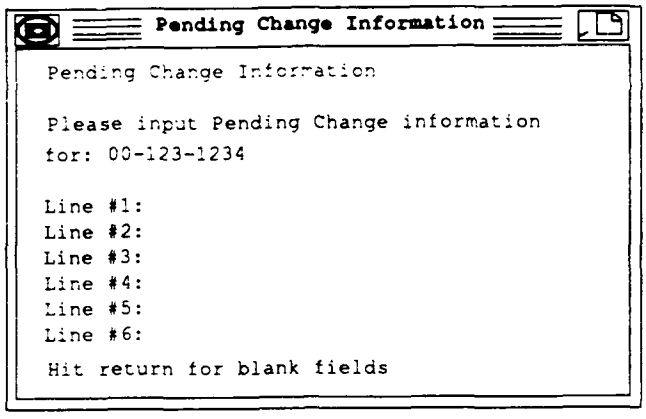


Figure 15 NSN Notebook Menus (Page 2)



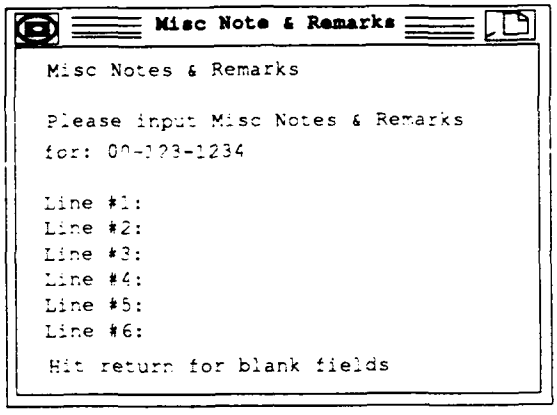


Figure 15 NSN Notebook Menus (Page 3)

F. REQUISITION PROCESSING

At the time of the writing of this thesis, the final elements of the requisition processing flow chart were not completed. The data manipulation elements are ready, only the work on the decision matrix needs to be completed. When it is finished in January 1989, the decision matrix will provide the decision rules that apply to each type of requisition.

Requisition processing will be handled in the following manner:

- Requisitions are received by the IBM 3090.
- Using the LRC, requisitions for WMB51 will be identified and transferred to the Sun 3/160.
- Upon receipt of the requisition, the UNIX operating system will activate the phantom user account assigned for requisition processing.
- The phantom user will read the file for each requisition. The file will be moved into a spreadsheet. The method is similar to the one used in the NSN Snapshot process.
- The phantom user then runs a macro which will save the spreadsheet in the central filing area and send a message to the appropriate inventory manager and his/her supervisor that a requisition needs to be processed.
- When the inventory manager selects the requisition processing option from the Inventory Management Menu, he will be presented with a list of the requisitions for his LRC that need to be processed.
- The inventory manager then selects the requisition he wishes to process.
- A view of the requisition will appear in a window. The NSN Snapshot for the stock number being requested will appear in another window. A third window will contain a dialog box[3] which will use a macro which is based upon the decision matrix to assist the inventory manager in properly handling the requisition.
- The dialog boxes will present the inventory manager with choices. After each choice a new dialog box will appear. The program continues on until another decision is required.
- After the decision making phase of the macro has been completed, the macro will format a file. The file will contain the 80 card column image the data entry clerk would have entered into the IBM 3090. This file records the inventory managers decisions concerning the requisition.
- The file is then transferred to the IBM 3090 and placed in the batch queue for UICP. The queue is read into a UICP program which will issue a shipment order and will issue a requisition status message to the requisitioner based upon the 80 card column image.
- The macro then deletes the requisition from the DSS's central file.
- The inventory manager is then told if additional requisitions need to be processed and, if there are, the inventory manager is asked if he or she wishes to continue processing requisitions Based upon the response the macro is re-executed or exited.

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[3] A menu which offers the user several possible choices and asked him or her to select one.

This DSS macro provides a consistent method for processing requisitions. Additionally, because the data is transmitted directly from the minicomputer to the mainframe, the number of data input errors is reduced. The requisition processing module will expedite the requisition processing process, provide a more consistent method of acting upon the requisition and reduce the chances of data entry errors.

G. CYCLIC VIEW

The Cyclic View will provide the inventory manager with historical data presently given on the consolidated stock status report (CSSR). This information allows the manager to look at past demand trends to gauge whether a sudden increase or decrease in demand is due to a single aberration or is happening on a recurring basis. This historical information needs to be considered as part of any future buy computations. The cyclic view will take data elements from the UICP database and copy them into the NSN snapshot spreadsheet. A separate area of the spreadsheet for the Cyclic View will be maintained. When the Inventory Manager selects the Cyclic View from the Inventory Management Menu he or she will be presented with a compound document, inset with the spreadsheet containing the Cyclic View. Additionally a graph showing the historical demand trends for the item will be available. The COBOL program to extract the required data elements is presently being written by Mr. Rosen and the NAVSUP interns. It is expected that the COBAL program and the ALIS macro will be completed in March 1989.

H. SUPPLY DEMAND REVIEW

The UICP model B10 (Supply Demand Review) provides recommendations for quantities of an item to buy. Presently the recommendations are printed and delivered to the inventory manager along with various management data. The manager then reviews the recommendations, modifies parameters he or she does not agree with, recomputes the quantity to procure and prepares a procurement package that is forwarded to the procurement section. The Supply Demand Review processing module will receive the recommendations from the mainframe and display the recommendations for the IM's review. The program will then recompute a new procurement quantity using data elements present in the NSN Snapshot spreadsheet and then prepare a "buy package". This module is scheduled to be finished in February 1989.

I. STYLE GUIDES AND OFFICE AUTOMATION

ALIS provides the ability to use style guides. Style guides are blank documents, spreadsheets, graphics and databases that have certain parameters predefined. When the inventory manager wants to create a letter for official correspondence, he or she will select the "Create a document" choice from the main menu and ask for the appropriate style guide. When the document appeared, it would be in the proper format and the cursor positioned such that he/she is prompted to provided information that is needed for the headings. This same method could be used with spreadsheets to compute initial procurement quantities. The inventory manager would be prompted for various information which would be used for the computation.

Today much of the work done by the inventory manager is handled in an independent manner and enforcing standards is difficult. The style guides will help to

ensure that the standards are followed. The consistency of computations done by personnel within the branch, and the consistency of the formats of written messages and correspondence from the branch can also be improved through the use of style guides. This subtle assistance makes the style guide part the DSS. If the administrative load on the inventory managers can be reduced, their overall productivity, and time spent actively managing items, can be increased.

VII. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

The primary goal of this thesis was to develop a workstation designed to assist the inventory manager in performing his or her work in a more efficient manner. By presenting UICP data to the item manager in a well designed, consistent manner, the potential exists for the inventory manager to work more efficiently. A major element in the presentation of the UICP data on the inventory manager's workstation is the decision support system.

Working closely with the inventory managers from ASO's Code WMB51, the identification of the UICP data they need to perform their work was accomplished. By listening closely to inventory manager's requirements and how the inventory manager's would like to see the UICP information displayed, the development of an IM Workstation that represents their heuristics was possible.

Using the hardware and software procured specifically for this thesis and the heuristics provided by the inventory managers a sample IM Workstation was developed. This thesis has demonstrated that an IM Workstation can be constructed. As a consequence a prototype 16 user system for WMB51 is now being contracted for.

The sample workstation was tested by the inventory managers of the WMB51 branch. The functions tested, in addition to the office automation features inherent to ALIS, were:

- Inventory Management Menu
- NSN Snapshot
- NSN Notebook

- Sample requisition processing screen
- Sample style guides for official letters and naval messages

The inventory managers, after a demonstration of workstation, were allowed to work with the various functions. After becoming familiar with the mouse and the windowed environment provided by ALIS on a SUN workstation, the inventory managers didn't experience any difficulty using the various functions. They expressed surprise that snapshot and notebook they had help designed, on paper, could be transformed to a computerized system. The inventory managers were enthusiastic with the sample system for both the custom functions, and the general office automation provided by ALIS. The unanimous feeling was that the IM Workstation would greatly improve the efficiency and quality of life for inventory managers and they were anxious to receive the prototype system.

The perception by the inventory manager was that the DSS was only an additional option, like the spreadsheet, and not actually a way to shape their actions in consistent manner. This perception was gained because the inventory manager's felt that the IM Workstation was their system, which it is. This thesis facilitated the inventory manager's desires and made them into a workable system. The inventory managers are a very intelligent (and computer literate) group of people. They had an image of what they were looking for in a computerized system, how it could improve their efficiency and what they could do with the UICP system given the proper tools. Once they understood what a possible IM Workstation could do, they provided a very detailed list of requirements.

B. CONCLUSIONS

The IM Workstation, even in the form of the sample system, shows that a DSS to support inventory management is possible. The fact that the inventory managers could have such a constructive part in the development shows that previous methods of developing computerized systems in a vacuum, with little or no user involvement, have been surpassed.

The extended language facility (ELF) of ALIS provides an easy to learn and use programming tool. Programmers, using the ELF facility, would be responsive to the needs of the inventory managers, providing a rapid response to changing situations. The programmers would most probably be computer literate inventory managers under the guidance of a trained management information specialist.

The SUN Microsystems hardware selected to develop the sample system was only one of many possible hardware solutions. Because the core software, ALIS, will operate on over 20 different computer systems, the system will transportable. With the IM Workstation, all the hardware can be competitively procured, removing the barrier normally experienced when a system is procured sole source.

This thesis shows that a complex system like UICP can be made user friendly and more effective use made of its information. Additionally, it shows that the quality of life for inventory managers can be improved, while increasing their efficiency. A system like this or something equivalent to it is needed as soon as possible by the inventory managers.

C. RECOMMENDATIONS

Now that a sample system has been developed and a prototype system is being contracted for WMB51, the following functions discussed in Chapter six need to be finished:

- Additional error checking sub-routines for the programs already written.
- Requisition processing
- Cyclic view
- Supply demand review (SDR) processing
- Additional style guides for documents, spreadsheets and database.

Additional functions that would add additional value to the IM Workstation, but need to be explored are:

- Expert systems to assist the decision making process.
- Scanning of contracts to be optically stored for easy retrieval.
- A system to produce requests for proposals (RFPs) and contracts.
- A consolidated inventory management and contracting system.
- A distributed database system, using the same database software on each computer level, to allow transparent sharing of data and process sharing.

APPENDIX A

UICP REAL TIME RETRIEVAL (A02) PROGRAM DESCRIPTIONS [1]

PROGRAM	*DESCRIPTION*
AS	PROVIDES ITEM STOCK STATUS
BA	PROVIDES ITEM INFORMATION FROM THE VARIOUS SEGMENTS OF THE MDF, PSI, TRF
BB	PROVIDES FSCM/REFERENCE NUMBER TO STOCK NUMBER CROSS-REFERENCE INFORMATION
BC	PROVIDES DATA FROM THE CASREP REQUISITION FILE
BD	PROVIDES PRESERVATION, PACKAGING, TRANSPORTATION AND COGNIZANCE DATA
BE	PROVIDES SUPPLY ITEM TECHNICAL DATA PERTINENT TO PROCUREMENT REFERRALS OR REQUIRED ITEM MANAGEMENT DATA FROM THE SPECIFIED APPLICATION ENTRY
BF	PROVIDES SUPPLY ITEM TECHNICAL PROCUREMENT DATA
BJ	PROVIDES DATA FOR UP TO ANY TEN DATA ELEMENT NUMBERS (DEN) AND UP TO ANY TEN STOCK NUMBERS IN THE MDF, PSI, TRF OR ONF
BK	PROVIDES DATA NECESSARY FOR TECHNICAL ANALYSIS PERTINENT TO THE PROCUREMENT OF AN ITEM
BM	PROVIDES DATA FROM THE MATERIAL RETURN PROGRAM SUSPENSE FILE (MRP)
CB	PROVIDES DATA CONTAINED IN THE CHANGE NOTICE SUSPENSE FILE / EFFECTIVE DATE SUSPENSE FILE
CD	PROVIDES DATA FROM THE BACKORDER FINDER FILE (BOF)

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[1] Actual help screen from online A02 retrival program, presentation edited for printed clarity.

CH	PROVIDES DATA FROM THE PLANNED PROGRAM REQUIREMENTS FILE (PPR) FOR A SPECIFIC ITEM OF SUPPLY
CL	PROVIDES DATA FROM THE DUE-IN/DUE OUT FILE (DDF)
DA	PROVIDES DATA FROM THE REPAIRABLES MANAGEMENT FILE (RMF)
DB	PROVIDES DATA FROM THE REPAIRABLE EVENTS FILE (REF)
DC	INPUT BATCH RETRIEVAL REQUESTS TO A10AX
DE	PROVIDES CARCASS TRACKING RECORD TYPE "C" DATA FROM THE CARCASS TRACKING RECORDS FILE (CTR)
DF	INPUT BATCH REQUEST TO PROGRAM B35UV (CARCASS TRACKING RECORDS NIIN RETRIEVAL)
DJ	PROVIDES RETRIEVAL OF UP TO TEN DATA ELEMENT NUMBERS (DEN) FOR UP TO ANY TEN REPARABLES MANAGEMENT FILE (RMF) RECORDS.
EF	PROVIDES STOCK NUMBER CROSS-REFERENCE DATA FOR UP TO EIGHT FSCM / REFERENCE NUMBERS
KQ	PROVIDES USAGE ACTIVITY RATES, STATISTICS, AND RETAIL REQUIREMENTS INFORMATION DATA FROM THE AVIATION RETAIL MANAGEMENT FILE (ARM)
MB	PROVIDES DATA FROM THE INDIVIDUAL COMPONENT REPAIR LIST FILE (ICR)
NA	PROVIDES DATA FROM THE CONTRACT STATUS FILE (CSF)
NB	PROVIDES PURCHASE WORKSHEET DATA FROM THE CONTRACT STATUS FILE (CSF)
ND	PROVIDES DATA FROM THE SUPPLIERS DATA FILE (SDF)
OU	PROVIDES THE NAVYS ORDER OF USE FOR DOD INTERCHANGEABLE AND SUBSTITUTABLE FAMILYS WHERE THE NAVY IS THE PRIMARY INVENTORY CONTROL ACTIVITY
RS	PROVIDES DOCUMENT STATUS FILE (DSF) DATA FOR A SPECIFIED DOCUMENT NUMBER
WA	PROVIDES OPTION TAILORED WEAPONS SYSTEMS FILE (WSF) DATA

WB	PROVIDES DATA FOR UP TO TEN NEXT HIGHER ASSEMBLIES (NHA) FOR UP TO ANY TEN APLS, AELS, OR EQUIPMENT MODEL CODES
WC	PROVIDES APPLICATION DATA AND ALLOWANCE LIST DATA FOR A SPECIFIC STOCK NUMBER
WG	PROVIDES WSF NEXT LOWER ASSEMBLY CHAIN EXTRACT DOWN TO FOUR LEVELS OF INDENTURE
WJ	PROVIDES UP TO ANY TEN NON-REPETITIVE DATA ELEMENTS FOR UP TO ANY TEN WEAPONS SYSTEMS FILE (WSF) LEVEL A, B, OR C PRIMARY RECORDS
WK	PROVIDES UP TO ANY TEN NON-REPETITIVE DATA ELEMANTS FOR UP TO ANY TEN RECORD IDENTIFICATION NUMBERS (RIN) IN THE WEAPONS SYSTEMS FILE (WSF)
WQ	INPUT BATCH RETRIEVAL REQUESTS TO WEAPONS SYSTEMS FILE PROGRAM A10EX
YA	PROVIDES WEAPONS SYSTEMS FILE (WSF) PROGRAM WA DATA WITH A NOMENCLATURE INPUT. NOMENCLATURE IS CROSSED TO A WSF KEY IN THE NOMENCLATURE TO RIC FILE (NRF)
YC	PROVIDES PART / EQUIPMENT APPLICATION / POPULATION DATA.
YE	PROVIDES DATA FROM THE MDF, PSI, TRF AND WSF WHICH IS NECESSARY FOR THE MANAGEMENT OF THE SHIPBOARD EQUIPMENT CONFIGURATION ACCOUNTING SYSTEM (SECAS)
YG	PROVIDES DATA FROM THE NOMENCLATURE TO RIC FILE (NRF) FROM THE WEAPONS SYSTEMS FILE (WSF) NECESSARY FOR THE MANAGEMENT OF THE SHIPBOARD EQUIPMENT CONFIGURATION ACCOUNTING SYSTEM (SECAS)

APPENDIX B

REVIEW OF ALIS FEATURES

1. INTRODUCTION

ALIS is an integrated office automation software package that operates under a variety of computer operating systems. The software contains a word processor, spreadsheet, personal database, graphics editor, electronic mail, calendar, and file management modules in a tightly integrated package. The Graphical User Interface has an icon based (object oriented) information management system, with multiple windows that makes use of a mouse. It is very similar to the Apple Macintosh style interface, with greater consistency between the modules. Electronic mail can be sent via the Simple Mail Transport Protocol (SMTP) used by the Transport Control Protocol / Internet Protocol (TCP/IP) standard established by the Department of Defense and used widely to connect dissimilar computer systems, IBM DISOSS and CICS mail via a gateway package, standard UNIX mail and Digital Equipment Corporation's DEC mail.

2. OPERATING SYSTEMS

ALIS version 2.0 is presently ported to over 20 UNIX based systems. These include SUN Microsystems servers and workstations, IBM RT PC, any Intel 80286 & 80386 based system operating under XENIX and Hewlett-Packard HP9000 series workstations. The system also will operate under AT&T's UNIX system V, Berkley 4.2 UNIX, Apollo's Aegis, and Digital Equipment Corporation's (DEC) Ultrix operating system. Additionally ALIS will run on any of DEC's family of VAX computers under the VMS operating system. The large number of platforms that ALIS can operate on, and the range of systems available from personal computer to mainframes, does not

impose a limited on the number of users, mass storage or response time. Further flexibility is afforded via the ALIS capability to use macros and data created on one system (UNIX), without translation for use on other systems (VAX VMS). This allows dissimilar systems installed at one site to be able to work together as a cohesive group and exchange information.

3. EQUIPMENT CONFIGURATIONS

ALIS is very flexible in how the CPU processing and file storage is distributed. The base configuration Could be a central computer (Intel 80386, SUN 3/160, DEC VAX 8800) with one console device and multiple ANSI X.64 "dumb" terminals. In this configuration only the console would have the complete "Graphical User Interface" (windows) which could use a mouse. The terminals would have a character based display (similar to IBM's PROFS or DEC's ALL-IN-1) and use the system with function key commands. Non-graphic terminals would not be able to display business graphics. All processing and storage occurs on the central computer's CPU.

The next higher configuration would use the same central computer. The computer would be connected to a network (Ethernet or Token Ring) running the TCP/IP protocol. Instead of the ANSI X.64 terminals each user is given an MS-DOS based personal computer (PC) connected to the network with an interface card. An MS-DOS based product called "PC-ALIS" is used. This product allows each PC to have a complete graphical user interface, including mouse support, which utilizes all of ALIS's features. PC-ALIS is an intelligent terminal emulator which uses TCP/IP to communicate with the central CPU. The processing load is split between the central computer (which handles file storage, computations and network interface) and the PC

(which handles the screen processing). For example if a spreadsheet graph is updated, the central CPU processes the changes. Simultaneously the PC sends and then receives the updates and paints the screen to reflect the changes. Since the bit mapped screen imaging used to create the graphical user interface is a high overhead item , the distribution removes some of the load from the central CPU.

The highest level configuration has a central CPU acting as a file server. This network hub (SUN 3/260 or DEC VAX 8800 server) has multiple UNIX or VMS based workstations connected to it via an Ethernet (Eg; SUN NFS (network file system) protocol for UNIX or DEC's DECNet protocol for VAX VMS). Each workstation would process its own tasks and use the server for storage and network services (mail, printing tasks, file transfers). Each workstation would have a complete graphical user interface with mouse support. This is what the XEROX Palo Alto research center defined in 1981 as the optimal information system.[2] Individual workstations are connected to a central file server via an Ethernet. Each workstation would have a graphical user interface, featuring multiple windows, a consistent user interface, with a mouse based pointing device. It has taken 8 years for computers and ethernets to have sufficient speed and power to make this optimal system feasible.

4. USER INTERFACE

The "XEROX Star" style interface is best known for its implementation on the Apple Macintosh computer. Partial implementations of the interface are also seen in

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2 Designing the Star User Interface, Dr David Smith etal, XEROX Corp., Byte Magazine, April 1982 pp 242-282.

Microsoft's Windows and IBM's planned Presentation Manager for the OS/2 operating system. Much of IBM's planned Systems Application Architecture (SAA) is based upon the Star interface methodology. Visually the ALIS system appears as an extended version of Microsoft Works for the Macintosh. The ALIS system contains all the elements (windows, icons, mouse, integrated graphics and text) that have made the Macintosh popular while overcoming many of its failings. By taking advantage of a powerful minicomputer or larger system, ALIS users do not experience the delay times associated with the Macintosh. Further ALIS is designed for working with a group and sharing information. Conversely the Macintosh is limited to simple file sharing via an Apple-Talk network which experiences long delays waiting for file from a central storage location, or to and send files to a central printer. UNIX and VAX VMS were designed with multitasking, networking and telecommunications in mind. This allows full background operations such as mail transfers, print spooling and batch processing.

Like the Macintosh, the user can start and stop tasks via a click of the mouse. Multiple windows can be opened and information traded between windows via a cut and paste operation. Unlike the Macintosh, ALIS offers dynamic linking. The dynamic linking is one of ALIS's most powerful features. Dynamic linking allows information from spreadsheets, databases and graphics to be linked. If the spreadsheet is updated with new data the links to the database, other spreadsheets and documents are updated. For example, if the latest quarters sales are entered into a spreadsheet and average sales are generated, then reported via a document ALIS would automatically generate the new sales average and enter them into the designated spot of the document. ALIS also has an easy to use macro generator. Unlike the Macintosh, ALIS allows menu

generation, information query pop-up windows and the ability to have one macro access the various modules and perform a complex operation. The macro could for example, read the database, input data into the spreadsheet, compute a number and update an associated graph. The macro then places the new number and updated graph into the document, sends the document via electronic mail, to a distribution list. This total sequence could be triggered from a single menu pick.

5. WORD PROCESSOR

The document composer is a full feature word processor with all the features of Word Perfect ver 5.0 less a thesaurus. ALIS allows graphics and spreadsheet tables to be integrated into documents, but unlike Word Perfect, it uses a cut and paste operation that does not require extensive file manipulation. It makes full use of the mouse and also has a WYSIWYG (What you see is what you get) display that shows both the fonts and graphics exactly as they will be printed. ALIS offers 5 fonts and from between 6 to 36 points. The system also allows the import and export of IBM DCA RFT, ASCII, and NavyDIf file formats. This allows the transfer of documents between ALIS and IBM systems, standard word processors and PC based word processing systems.

6. SPREADSHEET

The spreadsheet has all the features of Lotus 1-2-3 and a look and feel that is very similar to Microsoft's Excel. It makes use of the mouse and has an array of 702 X 9999 cells. Since the system is UNIX or VMS based and uses virtual memory there is no limit on the practical size of the spreadsheet. It has inter-spreadsheet referencing

(3D) like Boeing Calc or Lucid 3D. The system allows import and export of Lotus 1-2-3 WKS files, DIF, Multiplan and Excel (SYLK) files.

7. PERSONAL DATABASE

The database is a flat file database designed to handle small size data requirements. It is similar to Borland's Reflex and IBM's Filing Assistant. The module is best used to hold data from larger system or for personal databases (to do list, phone directories and mailing lists). It allows import and export of DIF files.

8. GRAPHICS EDITOR

This module is a complete graphics and drawing package. It has features similar to Media Cybernetic's DR HALO and Software Publishing Corporation's Harvard Presentation Graphics. Additionally the package allows business graphics created from spreadsheet data to be edited and annotated. HP-GL formatted graphics and FAX images can be imported and saved as separate objects and also included into compound graphics images.

9. ELECTRONIC MAIL

ALIS can send and receive compound documents to other ALIS systems without regard for the recipient's operating system. The system can also send and receive standard UNIX mail (text format only), DEC Mail and with gateways most IBM systems. Additionally, the system has a pop-up phone message, in the format of phone message slip, which allows a message to be sent that call was received while the recipient was out.

10. CALENDAR MANAGEMENT

The calendar management system provides for both personal time management and resource scheduling. It contains the features of IBM's PROFS and DEC's ALL-IN-1 but additionally allows the calendar to be accessed and viewed while working on other documents. It also contains an activity planner, delegate tasks and schedules resources (meeting rooms, projectors and personnel).

11. MISCELLANEOUS

The ALIS system supports a wide variety of printers. Support includes HP laserjet, postscript printers, HP-GL plotters and dot matrix printers. The file management systems is presented to the users organized as a series of file cabinets and folders. The system allows document searching and keyword retrievals. Files can be shared between users and access can be controlled.

ALIS is written in the "C" programming language. Applix Inc. offers an integration toolkit. This allows non-ALIS products to be integrated into the ALIS environment. An SQL database can be made part of the system with the toolkit. This allows data to be pulled out of the SQL database and moved into other modules. The SQL database can also provide a window to allow data input and display. Applix Inc. offers an IBM 3270 terminal emulation window.

11. SUMMARY

ALIS is a distinctive integrated system with several key features that differentiate it from similar products:

- Operating on computers from different manufacturers, it allows the computer hardware to be competitively procured while providing a consistent user interface usually not available when different brands of computer are installed.

- Running on any size machine, ALIS eliminates the need to change application software when a larger machine is required.

- Benefiting from hardware independence, a cost effective configuration can be developed for the smallest office or the largest corporation. When expansion is necessary, replacement of the current equipment and training is not required. Rather, additional equipment is added to the network and the current training program and application software is retained.

- Integration of dissimilar systems is much easier with ALIS's excellent telecommunications capabilities.

- For computers larger then personal computers ALIS is the only software product that provides the "XEROX Star" interface. This style interface makes the system easy to learn and use.

APPENDIX C

DATA ELEMENTS SELECTED BY INVENTORY MANAGERS AND THE ASSOCIATED A02 PRODUCT THEY APPEARED IN.

DEN	AS	BK	CD	CH	CL	EF	NA	NB	RS	AL	hits	avg
D046D	5	6	4	1	4	3	4	1	1	29	9	3
C003	6	6	5	1	0	3	1	0	0	22	6	4
K002	0	0	7	3	1	2	0	0	7	20	5	4
B002	6	4	5	1	0	3	0	0	0	19	5	4
C035	0	7	0	0	0	3	3	3	0	16	4	4
C003A	3	2	2	1	0	0	0	0	0	8	4	2
C003B	2	2	2	1	0	0	0	0	0	7	4	2
A001	2	0	0	4	7	0	0	0	0	13	3	4
K024	0	0	7	4	0	0	0	0	1	12	3	4
B053	0	5	3	0	0	0	0	3	0	11	3	4
K025	0	0	7	1	0	0	0	0	1	9	3	3
C004	0	5	0	1	0	0	2	0	0	8	3	3
K006	0	0	0	4	0	0	1	3	0	8	3	3
C042	2	3	0	1	0	0	0	0	0	6	3	2
K005	0	0	0	2	2	0	1	0	0	5	3	2
B011A	5	6	0	0	0	0	0	0	0	11	2	6
L022	0	0	0	0	6	0	3	0	0	9	2	5
K001	0	0	0	4	3	0	0	0	0	7	2	4
K026	0	0	3	0	0	0	0	0	3	6	2	3
L001G	0	0	0	0	0	0	4	2	0	6	2	3
L010	0	0	0	0	5	0	1	0	0	6	2	3
E089	0	4	0	0	0	0	0	0	1	5	2	3
K011	0	0	0	0	4	0	1	0	0	5	2	3
L001A	0	0	0	0	0	0	3	2	0	5	2	3
K017	0	0	0	3	1	0	0	0	0	4	2	2
L009	0	0	0	0	2	0	1	0	0	3	2	2
A012A	1	0	0	1	0	0	0	0	0	2	2	1
B081	0	0	0	0	1	0	1	0	0	2	2	1
C003E	1	0	0	1	0	0	0	0	0	2	2	1
C005	0	1	0	0	0	0	1	0	0	2	2	1
L033	0	0	0	0	8	0	0	0	0	8	1	8
A008B	7	0	0	0	0	0	0	0	0	7	1	7
A011	7	0	0	0	0	0	0	0	0	7	1	7
A012	7	0	0	0	0	0	0	0	0	7	1	7
D074	7	0	0	0	0	0	0	0	0	7	1	7
D001	0	7	0	0	0	0	0	0	0	7	1	7
K034	0	0	7	0	0	0	0	0	0	7	1	7
K036	0	0	7	0	0	0	0	0	0	7	1	7

L001	0	0	0	0	7	0	0	0	0	7	1	7
A014	6	0	0	0	0	0	0	0	0	6	1	6
A021A	6	0	0	0	0	0	0	0	0	6	1	6
C038	0	6	0	0	0	0	0	0	0	6	1	6
D012	0	6	0	0	0	0	0	0	0	6	1	6
K022	0	0	6	0	0	0	0	0	0	6	1	6
B010	0	5	0	0	0	0	0	0	0	5	1	5
D013C	0	5	0	0	0	0	0	0	0	5	1	5
D009	0	4	0	0	0	0	0	0	0	4	1	4
D029	0	4	0	0	0	0	0	0	0	4	1	4
L025	0	0	0	0	0	0	4	0	0	4	1	4
L213	0	0	0	0	0	0	4	0	0	4	1	4
A030	3	0	0	0	0	0	0	0	0	3	1	3
C035A	0	0	0	0	0	0	3	0	0	3	1	3
C043	0	0	0	0	0	0	0	3	0	3	1	3
D011	0	3	0	0	0	0	0	0	0	3	1	3
D016	0	3	0	0	0	0	0	0	0	3	1	3
D016A	0	3	0	0	0	0	0	0	0	3	1	3
K018C	0	0	3	0	0	0	0	0	0	3	1	3
K021	0	0	0	0	0	3	0	0	0	3	1	3
L029C	0	0	0	0	0	0	3	0	0	3	1	3
A014A	0	0	0	2	0	0	0	0	0	2	1	2
B001	2	0	0	0	0	0	0	0	0	2	1	2
B002B	0	0	0	0	0	0	2	0	0	2	1	2
B007	0	2	0	0	0	0	0	0	0	2	1	2
B046A	2	0	0	0	0	0	0	0	0	2	1	2
B059	0	2	0	0	0	0	0	0	0	2	1	2
C003W	0	0	0	0	0	0	2	0	0	2	1	2
D013	0	2	0	0	0	0	0	0	0	2	1	2
D025E	0	2	0	0	0	0	0	0	0	2	1	2
D025F	0	2	0	0	0	0	0	0	0	2	1	2
K026B	0	0	2	0	0	0	0	0	0	2	1	2
K033	0	0	2	0	0	0	0	0	0	2	1	2
K061	0	0	0	0	0	0	2	0	0	2	1	2
L002	0	0	0	0	2	0	0	0	0	2	1	2
L023	0	0	0	0	0	0	2	0	0	2	1	2
L029	0	0	0	0	2	0	0	0	0	2	1	2
L033A	0	0	0	0	0	0	2	0	0	2	1	2
L038	0	0	0	0	0	0	2	0	0	2	1	2
L304	0	0	0	0	0	0	2	0	0	2	1	2
L330	0	0	0	0	0	0	2	0	0	2	1	2
L341	0	0	0	0	0	0	2	0	0	2	1	2
L388	0	0	0	0	2	0	0	0	0	2	1	2
A002	0	0	0	1	0	0	0	0	0	1	1	1
A012K	0	0	0	1	0	0	0	0	0	1	1	1
A025	1	0	0	0	0	0	0	0	0	1	1	1

B013	0	1	0	0	0	0	0	0	0	1	1	1
C009	0	1	0	0	0	0	0	0	0	1	1	1
C012	0	1	0	0	0	0	0	0	0	1	1	1
C016	0	1	0	0	0	0	0	0	0	1	1	1
D001A	0	1	0	0	0	0	0	0	0	1	1	1
D001B	0	1	0	0	0	0	0	0	0	1	1	1
D005	0	1	0	0	0	0	0	0	0	1	1	1
D006	0	1	0	0	0	0	0	0	0	1	1	1
D008	0	0	0	0	0	0	0	0	1	1	1	1
D016B	0	1	0	0	0	0	0	0	0	1	1	1
D024	0	1	0	0	0	0	0	0	0	1	1	1
D120	0	1	0	0	0	0	0	0	0	1	1	1
D131	0	1	0	0	0	0	0	0	0	1	1	1
E007	0	1	0	0	0	0	0	0	0	1	1	1
F025	0	0	0	0	0	0	0	0	1	1	1	1
FOB	0	0	0	0	0	0	0	1	0	1	1	1
K018B	0	0	0	1	0	0	0	0	0	1	1	1
L034	0	0	0	0	0	0	1	0	0	1	1	1
L039	0	0	0	0	0	0	1	0	0	1	1	1
L293	0	0	0	0	0	0	1	0	0	1	1	1
M	0	0	0	0	0	1	0	0	0	1	1	1
PIIN	0	0	0	0	0	0	0	1	0	1	1	1
SPIIN	0	0	0	0	0	0	0	1	0	1	1	1
Y15	0	0	0	1	0	0	0	0	0	1	1	1
total	81	120	72	40	57	18	62	20	16	488	9	54

APPENDIX D

NSN5B PROGRAM TO EXTRACT UICP DATA

```
000100 IDENTIFICATION DIVISION.                                          00010000
000200 PROGRAM-ID.                      NSN5B.                           00020000
000300 AUTHORS.                         PAUL ROSEN.                      00030000
000400                                  BILL LEANZA.                     00040000
000500                                  ELMER NAGRAMPA.                  00050000
000600 INSTALLATION.                    ASO.                             00060000
000700 DATE-WRITTEN.                    88259.                           00070000
000800 DATE-COMPILED. 88278.                                              00080000
000900 SECURITY.                        UNCLASSIFIED.                    00090000
001000 REMARKS.                                                          00100000
001100*****************************************************************  00110000
001200**   THIS PROGRAM EXTRACTS SELECTED DENS FROM BIOJX1 RECORD     **  00120000
001300**   TYPES (D, F, H, J, L, N, P, R, T, V, AND Z) AND PLACES     **  00130000
001400**   THE DENS INTO 11 OUTPUT RECORD TYPES (1-11) FOR USE IN     **  00140000
001500**   THE NSN SNAPSHOT PROGRAM                                   **  00150000
001600*****************************************************************  00160000
001700*****************************************************************  00170000
001800 ENVIRONMENT DIVISION.                                              00180000
001900*****************************************************************  00190000
002000*****************************************************************  00200000
002100 CONFIGURATION SECTION.                                             00210000
002200     SOURCE-COMPUTER.              IBM-3090.                        00220000
002300     OBJECT-COMPUTER.              IBM-3090.                        00230000
002400 INPUT-OUTPUT SECTION.                                              00240000
002500 FILE-CONTROL.                                                      00250000
002600     SELECT BIOJX1  ASSIGN TO UT-S-BIOJX1.                        00260000
002700     SELECT OFILE1  ASSIGN TO UT-S-OFILE1.                        00270000
002800     SELECT OFILE2  ASSIGN TO UT-S-OFILE2.                        00280000
002900     SELECT OFILE3  ASSIGN TO UT-S-OFILE3.                        00290000
003000     SELECT OFILE4  ASSIGN TO UT-S-OFILE4.                        00300000
003100     SELECT OFILE5  ASSIGN TO UT-S-OFILE5.                        00310000
003200     SELECT OFILE6  ASSIGN TO UT-S-OFILE6.                        00320000
003300     SELECT OFILE7  ASSIGN TO UT-S-OFILE7.                        00330000
003400     SELECT OFILE8  ASSIGN TO UT-S-OFILE8.                        00340000
003500     SELECT OFILE9  ASSIGN TO UT-S-OFILE9.                        00350000
003600     SELECT OFILE10  ASSIGN TO UT-S-OFILE10.                      00360000
003700     SELECT OFILE11  ASSIGN TO UT-S-OFILE11.                      00370000
003800     SELECT OFILE12  ASSIGN TO UT-S-OFILE12.                      00380000
003900     SELECT OFILE13  ASSIGN TO UT-S-OFILE13.                      00390000
003901*****************************************************************  00400000
004000 DATA DIVISION.                                                    00410000
004100*****************************************************************  00420000
004200*****************************************************************  00430000
004300 FILE SECTION.                                                     00440000
004400 FD  BIOJX1                                                        00450000
004500     LABEL RECORDS ARE STANDARD                                   00460000
004600     RECORDING MODE IS F                                          00470000
004700     BLOCK CONTAINS 0 RECORDS                                     00480000
004800     RECORD CONTAINS 425 CHARACTERS                               00490000
004900     DATA RECORD IS BIO-INPUT-REC.                                00500000
005000 01  BIO-INPUT-REC.                                               00510000
005100     05  HIP-I                     PIC X(28).                     00520000
005200     05  NIIN-CODE-I               PIC X.                         00530000
005300     05  PRINT-CODE-I              PIC X.                         00540000
005400     05  FILLER                    PIC X(32).                     00550000
005500     05  Z-FLAG-I                  PIC X.                         00560000
005600     05  FILLER                    PIC X(62).                     00570000
```

```
005700     05  ITEM-NAME-I              PIC X(22).                      00580000
005800     05  SEQ-AND-DATA-I           PIC X(288).                     00590000
005900*****************************************************************00600000
006000 FD  OFILE1                                                       00610000
006100     LABEL RECORDS ARE STANDARD                                   00620000
006200     RECORDING MODE IS F                                          00630000
006300     BLOCK CONTAINS 0 RECORDS                                     00640000
006400     RECORD CONTAINS 140 CHARACTERS                               00650000
006500     DATA RECORD IS OUTPUT-REC-1.                                 00660000
006600 01  OUTPUT-REC-1                 PIC X(140).                     00670000
006700*****************************************************************00680000
006800 FD  OFILE2                                                       00690000
006900     LABEL RECORDS ARE STANDARD                                   00700000
007000     RECORDING MODE IS F                                          00710000
007100     BLOCK CONTAINS 0 RECORDS                                     00720000
007200     RECORD CONTAINS 140 CHARACTERS                               00730000
007300     DATA RECORD IS OUTPUT-REC-2.                                 00740000
007400 01  OUTPUT-REC-2                 PIC X(140).                     00750000
007500*****************************************************************00760000
007600 FD  OFILE3                                                       00770000
007700     LABEL RECORDS ARE STANDARD                                   00780000
007800     RECORDING MODE IS F                                          00790000
007900     BLOCK CONTAINS 0 RECORDS                                     00800000
008000     RECORD CONTAINS 140 CHARACTERS                               00810000
008100     DATA RECORD IS OUTPUT-REC-3.                                 00820000
008200 01  OUTPUT-REC-3                 PIC X(140).                     00830000
008300*****************************************************************00840000
008400 FD  OFILE4                                                       00850000
008500     LABEL RECORDS ARE STANDARD                                   00860000
008600     RECORDING MODE IS F                                          00870000
008700     BLOCK CONTAINS 0 RECORDS                                     00880000
008800     RECORD CONTAINS 140 CHARACTERS                               00890000
008900     DATA RECORD IS OUTPUT-REC-4.                                 00900000
009000 01  OUTPUT-REC-4                 PIC X(140).                     00910000
009100*****************************************************************00920000
009200 FD  OFILE5                                                       00930000
009300     LABEL RECORDS ARE STANDARD                                   00940000
009400     RECORDING MODE IS F                                          00950000
009500     BLOCK CONTAINS 0 RECORDS                                     00960000
009600     RECORD CONTAINS 140 CHARACTERS                               00970000
009700     DATA RECORD IS OUTPUT-REC-5.                                 00980000
009800 01  OUTPUT-REC-5                 PIC X(140).                     00990000
009900*****************************************************************01000000
010000 FD  OFILE6                                                       01010000
010100     LABEL RECORDS ARE STANDARD                                   01020000
010200     RECORDING MODE IS F                                          01030000
010300     BLOCK CONTAINS 0 RECORDS                                     01040000
010400     RECORD CONTAINS 140 CHARACTERS                               01050000
010500     DATA RECORD IS OUTPUT-REC-6.                                 01060000
010600 01  OUTPUT-REC-6                 PIC X(140).                     01070000
010700*****************************************************************01080000
010800 FD  OFILE7                                                       01090000
010900     LABEL RECORDS ARE STANDARD                                   01100000
011000     RECORDING MODE IS F                                          01110000
011100     BLOCK CONTAINS 0 RECORDS                                     01120000
011200     RECORD CONTAINS 140 CHARACTERS                               01130000
011300     DATA RECORD IS OUTPUT-REC-7.                                 01140000
011400 01  OUTPUT-REC-7                 PIC X(140).                     01150000
011500*****************************************************************01160000
011600 FD  OFILE8                                                       01170000
011700     LABEL RECORDS ARE STANDARD                                   01180000
011800     RECORDING MODE IS F                                          01190000
011900     BLOCK CONTAINS 0 RECORDS                                     01200000
012000     RECORD CONTAINS 140 CHARACTERS                               01210000
```

```
012100     DATA RECORD IS OUTPUT-REC-8.                                 01220000
012200 01  OUTPUT-REC-8                PIC X(140).                      01230000
012300*****************************************************************01240000
012400 FD  OFILE9                                                       01250000
012500     LABEL RECORDS ARE STANDARD                                   01260000
012600     RECORDING MODE IS F                                          01270000
012700     BLOCK CONTAINS 0 RECORDS                                     01280000
012800     RECORD CONTAINS 140 CHARACTERS                               01290000
012900     DATA RECORD IS OUTPUT-REC-9.                                 01300000
013000 01  OUTPUT-REC-9                PIC X(140).                      01310000
013100*****************************************************************01320000
013200 FD  OFILE10                                                      01330000
013300     LABEL RECORDS ARE STANDARD                                   01340000
013400     RECORDING MODE IS F                                          01350000
013500     BLOCK CONTAINS 0 RECORDS                                     01360000
013600     RECORD CONTAINS 140 CHARACTERS                               01370000
013700     DATA RECORD IS OUTPUT-REC-10.                                01380000
013800 01  OUTPUT-REC-10               PIC X(140).                      01390000
013900*****************************************************************01400000
014000 FD  OFILE11                                                      01410000
014100     LABEL RECORDS ARE STANDARD                                   01420000
014200     RECORDING MODE IS F                                          01430000
014300     BLOCK CONTAINS 0 RECORDS                                     01440000
014400     RECORD CONTAINS 140 CHARACTERS                               01450000
014500     DATA RECORD IS OUTPUT-REC-11.                                01460000
014600 01  OUTPUT-REC-11               PIC X(140).                      01470000
014700*****************************************************************01480000
014800 FD  OFILE12                                                      01490000
014900     LABEL RECORDS ARE STANDARD                                   01500000
015000     RECORDING MODE IS F                                          01510000
015100     BLOCK CONTAINS 0 RECORDS                                     01520000
015200     RECORD CONTAINS 140 CHARACTERS                               01530000
015300     DATA RECORD IS OUTPUT-REC-12.                                01540000
015400 01  OUTPUT-REC-12               PIC X(140).                      01550000
015500*****************************************************************01560000
013600 FD  OFILE13                                                      01570013
013700     LABEL RECORDS ARE STANDARD                                   01580013
013800     RECORDING MODE IS F                                          01590013
013900     BLOCK CONTAINS 0 RECORDS                                     01600013
014000     RECORD CONTAINS 140 CHARACTERS                               01610013
014100     DATA RECORD IS OUTPUT-REC-13.                                01620013
014200 01  OUTPUT-REC-13               PIC X(140).                      01630013
014300*****************************************************************01640013
015600*****************************************************************01650000
015700 WORKING-STORAGE SECTION.                                         01660000
015800*****************************************************************01670000
015900*****************************************************************01680000
016000 01  WS-D-REC.                                                    01690000
016100     05  IM-HDR-D.                                                01700000
016200         10  IM-FILE-ID-D        PIC X(5).                        01710000
016300         10  IM-REQR-ID-D        PIC X(7).                        01720000
016400         10  HDR-LRC-D           PIC XXX.                         01730000
016500         10  HDR-FSC-D           PIC X(4).                        01740000
016600         10  HDR-F-REL-D         PIC X.                           01750000
016700         10  HDR-NIIN-D          PIC X(9).                        01760000
016800         10  PRINT-CODE-D        PIC X.                           01770000
016900         10  SEQ-DATA-D          PIC X(20).                       01780000
017000     05  FILLER                  PIC X(8).                        01790000
017100     05  SDR-DATE                PIC 9(4).                        01800000
017200     05  FILLER                  PIC X.                           01810000
017300     05  BC45                    PIC 9(5).                        01820000
017400     05  FILLER                  PIC X.                           01830000
017500     05  CC30                    PIC XX.                          01840000
017600     05  FILLER                  PIC X.                           01850000
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017700     05  C016                    PIC X.                        01860000
017800     05  FILLER                  PIC X.                        01870000
017900     05  C012                    PIC 9(5).                     01880000
018000     05  FILLER                  PIC X.                        01890000
018100     05  C015                    PIC X.                        01900000
018200     05  FILLER                  PIC X.                        01910000
018300     05  B004                    PIC 9(5).                     01920000
018400     05  FILLER                  PIC X.                        01930000
018500     05  B067-PROV               PIC X.                        01940000
018600     05  FILLER                  PIC X.                        01950000
018700     05  B067-MARK               PIC X.                        01960000 .
018800     05  FILLER                  PIC X.                        01970000
018900     05  B067E                   PIC X.                        01980000
019000     05  FILLER                  PIC X.                        01990000
019100     05  B067-REPAIR-STAT        PIC XX.                       02000000
019200     05  FILLER                  PIC XXX.                      02010000
019300     05  B007                    PIC X.                        02020000
019400     05  FILLER                  PIC X.                        02030000
019500     05  C005                    PIC XX.                       02040000
019600     05  FILLER                  PIC X.                        02050000
019700     05  B055.                                                 02060000
019800         10  FILLER              PIC X.                        02070000
019900         10  B055-DOLLARS-I.     PIC 9(6).                     02080000
020000         10  FILLER              PIC X.                        02090000
020100         10  B055-CENTS-IN       PIC 99.                       02100000
020200     05  FILLER                  PIC X.                        02110000
020300     05  C004                    PIC X(22).                    02120000
020400     05  FILLER                  PIC X.                        02130000
020500     05  B002B                   PIC XXX.                      02140000
020600     05  FILLER                  PIC X.                        02150000
020700     05  C001A                   PIC X(4).                     02160000
020800     05  FILLER                  PIC X.                        02170000
020900     05  C001B                   PIC X.                        02180000
021000     05  FILLER                  PIC X.                        02190000
021100     05  C001C                   PIC X.                        02200000
021200     05  FILLER                  PIC X.                        02210000
021300     05  C003                    PIC XX.                       02220000
021400     05  C003A                   PIC X.                        02230000
021500     05  FILLER                  PIC X.                        02240000
021600     05  C042                    PIC X(4).                     02250000
021700     05  FILLER                  PIC X.                        02260000
021800     05  C001E                   PIC XX.                       02270000
021900     05  FILLER                  PIC X.                        02280000
022000     05  D046                    PIC X(7).                     02290000
022100     05  FILLER                  PIC X(4).                     02300000
022200     05  END-PRINT-LINE-D1       PIC X.                        02310000
022300     05  B034C                   PIC 9(5).                     02320000
022400     05  FILLER                  PIC X.                        02330000
022500     05  B034F                   PIC 9(5).                     02340000
022600     05  FILLER                  PIC X.                        02350000
022700     05  B034D                   PIC 9(5).                     02360000
022800     05  FILLER                  PIC X.                        02370000
022900     05  B034E                   PIC 9(5).                     02380000
023000     05  FILLER                  PIC X.                        02390000
023100     05  F024                    PIC X.                        02400000
023200     05  FILLER                  PIC X.                        02410000
023300     05  D010A-D                 PIC X(5).                     02420000
023400     05  FILLER                  PIC X.                        02430000
023500     05  C028                    PIC X.                        02440000
023600     05  FILLER                  PIC X.                        02450000
023700     05  C029                    PIC XX.                       02460000
023800     05  FILLER                  PIC XXX.                      02470000
023900     05  D014A                   PIC XX.                       02480000
024000     05  FILLER                  PIC X.                        02490000
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024100      05  B050                    PIC X.                    02500000
024200      05  C009                    PIC XX.                   02510000
024300      05  FILLER                  PIC X.                    02520000
024400      05  V007F                   PIC X.                    02530000
024500      05  C033                    PIC X.                    02540000
024600      05  D015                    PIC X.                    02550000
024700      05  FILLER                  PIC XX.                   02560000
024800      05  C017                    PIC X.                    02570000
024900      05  FILLER                  PIC X.                    02580000
025000      05  B001                    PIC X(5).                 02590000
025100      05  FILLER                  PIC X.                    02600000
025200      05  B008                    PIC X.                    02610000
025300      05  FILLER                  PIC X.                    02620000
025400      05  C035                    PIC X(5).                 02630000
025500      05  FILLER                  PIC X.                    02640000
025600      05  C008C.                                            02650000
025700          10  FILLER              PIC X.                    02660000
025800          10  C008C-DEC-IN        PIC 999.                  02670000
025900      05  FILLER                  PIC X.                    02680000
026000      05  C023.                                             02690000
026100          10  C023-NUM-IN         PIC 9(4).                 02700000
026200          10  FILLER              PIC X.                    02710000
026300          10  C023-DEC-IN         PIC 99.                   02720000
026400      05  FILLER                  PIC X.                    02730000
026500      05  C024.                                             02740000
026600          10  C024-NUM-IN         PIC 9(4).                 02750000
026700          10  FILLER              PIC X.                    02760000
026800          10  C024-DEC-IN         PIC 99.                   02770000
026900      05  FILLER                  PIC X.                    02780000
027000      05  PACKAGE-QTY             PIC 9(7).                 02790000
027100      05  FILLER                  PIC X.                    02800000
027200      05  B014A.                                            02810000
027300          10  B014A-NUM-IN        PIC 9.                    02820000
027400          10  FILLER              PIC X.                    02830000
027500          10  B014A-DEC-IN        PIC 999.                  02840000
027600      05  FILLER                  PIC X.                    02850000
027700      05  B011A.                                            02860000
027800          10  B011A-NUM-IN        PIC 99.                   02870000
027900          10  FILLER              PIC X.                    02880000
028000          10  B011A-DEC-IN        PIC 99.                   02890000
028100      05  CSSP-REASON-REQD-IN     PIC X(13).                02900000
028200      05  FILLER                  PIC X(4).                 02910000
028300      05  END-OF-LINE-2-D         PIC 9.                    02920000
028400      05  B033                    PIC 9(6).                 02930000
028500      05  SIGN-DISP-QTY           PIC X.                    02940000
028600      05  B028C                   PIC 9(6).                 02950000
028700      05  FILLER                  PIC XX.                   02960000
028800      05  B011B.                                            02970000
028900          10  B011B-NUM-IN        PIC 99.                   02980000
029000          10  FILLER              PIC X.                    02990000
029100          10  B011B-DEC-IN        PIC 9.                    03000000
029200      05  FILLER                  PIC XX.                   03010000
029300      05  B027                    PIC 9(6).                 03020000
029400      05  FILLER                  PIC X.                    03030000
029500      05  F025                    PIC XX.                   03040000
029600      05  FILLER                  PIC XXX.                  03050000
029700      05  D025DEF-E089            PIC X(4).                 03060000
029800      05  FILLER                  PIC XX.                   03070000
029900      05  C049                    PIC 9(5).                 03080000
030000      05  FILLER                  PIC X.                    03090000
030100      05  D007A-E                 PIC X(5).                 03100000
030200      05  FILLER                  PIC XX.                   03110000
030300      05  B10.                                              03120000
030400          10  B10-NUM-IN          PIC 99.                   03130000
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030500          10  FILLER                 PIC X.                          03140000
030600          10  B10-DEC-IN             PIC 9.                          03150000
030700      05  FILLER                     PIC X.                          03160000
030800      05  DATE-OF-NEXT-BUY           PIC 9(5).                       03170000
030900      05  FILLER                     PIC X.                          03180000
031000      05  B077.                                                      03190000
031100          10  B077-NUM-IN            PIC 9(5).                       03200000
031200          10  FILLER                 PIC X.                          03210000
031300          10  B077-DEC-IN            PIC 9.                          03220000
031400      05  B077A.                                                     03230000
031500          10  B077A-NUM-IN           PIC 9(5).                       03240000
031600          10  FILLER                 PIC X.                          03250000
031700          10  B077A-DEC-IN           PIC 9.                          03260000
031800      05  B077B.                                                     03270000
031900          10  B077B-NUM-IN           PIC 9(5).                       03280000
032000          10  FILLER                 PIC X.                          03290000
032100          10  B077B-DEC-IN           PIC 9.                          03300000
032200      05  B077C.                                                     03310000
032300          10  B077C-NUM-IN           PIC 9(5).                       03320000
032400          10  FILLER                 PIC X.                          03330000
032500          10  B077C-DEC-IN           PIC 9.                          03340000
032600      05  B077D.                                                     03350000
032700          10  B077D-NUM-IN           PIC 9(5).                       03360000
032800          10  FILLER                 PIC X.                          03370000
032900          10  B077D-DEC-IN           PIC 9.                          03380000
033000      05  B077E.                                                     03390000
033100          10  B077E-NUM-IN           PIC 9(5).                       03400000
033200          10  FILLER                 PIC X.                          03410000
033300          10  B077E-DEC-IN           PIC 9.                          03420000
033400      05  FILLER                     PIC X.                          03430000
033500      05  C0003B                     PIC XX.                         03440000
033600      05  FILLER                     PIC XX.                         03450000
033700      05  B083.                                                      03460000
033800          10  FILLER                 PIC X.                          03470000
033900          10  B083-DOLLARS-IN        PIC 9(6).                       03480000
034000          10  FILLER                 PIC X.                          03490000
034100          10  B083-CENTS-IN          PIC 99.                         03500000
034200      05  FILLER                     PIC X(4).                       03510000
034300      05  END-OF-LINE-3-D            PIC 9.                          03520000
034400*****************************************************************     03530000
034500*****************************************************************     03540000
034600  01  WS-F-REC.                                                      03550000
034700      05  IM-HDR-F.                                                  03560000
034800          10  IM-FILE-ID-F           PIC X(5).                       03570000
034900          10  IM-REC-ID-F            PIC X(7).                       03580000
035000          10  HDR-LRC-F              PIC X(3).                       03590000
035100          10  HDR-FCC-F              PIC X(4).                       03600000
035200          10  HDR-F-REC-F            PIC X.                          03610000
035300          10  HDR-NINE-F             PIC X(9).                       03620000
035400          10  PRINT-CODE-F           PIC X.                          03630000
035500          10  SEQ-DATA-F             PIC X(20).                      03640000
035600      05  A006                       PIC S9(7).                      03650000
035700      05  FILLER                     PIC X.                          03660000
035800      05  A006A                      PIC S9(7).                      03670000
035900      05  FILLER                     PIC X.                          03680000
036000      05  A006                       PIC S9(7).                      03690000
036100      05  FILLER                     PIC X.                          03700000
036200      05  A004A                      PIC S9(7).                      03710000
036300      05  FILLER                     PIC X.                          03720000
036400      05  B074                       PIC S9(5)V9.                    03730000
036500      05  FILLER                     PIC X.                          03740000
036600      05  A023B.                                                     03750000
036700          10  A023B-NUM-IN           PIC 999.                        03760000
036800          10  FILLER                 PIC X.                          03770000
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        10  A023B-DEC-IN          PIC 999.
        10  A023B-MINUS-IN        PIC X.
    05  B019A.
        10  B019A-NUM-IN          PIC 999.
        10  FILLER                PIC X.
        10  B019A-DEC-IN          PIC 9(4).
    05  FILLER                    PIC X.
    05  B023C                     PIC 9(6)V9.
    05  FILLER                    PIC XX.
    05  H3-HORIZON                PIC 9(5).
    05  FILLER                    PIC XX.
    05  B023D                     PIC 9(6)V9.
    05  FILLER                    PIC X.
    05  A019D-A019.
        10  A019D-NUM-IN          PIC 9.
        10  FILLER                PIC X.
        10  A019D-DEC             PIC 9(4).
        10  A019D-MINUS-IN        PIC X.
    05  A019E-A019A.
        10  A019E-NUM-IN          PIC 9.
        10  FILLER                PIC X.
        10  A019E-DEC             PIC 9(4).
        10  A019E-MINUS-IN        PIC X.
    05  B093                      PIC 9(5).
    05  FILLER                    PIC X.
    05  B093A                     PIC 9(5).
    05  B022D-B022.
        10  B022D-NUM-IN          PIC 99.
        10  FILLER                PIC X.
        10  B022D-DEC-IN          PIC 9(4).
        10  B022D-MINUS-IN        PIC X.
    05  B022E-B022A.
        10  B022E-NUM-IN          PIC 99.
        10  FILLER                PIC X.
        10  B022E-DEC-IN          PIC 9(4).
        10  B022E-MINUS-IN        PIC X.
    05  FILLER                    PIC XXX.
    05  END-OF-LINE-1-IND         PIC X.
    05  ON-HAND-A                 PIC S9(6).
    05  FILLER                    PIC X.
    05  A011A                     PIC S9(7).
    05  FILLER                    PIC X.
    05  ON-HAND-REGEN             PIC S9(7).
    05  FILLER                    PIC X.
    05  DUE-OUT-REGEN             PIC S9(7).
    05  FILLER                    PIC X.
    05  ON-HAND-OTHER             PIC S9(7).
    05  FILLER                    PIC X.
    05  DUE-OUT-OTHER             PIC 9(7).
    05  FILLER                    PIC X.
    05  PLT-DUE-IN-OTHER          PIC S9(7).
    05  FILLER                    PIC X.
    05  PLT-DUE-IN-REGEN          PIC S9(7).
    05  FILLER                    PIC X.
    05  PLT-ASSETS                PIC S9(8).
    05  FILLER                    PIC X.
    05  B023E                     PIC 9(6)V9.
    05  FILLER                    PIC XX.
    05  NET-EXCESS-REQMT          PIC S9(7).
    05  FILLER                    PIC XX.
    05  B023F                     PIC 9(6)V9.
    05  FILLER                    PIC XX.
    05  B023G                     PIC 9(6)V9.
    05  FILLER                    PIC XXXX.
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043300     05  B023H                   PIC 9(6)V9.                  04420000
043400     05  SPACE-FILL-1            PIC X(5).                    04430000
043500     05  END-OF-LINE-2-IND       PIC X.                       04440000
043600     05  A011                    PIC 9(8).                    04450000
043700     05  FILLER                  PIC X.                       04460000
043800     05  A011B                   PIC 9(8).                    04470000
043900     05  FUND-PROT-PPR-PLT       PIC 9(7).                    04480000
044000     05  FILLER                  PIC X.                       04490000
044100     05  SAFETY-LEVEL            PIC S9(7).                   04500000
044200     05  FILLER                  PIC XX.                      04510000
044300     05  B019                    PIC 9(7).                    04520000
044400     05  FILLER                  PIC X.                       04530000
044500     05  B019C.                                               04540000
044600         10  B019C-NUM-IN        PIC 999.                     04550000
044700         10  FILLER              PIC X.                       04560000
044800         10  B019C-DEC-IN        PIC 999.                     04570000
044900     05  FILLER                  PIC X.                       04580000
045000     05  B021                    PIC 9(7).                    04590000
045100     05  FILLER                  PIC X(8).                    04600000
045200     05  B019B                   PIC 9(7).                    04610000
045300     05  FILLER                  PIC X.                       04620000
045400     05  B021A                   PIC 9(7).                    04630000
045500     05  FILLER                  PIC X.                       04640000
045600     05  B055A.                                               04650000
045700         10  FILLER              PIC X.                       04660000
045800         10  B055A-DOLLARS-IN    PIC 9(6).                    04670000
045900         10  FILLER              PIC X.                       04680000
046000         10  B055A-DEC-IN        PIC 99.                      04690000
046100     05  FILLER                  PIC X.                       04700000
046200     05  F007.                                                04710000
046300         10  F007-NUM-IN         PIC 9.                       04720000
046400         10  FILLER              PIC X.                       04730000
046500         10  F007-DEC-IN         PIC 99.                      04740000
046600     05  FILLER                  PIC X.                       04750000
046700     05  B094                    PIC XX.                      04760000
046800     05  FILLER                  PIC X.                       04770000
046900     05  F030                    PIC X(4).                    04780000
047000     05  FILLER                  PIC X.                       04790000
047100     05  D008                    PIC X(10).                   04800000
047200     05  FILLER                  PIC X.                       04810000
047300     05  F009A.                                               04820000
047400         10  F009A-NUM-IN        PIC 9.                       04830000
047500         10  FILLER              PIC X.                       04840000
047600         10  F009A-DEC-IN        PIC 99.                      04850000
047700     05  SPACE-FILL-2            PIC X(4).                    04860000
047800     05  FILLER                  PIC X.                       04870000
047900*****************************************************************04880000
048000*****************************************************************04890000
048100 01  WS-H-REC.                                                04900000
048200     05 IM-HDR-H.                                             04910000
048300        10 IM-FILE-ID-H          PIC X(5).                    04920000
048400        10 IM-REQR-ID-H          PIC X(7).                    04930000
048500        10 HDR-LRC-H             PIC X(3).                    04940000
048600        10 HDR-PGC-H             PIC X(4).                    04950000
048700        10 HDR-F-REL-H           PIC X.                       04960000
048800        10 HDR-NIIN-H            PIC X(9).                    04970000
048900        10 PRINT-CODE-H          PIC X.                       04980000
049000        10 SEQ-DATA-H            PIC X(20).                   04990000
049100     05 BLANK-CSSR-PRNT-7        PIC X(125).                  05000000
049200     05 A005B                    PIC S9(5).                   05010000
049300     05 FILLER                   PIC XX.                      05020000
049400     05 A005C                    PIC S9(6).                   05030000
049500     05 FILLER                   PIC XX.                      05040000
049600     05 PLT-ADD2-DATE            PIC 9(5).                    05050000
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049700     05 FILLER                    PIC XX.                      05060000
049800     05 B022F-B.                                               05070000
049900        10  B022F-B-NUM-IN        PIC 9.                       05080000
050000        10  FILLER                PIC X.                       05090000
050100        10  B022F-B-DEC-IN        PIC 9(4).                    05100000
050200        10  B022F-B-MINUS-IND     PIC X.                       05110000
050300     05 END-PPR-PLT-ADD2           PIC 9(7).                    05120000
050400     05 A019F-B.                                                05130000
050500        10  A019F-B-NUM-IN        PIC 9.                       05140000
050600        10  FILLER                PIC X.                       05150000
050700        10  A019F-B-DEC-IN        PIC 9(4).                    05160000
050800        10  A019F-B-MINUS-IND     PIC X.                       05170000
050900     05 B012B.                                                  05180000
051000        10  B012B-NUM-IN          PIC 9.                       05190000
051100        10  FILLER                PIC X.                       05200000
051200        10  B012B-DEC-IN          PIC 9.                       05210000
051300     05 FILLER                     PIC X.                       05220000
051400     05 B012D.                                                  05230000
051500        10  B012D-NUM-IN          PIC 9.                       05240000
051600        10  FILLER                PIC X.                       05250000
051700        10  B012D-DEC-IN          PIC 9.                       05260000
051800     05 FILLER                     PIC X(4).                    05270000
051900     05 B012-B012C.                                             05280000
052000        10  B012-NUM-IN           PIC 9.                       05290000
052100        10  FILLER                PIC X.                       05300000
052200        10  B012-DEC-IN           PIC 99.                      05310000
052300     05 FILLER                     PIC X.                       05320000
052400     05 B012F.                                                  05330000
052500        10  B012F-NUM-IN          PIC 9.                       05340000
052600        10  FILLER                PIC X.                       05350000
052700        10  B012F-DEC-IN          PIC 99.                      05360000
052800     05 FILLER                     PIC X.                       05370000
052900     05 F009.                                                   05380000
053000        10  F009-NUM-IN           PIC 9.                       05390000
053100        10  FILLER                PIC X.                       05400000
053200        10  F009-DEC-IN           PIC 99.                      05410000
053300     05 FILLER                     PIC XX.                      05420000
053400     05 B012E.                                                  05430000
053500        10  B012E-NUM-IN          PIC 9.                       05440000
053600        10  FILLER                PIC X.                       05450000
053700        10  B012E-DEC-IN          PIC 99.                      05460000
053800     05 FILLER                     PIC X.                       05470000
053900     05 B014C.                                                  05480000
054000        10  B014C-DEC-POINT       PIC X.                       05490000
054100        10  B014C-DEC-IN          PIC 999.                     05500000
054200     05 FILLER                     PIC X.                       05510000
054300     05 F016-1                     PIC X(6).                    05520000
054400     05 FILLER                     PIC X.                       05530000
054500     05 F016-2                     PIC X(6).                    05540000
054600     05 FILLER                     PIC X.                       05550000
054700     05 F016-3                     PIC X(6).                    05560000
054800     05 FILLER                     PIC X.                       05570000
054900     05 F016-4                     PIC X(6).                    05580000
055000     05 FILLER                     PIC X.                       05590000
055100     05 F016-5                     PIC X(6).                    05600000
055200     05 FILLER                     PIC XX.                      05610000
055300     05 B075                       PIC X.                       05620000
055400     05 FILLER                     PIC XX.                      05630000
055500     05 B075D                      PIC 9.                       05640000
055600     05 FILLER                     PIC X(4).                    05650000
055700     05 END-PPINT-LINE-1           PIC 9.                       05660000
055800     05  D012                      PIC XX.                      05670000
055900     05  FILLER                    PIC XX.                      05680000
056000     05  D013C                     PIC X.                       05690000
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           05  FILLER                PIC XXX.
           05  D012A                 PIC X.
           05  FILLER                PIC XX.
           05  F027.
               10 F027-NUM-IN        PIC 99.
               10 FILLER             PIC X.
               10 F027-DEC-IN        PIC 9(4).
           05  FILLER                PIC X.
           05  B28C                  PIC 9(5).
           05  FILLER                PIC X.
           05  C001F                 PIC X(4).
           05  FILLER                PIC X.
           05  B051                  PIC 9(7).
           05  FILLER                PIC X.
           05  D120                  PIC XX.
           05  FILLER                PIC XX.
           05  B061B                 PIC 9(5).
           05  FILLER                PIC XX.
           05  D125A-B-C-N           PIC X(4).
           05  FILLER                PIC X.
           05  E088                  PIC X(3).
           05  FILLER                PIC X.
           05  B020                  PIC 9(7).
           05  FILLER                PIC X.
           05  B093B                 PIC 9(5).
           05  FILLER                PIC X.
           05  B098                  PIC 9(8).
           05  FILLER                PIC X.
           05  B098A                 PIC 9(8).
           05  FILLER                PIC X.
           05  C003D                 PIC XX.
           05  FILLER                PIC X.
           05  C003W                 PIC XX.
           05  FILLER                PIC XX.
           05  B059.
               10 FILLER             PIC X.
               10 B059-DOLLARS-IN    PIC 9(7).
               10 FILLER             PIC X.
               10 B059-CENTS-IN      PIC 99.
           05  FILLER                PIC X(16).
           05  END-PRINT-LINE-2      PIC 9.
      *****************************************************************
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       01  WS-J-REC.
           05 IM-HDR-J.
             10 IM-FILE-ID-J         PIC X(5).
             10 IM-REQR-ID-J         PIC X(7).
             10 HDR-LRC-J            PIC X(3).
             10 HDR-FGC-J            PIC X(4).
             10 HDR-F-REL-J          PIC X.
             10 HDR-NIIN-J           PIC X(9).
             10 PRINT-CODE-J         PIC X.
             10 SEQ-DATA-J           PIC X(20).


      *********************FIRST PRINT LINE****************************

           05 A001-1                 PIC XXX.
           05 FILLER                 PIC X.
           05 B046A-1                PIC 9(5).
           05 FILLER                 PIC X.
           05 A003-1                 PIC XX.
           05 F016-1                 PIC X.
           05 FILLER                 PIC X.
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062500     05 A006A-1.                                                  06340000
062600       10 A006A-1-IN              PIC 9(6).                      06350000
062700       10 A006A-1-MINUS-IN        PIC X.                         06360000
062800     05 A004-1.                                                   06370000
062900       10 A004-1-IN               PIC 9(6).                      06380000
063000       10 A004-1-MINUS-IN         PIC X.                         06390000
063100     05 A023-1.                                                   06400000
063200       10 A023-1-NUM-IN           PIC 9(4).                      06410000
063300       10 FILLER                  PIC X.                         06420000
063400       10 A023-1-DEC-IN           PIC 999.                       06430000
063500       10 A023-1-MINUS-IN         PIC X.                         06440000
063600     05 FILLER                    PIC X.                         06450000
063700     05 A012A-1                   PIC X.                         06460000
063800     05 FILLER                    PIC XX.                        06470000
063900     05 A008W-1.                                                  06480000
064000       10 A008-1-IN               PIC 9(7).                      06490000
064100       10 A008-1-MINUS-IN         PIC X.                         06500000
064200     05 A034-1-IN                 PIC 9(6).                      06510064300     05
           FILLER                      PIC XX.                        06520000
064400     05 A025-1.                                                   06530000
064500       10 A025-1-IN               PIC 9(6).                      06540000
064600       10 A025-1-MINUS-IN         PIC X.                         06550000
064700     05 PL-PROG-OST-1.                                            06560000
064800       10 PL-PROG-OST-1-IN        PIC 9(7).                      06570000
064900       10 PL-PROG-OST-1-MIN-IN    PIC X.                         06580000
065000     05 C003E-1                   PIC X.                         06590000
065100     05 FILLER                    PIC X.                         06600000
065200     05 A012-1.                                                   06610000
065300       10 A012-1-IN               PIC 9(7).                      06620000
065400       10 A012-1-MINUS-IN         PIC X.                         06630000
065500     05 A021A-1.                                                  06640000
065600       10 A021A-1-IN              PIC 9(6).                      06650000
065700       10 A021A-1-MINUS-IN        PIC X.                         06660000
065800     05 DUE-IN-OST-1.                                             06670000
065900       10 DUE-IN-OST-1-IN         PIC 9(7).                      06680000
066000       10 DUE-IN-OST-1-MINUS-IN   PIC X.                         06690000
066100     05 A008B-1.                                                  06700000
066200       10 A008B-1-IN              PIC 9(7).                      06710000
066300       10 A008B-1-MINUS-IN        PIC X.                         06720000
066400     05 NET-EX-RQMT-1.                                            06730000
066500       10 NET-EX-RQMT-1-IN        PIC 9(7).                      06740000
066600       10 NET-EX-RQMT-1-MIN-IN    PIC X.                         06750000
066700     05 FILLER                    PIC X(12).                     06760000
066800                                                                 06770000
066900*************************SECOND PRINT LINE*************************06780000
067000                                                                 06790000
067100     05 A001-2                    PIC XXX.                       06800000
067200     05 FILLER                    PIC X.                         06810000
067300     05 B046A-2                   PIC 9(5).                      06820000
067400     05 FILLER                    PIC X.                         06830000
067500     05 A003-2                    PIC XX.                        06840000
067600     05 F016-2                    PIC X.                         06850000
067700     05 FILLER                    PIC X.                         06860000
067800     05 A006A-2.                                                  06870000
067900       10 A006A-2-IN              PIC 9(6).                      06880000
068000       10 A006A-2-MINUS-IN        PIC X.                         06890000
068100     05 A004-2.                                                   06900000
068200       10 A004-2-IN               PIC 9(6).                      06910000
068300       10 A004-2-MINUS-IN         PIC X.                         06920000
068400     05 A023-2.                                                   06930000
068500       10 A023-2-NUM-IN           PIC 9(4).                      06940000
068600       10 FILLER                  PIC X.                         06950000
068700       10 A023-2-DEC-IN           PIC 999.                       06960000
068800       10 A023-2-MINUS-IN         PIC X.                         06970000
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       05 FILLER                     PIC X.
       05 A012A-2                    PIC X.
       05 FILLER                     PIC XX.
       05 A008W-2.
         10 A008-2-IN                PIC 9(7).
         10 A008-2-MINUS-IN          PIC X.
       05 A034-2-IN                  PIC 9(6).
       05 FILLER                     PIC XX.
       05 A025-2.
         10 A025-2-IN                PIC 9(6).
         10 A025-2-MINUS-IN          PIC X.
       05 PL-PROG-OST-2.
         10 PL-PROG-OST-2-IN         PIC 9(7).
         10 PL-PROG-OST-2-MIN-IN     PIC X.
       05 C003E-2                    PIC X.
       05 FILLER                     PIC X.
       05 A012-2.
         10 A012-2-IN                PIC 9(7).
         10 A012-2-MINUS-IN          PIC X.
       05 A021A-2.
         10 A021A-2-IN               PIC 9(6).
         10 A021A-2-MINUS-IN         PIC X.
       05 DUE-IN-OST-2.
         10 DUE-IN-OST-2-IN          PIC 9(7).
         10 DUE-IN-OST-2-MINUS-IN    PIC X.
       05 A008B-2.
         10 A008B-2-IN               PIC 9(7).
         10 A008B-2-MINUS-IN         PIC X.
       05 NET-EX-RQMT-2.
         10 NET-EX-RQMT-2-IN         PIC 9(7).
         10 NET-EX-RQMT-2-MIN-IN     PIC X.
       05 FILLER                     PIC X(12).


*********************THIRD PRINT LINE***********************

       05 A001-3                     PIC XXX.
       05 FILLER                     PIC X.
       05 B046A-3                    PIC 9(5).
       05 FILLER                     PIC X.
       05 A003-3                     PIC XX.
       05 F016-3                     PIC X.
       05 FILLER                     PIC X.
       05 A006A-3.
         10 A006A-3-IN               PIC 9(6).
         10 A006A-3-MINUS-IN         PIC X.
       05 A004-3.
         10 A004-3-IN                PIC 9(6).
         10 A004-3-MINUS-IN          PIC X.
       05 A023-3.
         10 A023-3-NUM-IN            PIC 9(4).
         10 FILLER                   PIC X.
         10 A023-3-DEC-IN            PIC 999.
         10 A023-3-MINUS-IN          PIC X.
       05 FILLER                     PIC X.
       05 A012A-3                    PIC X.
       05 FILLER                     PIC XX.
       05 A008W-3.
         10 A008-3-IN                PIC 9(7).
         10 A008-3-MINUS-IN          PIC X.
       05 A034-3-IN                  PIC 9(6).
       05 FILLER                     PIC XX.
       05 A025-3.
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075200         10 A025-3-IN                PIC 9(6).                        07610000
075300         10 A025-3-MINUS-IN          PIC X.                           07620000
075400      05 PL-PROG-OST-3.                                                07630000
075500         10 PL-PROG-OST-3-IN          PIC 9(7).                        07640000
075600         10 PL-PROG-OST-3-MIN-IN      PIC X.                           07650000
075700      05 C003E-3                      PIC X.                           07660000
075800      05 FILLER                       PIC X.                           07670000
075900      05 A012-3.                                                       07680000
076000         10 A012-3-IN                 PIC 9(7).                        07690000
076100         10 A012-3-MINUS-IN           PIC X.                           07700000
076200      05 A021A-3.                                                      07710000
076300         10 A021A-3-IN                PIC 9(6).                        07720000
076400         10 A021A-3-MINUS-IN          PIC X.                           07730000
076500      05 DUE-IN-OST-3.                                                 07740000
076600         10 DUE-IN-OST-3-IN           PIC 9(7).                        07750000
076700         10 DUE-IN-OST-3-MINUS-IN     PIC X.                           07760000
076800      05 A008B-3.                                                      07770000
076900         10 A008B-3-IN                PIC 9(7).                        07780000
077000         10 A008B-3-MINUS-IN          PIC X.                           07790000
077100      05 NET-EX-RQMT-3.                                                07800000
077200         10 NET-EX-RQMT-3-IN          PIC 9(7).                        07810000
077300         10 NET-EX-RQMT-3-MIN-IN      PIC X.                           07820000
077400      05 FILLER                       PIC X(12).                       07830000
077500*****************************************************************      07840000
077600*****************************************************************      07850000
077700 01  WS-L-REC.                                                         07860000
077800      05 IM-HDR-L.                                                     07870000
077900         10 IM-FILE-ID-L              PIC X(5).                        07880000
078000         10 IM-REQR-ID-L              PIC X(7).                        07890000
078100         10 HDR-LRC-L                 PIC X(3).                        07900000
078200         10 HDR-FGC-L                 PIC X(4).                        07910000
078300         10 HDR-F-REL-L               PIC X.                           07920000
078400         10 HDR-NIIN-L                PIC X(9).                        07930000
078500         10 PRINT-CODE-L              PIC X.                           07940000
078600         10 SEQ-DATA-L                PIC X(20).                       07950000
078700                                                                        07960000
078800*************************DDF ENTRY*************************************07970000
078900      05 K001-L                       PIC XXX.                         07980000
079000      05 DD-DOC-IND-L                 PIC X.                           07990000
079100      05 K002-L001-L                  PIC X(15).                       08000000
079200      05 L001A-L                      PIC X(4).                        08010000
079300      05 FILLER                       PIC X.                           08020000
079400      05 L022-L                       PIC X(6).                        08030000
079500      05 FILLER                       PIC X.                           08040000
079600      05 A001-FROM-L                  PIC XXX.                         08050000
079700      05 FILLER                       PIC X.                           08060000
079800      05 A001-TO-L                    PIC XXX.                         08070000
079900      05 FILLER                       PIC X.                           08080000
080000      05 ORIG-QTY-L                   PIC 9(7).                        08090000
080100      05 SIGN-L                       PIC X.                           08100000
080200      05 FILLER                       PIC X.                           08110000
080300      05 C003E-L                      PIC X.                           08120000
080400      05 FILLER                       PIC XX.                          08130000
080500      05 DELV-DATE-L                  PIC 9(5).                        08140000
080600      05 FILLER                       PIC X.                           08150000
080700      05 L034-L.                                                       08160000
080800         10 L034-L-IN                 PIC S9(6).                       08170000
080900         10 L034-L-MINUS-IN           PIC X.                           08180000
081000      05 FILLER                       PIC X.                           08190000
081100      05 DATE-OF-ACTION-L             PIC 9(5).                        08200000
081200      05 FILLER                       PIC X.                           08210000
081300      05 TYPE-OF-ACTION-L             PIC X.                           08220000
081400      05 FOLLOW-UP-IND-L              PIC X.                           08230000
081500      05 EXPEDITE-IND-L               PIC X.                           08240000
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081600     05 FILLER                    PIC X(4).                    08250000
081700     05 A012A-FROM-L              PIC X.                       08260000
081800     05 FILLER                    PIC X(6).                    08270000
081900     05 A012A-TO-L                PIC X.                       08280000
082000     05 FILLER                    PIC X(4).                    08290000
082100     05 L040-L                    PIC 9(6).                    08300000
082200     05 FILLER                    PIC X(5).                    08310000
082300     05 K024-L                    PIC XXX.                     08320000
082400     05 FILLER                    PIC X(20).                   08330000
082500     05 CC-L                      PIC X.                       08340000
082600     05 FILLER                    PIC X(250).                  08350000
081600*****************************************************************08360017
081600*****************************************************************08370017
081700 01  WS-N-REC.                                                  08380017
081800     05  IM-HDR-N.                                              08390017
081900         10  IM-FILE-ID-N         PIC X(5).                     08400017
082000         10  IM-REQR-ID-N         PIC X(7).                     08410017
082100         10  HDR-LRC-N            PIC XXX.                      08420017
082200         10  HDR-FGC-N            PIC X(4).                     08430017
082300         10  HDR-F-REL-N          PIC X.                        08440017
082400         10  HDR-NIIN-N           PIC X(9).                     08450017
082500         10  PRINT-CODE-N         PIC X.                        08460017
082600         10  SEQ-DATA-N           PIC X(20).                    08470017
082700     05  PPR-K001-IN              PIC X(3).                     08480017
082800     05  FILLER                   PIC X.                        08490017
082900     05  PPR-K002-IN              PIC X(14).                    08500017
083000     05  FILLER                   PIC X.                        08510017
083100     05  PPR-A001-IN              PIC XXX.                      08520017
083200     05  FILLER                   PIC X.                        08530017
083300     05  PPR-A012A-IN             PIC X.                        08540017
083400     05  FILLER                   PIC X.                        08550017
083500     05  PPR-K017-IN              PIC X(6).                     08560017
083600     05  FILLER                   PIC X.                        08570017
083700     05  PPR-QTY-IN               PIC 9(7).                     08580017
083800     05  FILLER                   PIC X.                        08590017
083900     05  PPR-K018-IN              PIC 9(5).                     08600017
084000     05  FILLER                   PIC X.                        08610017
084100     05  PPR-A014A-IN.                                          08620017
               10  A014B-E-IN          PIC X(4).                     08630017
               10  A014F-IN            PIC X.                        08640017
               10  A014G-IN            PIC X.                        08650017
084200     05  FILLER                   PIC X.                        08660017
084300     05  PPR-K024-IN              PIC XXX.                      08670017
084400     05  FILLER                   PIC X.                        08680017
084500     05  PPR-K026-IN              PIC XX.                       08690017
084600     05  FILLER                   PIC X(316).                   08700017
084700*****************************************************************08710017
085900*****************************************************************08720000
086000*****************************************************************08730000
086100 01  WS-P-REC.                                                  08740000
086200     05 IM-HDR-P.                                               08750000
086300        10 IM-FILE-ID-P           PIC X(5).                     08760000
086400        10 IM-REQR-ID-P           PIC X(7).                     08770000
086500        10 HDR-LRC-P              PIC X(3).                     08780000
086600        10 HDR-FGC-P              PIC X(4).                     08790000
086700        10 HDR-F-REL-P            PIC X.                        08800000
086800        10 HDR-NIIN-P             PIC X(9).                     08810000
086900        10 PRINT-CODE-P           PIC X.                        08820000
087000        10 SEQ-DATA-P             PIC X(20).                    08830000
087100***FIRST ALT NIIN ENTRY OF FIRST PRINT LINE*********************08840000
087200     05 FILLER                    PIC X(12).                    08850000
087300     05 D016-1ST                  PIC X(9).                     08860000
087400     05 FILLER                    PIC XXX.                      08870000
087500     05 D016A-1ST                 PIC 99.                       08880000
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087600      05 D016B-1ST                PIC X.                          08890000
087700      05 FILLER                   PIC X(5).                       08900000
087800***SECOND ALT NIIN ENTRY OF FIRST PRINT LINE**********************08910000
087900      05 D016-2-1ST               PIC X(9).                       08920000
088000      05 FILLER                   PIC XXX.                        08930000
088100      05 D016A-2-1ST              PIC 99.                         08940000
088200      05 D016B-2-1ST              PIC X.                          08950000
088300      05 FILLER                   PIC X(5).                       08960000
088400***THIRD ALT NIIN ENTRY OF FIRST PRINT LINE***********************08970000
088500      05 D016-3-1ST               PIC X(9).                       08980000
088600      05 FILLER                   PIC XXX.                        08990000
088700      05 D016A-3-1ST              PIC 99.                         09000000
088800      05 D016B-3-1ST              PIC X.                          09010000
088900      05 FILLER                   PIC X(5).                       09020000
089000***FOURTH ALT NIIN ENTRY OF FIRST PRINT LINE**********************09030000
089100      05 D016-4-1ST               PIC X(9).                       09040000
089200      05 FILLER                   PIC XXX.                        09050000
089300      05 D016A-4-1ST              PIC 99.                         09060000
089400      05 D016B-4-1ST              PIC X.                          09070000
089500      05 FILLER                   PIC X(5).                       09080000
089600***FIFTH ALT NIIN ENTRY OF FIRST PRINT LINE***********************09090000
089700      05 D016-5-1ST               PIC X(9).                       09100000
089800      05 FILLER                   PIC XXX.                        09110000
089900      05 D016A-5-1ST              PIC 99.                         09120000
090000      05 D016B-5-1ST              PIC X.                          09130000
090100      05 FILLER                   PIC X(30).                      09140000
090200****FIRST ALT NIIN ENTRY OF 2ND PRINT LINE**********************09150000
090300      05 D016-2ND                 PIC X(9).                       09160000
090400      05 FILLER                   PIC XXX.                        09170000
090500      05 D016A-2ND                PIC 99.                         09180000
090600      05 D016B-2ND                PIC X.                          09190000
090700      05 FILLER                   PIC X(5).                       09200000
090800***SECOND ALT NIIN ENTRY OF 2ND PRINT LINE**********************09210000
090900      05 D016-2-2ND               PIC X(9).                       09220000
091000      05 FILLER                   PIC XXX.                        09230000
091100      05 D016A-2-2ND              PIC 99.                         09240000
091200      05 D016B-2-2ND              PIC X.                          09250000
091300      05 FILLER                   PIC X(5).                       09260000
091400***THIRD ALT NIIN ENTRY OF 2ND PRINT LINE**********************09270000
091500      05 D016-3-2ND               PIC X(9).                       09280000
091600      05 FILLER                   PIC XXX.                        09290000
091700      05 D016A-3-2ND              PIC 99.                         09300000
091800      05 D016B-3-2ND              PIC X.                          09310000
091900      05 FILLER                   PIC X(5).                       09320000
092000***FOURTH ALT NIIN ENTRY OF 2ND PRINT LINE**********************09330000
092100      05 D016-4-2ND               PIC X(9).                       09340000
092200      05 FILLER                   PIC XXX.                        09350000
092300      05 D016A-4-2ND              PIC 99.                         09360000
092400      05 D016B-4-2ND              PIC X.                          09370000
092500      05 FILLER                   PIC X(5).                       09380000
092600***FIFTH ALT NIIN ENTRY OF 2ND PRINT LINE***********************09390000
092700      05 D016-5-2ND               PIC X(9).                       09400000
092800      05 FILLER                   PIC XXX.                        09410000
092900      05 D016A-5-2ND              PIC 99.                         09420000
093000      05 D016B-5-2ND              PIC X.                          09430000
093100      05 FILLER                   PIC X(30).                      09440000
093200****FIRST ALT NIIN ENTRY OF 3RD PRINT LINE**********************09450000
093300      05 D016-3RD                 PIC X(9).                       09460000
093400      05 FILLER                   PIC XXX.                        09470000
093500      05 D016A-3RD                PIC 99.                         09480000
093600      05 D016B-3RD                PIC X.                          09490000
093700      05 FILLER                   PIC X(5).                       09500000
093800***SECOND ALT NIIN ENTRY OF 3RD PRINT LINE**********************09510000
093900      05 D016-2-3RD               PIC X(9).                       09520000
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094000      05 FILLER                      PIC XXX.                          09530000
094100      05 D016A-2-3RD                 PIC 99.                           09540000
094200      05 D016B-2-3RD                 PIC X.                            09550000
094300      05 FILLER                      PIC X(5).                         09560000
094400***THIRD ALT NIIN ENTRY OF 3RD PRINT LINE*************************09570000
094500      05 D016-3-3RD                  PIC X(9).                         09580000
094600      05 FILLER                      PIC XXX.                          09590000
094700      05 D016A-3-3RD                 PIC 99.                           09600000
094800      05 D016B-3-3RD                 PIC X.                            09610000
094900      05 FILLER                      PIC X(5).                         09620000
095000***FOURTH ALT NIIN ENTRY OF 3RD PRINT LINE************************09630000
095100      05 D016-4-3RD                  PIC X(9).                         09640000
095200      05 FILLER                      PIC XXX.                          09650000
095300      05 D016A-4-3RD                 PIC 99.                           09660000
095400      05 D016B-4-3RD                 PIC X.                            09670000
095500      05 FILLER                      PIC X(5).                         09680000
095600***FIFTH ALT NIIN ENTRY OF 3RD PRINT LINE*************************09690000
095700      05 D016-5-3RD                  PIC X(9).                         09700000
095800      05 FILLER                      PIC XXX.                          09710000
095900      05 D016A-5-3RD                 PIC 99.                           09720000
096000      05 D016B-5-3RD                 PIC X.                            09730000
096100      05 FILLER                      PIC X(18).                        09740000
096200************************************************************************09750000
096300 01  WS-R-REC.                                                         09760000
096400      05 IM-HDR-R.                                                     09770000
096500         10 IM-FILE-ID-R             PIC X(5).                         09780000
096600         10 IM-REQR-ID-R             PIC X(7).                         09790000
096700         10 HDR-LRC-R                PIC X(3).                         09800000
096800         10 HDR-FSC-R                PIC X(4).                         09810000
096900         10 HDR-F-REL-R              PIC X.                            09820000
097000         10 HDR-NIIN-R               PIC X(9).                         09830000
097100         10 PRINT-CODE-R             PIC X.                            09840000
097200         10 SEQ-DATA-R               PIC X(20).                        09850000
097300***FIRST APPL ENTRY OF 1ST PRINT LINE*****************************09860000
097400      05 D009-1ST                    PIC X(10).                        09870000
097500      05 FILLER                      PIC XX.                           09880000
097600      05 D009A-1ST                   PIC X.                            09890000
097700      05 FILLER                      PIC X.                            09900000
097800      05 D011-1ST                    PIC 9(6).                         09910000
097900      05 FILLER                      PIC X(4).                         09920000
098000      05 F018-1ST                    PIC 999.                          09930000
098100      05 FILLER                      PIC X.                            09940000
098200      05 D013-1ST                    PIC XX.                           09950000
098300      05 FILLER                      PIC X(10).                        09960000
098400***SECOND APPL ENTRY OF 1ST PRINT LINE****************************09970000
098500      05 D009-2-1ST                  PIC X(10).                        09980000
098600      05 FILLER                      PIC XX.                           09990000
098700      05 D009A-2-1ST                 PIC X.                            10000000
098800      05 FILLER                      PIC X.                            10010000
098900      05 D011-2-1ST                  PIC 9(6).                         10020000
099000      05 FILLER                      PIC X(4).                         10030000
099100      05 F018-2-1ST                  PIC 999.                          10040000
099200      05 FILLER                      PIC X.                            10050000
099300      05 D013-2-1ST                  PIC XX.                           10060000
099400      05 FILLER                      PIC X(10).                        10070000
099500***THIRD APPL ENTRY OF 1ST PRINT LINE*****************************10080000
099600      05 D009-3-1ST                  PIC X(10).                        10090000
099700      05 FILLER                      PIC XX.                           10100000
099800      05 D009A-3-1ST                 PIC X.                            10110000
099900      05 FILLER                      PIC X.                            10120000
100000      05 D011-3-1ST                  PIC 9(6).                         10130000
100100      05 FILLER                      PIC X(4).                         10140000
100200      05 F018-3-1ST                  PIC 999.                          10150000
100300      05 FILLER                      PIC X.                            10160000
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100400     05 D013-3-1ST                PIC XX.                          10170000
100500     05 FILLER                    PIC X(15).                       10180000
100600***FIRST APPL ENTRY OF 2ND PRINT LINE*****************************10190000
100700     05 D009-2ND                   PIC X(10).                       10200000
100800     05 FILLER                    PIC XX.                          10210000
100900     05 D009A-2ND                  PIC X.                           10220000
101000     05 FILLER                    PIC X.                           10230000
101100     05 D011-2ND                   PIC 9(6).                        10240000
101200     05 FILLER                    PIC X(4).                        10250000
101300     05 F018-2ND                   PIC 999.                         10260000
101400     05 FILLER                    PIC X.                           10270000
101500     05 D013-2ND                   PIC XX.                          10280000
101600     05 FILLER                    PIC X(10).                       10290000
101700***SECOND APPL ENTRY OF 2ND PRINT LINE****************************10300000
101800     05 D009-2-2ND                 PIC X(10).                       10310000
101900     05 FILLER                    PIC XX.                          10320000
102000     05 D009A-2-2ND                PIC X.                           10330000
102100     05 FILLER                    PIC X.                           10340000
102200     05 D011-2-2ND                 PIC 9(6).                        10350000
102300     05 FILLER                    PIC X(4).                        10360000
102400     05 F018-2-2ND                 PIC 999.                         10370000
102500     05 FILLER                    PIC X.                           10380000
102600     05 D013-2-2ND                 PIC XX.                          10390000
102700     05 FILLER                    PIC X(10).                       10400000
102800***THIRD APPL ENTRY OF 2ND PRINT LINE*****************************10410000
102900     05 D009-3-2ND                 PIC X(10).                       10420000
103000     05 FILLER                    PIC XX.                          10430000
103100     05 D009A-3-2ND                PIC X.                           10440000
103200     05 FILLER                    PIC X.                           10450000
103300     05 D011-3-2ND                 PIC 9(6).                        10460000
103400     05 FILLER                    PIC X(4).                        10470000
103500     05 F018-3-2ND                 PIC 999.                         10480000
103600     05 FILLER                    PIC X.                           10490000
103700     05 D013-3-2ND                 PIC XX.                          10500000
103800     05 FILLER                    PIC X(15).                       10510000
103900***FIRST APPL ENTRY OF 3RD PRINT LINE*****************************10520000
104000     05 D009-3RD                   PIC X(10).                       10530000
104100     05 FILLER                    PIC XX.                          10540000
104200     05 D009A-3RD                  PIC X.                           10550000
104300     05 FILLER                    PIC X.                           10560000
104400     05 D011-3RD                   PIC 9(6).                        10570000
104500     05 FILLER                    PIC X(4).                        10580000
104600     05 F018-3RD                   PIC 999.                         10590000
104700     05 FILLER                    PIC X.                           10600000
104800     05 D013-3RD                   PIC XX.                          10610000
104900     05 FILLER                    PIC X(10).                       10620000
105000***SECOND APPL ENTRY OF 3RD PRINT LINE****************************10630000
105100     05 D009-2-3RD                 PIC X(10).                       10640000
105200     05 FILLER                    PIC XX.                          10650000
105300     05 D009A-2-3RD                PIC X.                           10660000
105400     05 FILLER                    PIC X.                           10670000
105500     05 D011-2-3RD                 PIC 9(6).                        10680000
105600     05 FILLER                    PIC X(4).                        10690000
105700     05 F018-2-3RD                 PIC 999.                         10700000
105800     05 FILLER                    PIC X.                           10710000
105900     05 D013-2-3RD                 PIC XX.                          10720000
106000     05 FILLER                    PIC X(10).                       10730000
106100***THIRD APPL ENTRY OF 3RD PRINT LINE*****************************10740000
106200     05 D009-3-3RD                 PIC X(10).                       10750000
106300     05 FILLER                    PIC XX.                          10760000
106400     05 D009A-3-3RD                PIC X.                           10770000
106500     05 FILLER                    PIC X.                           10780000
106600     05 D011-3-3RD                 PIC 9(6).                        10790000
106700     05 FILLER                    PIC X(4).                        10800000
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106800     05 F018-3-3RD              PIC 999.                        10810000
106900     05 FILLER                  PIC X.                          10820000
107000     05 D013-3-3RD              PIC XX.                         10830000
107100     05 FILLER                  PIC X(15).                      10840000
107200*****************************************************************10850000
107300*****************************************************************10860000
107400 01  WS-T-REC.                                                   10870000
107500     05  IM-HDR-T.                                               10880000
107600         10  IM-FILE-ID-T        PIC X(5).                       10890000
107700         10  IM-REQR-ID-T        PIC X(7).                       10900000
107800         10  HDR-LRC-T           PIC XXX.                        10910000
107900         10  HDR-FGC-T           PIC X(4).                       10920000
108000         10  HDR-F-REL-T         PIC X.                          10930000
108100         10  HDR-NIIN-T          PIC X(9).                       10940000
108200         10  PRINT-CODE-T        PIC X.                          10950000
108300         10  SEQ-DATA-T          PIC X(20).                      10960000
108400     05  BB-K002-K020-IN         PIC X(15).                      10970000
108500     05  FILLER                  PIC X.                          10980000
108600     05  BB-K036-IN              PIC 9(5).                       10990000
108700     05  FILLER                  PIC X.                          11000000
108800     05  BB-K024-IN              PIC XXX.                        11010000
108900     05  FILLER                  PIC X.                          11020000
109000     05  BB-K022-IN              PIC XX.                         11030000
109100     05  FILLER                  PIC X.                          11040000
109200     05  BB-K025-IN              PIC 99.                         11050000
109300     05  FILLER                  PIC XX.                         11060000
109400     05  DO-NO-SUB-IND-IN        PIC X.                          11070000
109500     05  FILLER                  PIC X.                          11080000
109600     05  BB-K026-IN              PIC XX.                         11090000
109700     05  FILLER                  PIC X(338).                     11100000
109800*****************************************************************11110000
109900*****************************************************************11120000
110000 01  WS-V-REC.                                                   11130000
110100     05  IM-HDR-V.                                               11140000
110200         10  IM-FILE-ID-V        PIC X(5).                       11150000
110300         10  IM-REQR-ID-V        PIC X(7).                       11160000
110400         10  HDR-LRC-V           PIC XXX.                        11170000
110500         10  HDR-FGC-V           PIC X(4).                       11180000
110600         10  HDR-F-REL-V         PIC X.                          11190000
110700         10  HDR-NIIN-V          PIC X(9).                       11200000
110800         10  PRINT-CODE-V        PIC X.                          11210000
110900         10  SEQ-DATA-V          PIC X(20).                      11220000
111000     05  C035-IN-1               PIC X(5).                       11230000
111100     05  C038-IN-1               PIC X.                          11240000
111200     05  FILLER                  PIC X.                          11250000
111300     05  D001-IN-1               PIC X(32).                      11260000
111400     05  FILLER                  PIC X.                          11270000
111500     05  C035-IN-2               PIC X(5).                       11280000
111600     05  C038-IN-2               PIC X.                          11290000
111700     05  FILLER                  PIC X.                          11300000
111800     05  D001-IN-2               PIC X(32).                      11310000
111900     05  FILLER                  PIC X.                          11320000
112000     05  C035-IN-3               PIC X(5).                       11330000
112100     05  C038-IN-3               PIC X.                          11340000
112200     05  FILLER                  PIC X.                          11350000
112300     05  D001-IN-3               PIC X(32).                      11360000
112400     05  FILLER                  PIC X(6).                       11370000
112500     05  C035-IN-4               PIC X(5).                       11380000
112600     05  C038-IN-4               PIC X.                          11390000
112700     05  FILLER                  PIC X.                          11400000
112800     05  D001-IN-4               PIC X(32).                      11410000
112900     05  FILLER                  PIC X.                          11420000
113000     05  C035-IN-5               PIC X(5).                       11430000
113100     05  C038-IN-5               PIC X.                          11440000
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113200     05  FILLER                  PIC X.                          11450000
113300     05  D001-IN-5               PIC X(32).                      11460000
113400     05  FILLER                  PIC X.                          11470000
113500     05  C035-IN-6               PIC X(5).                       11480000
113600     05  C038-IN-6               PIC X.                          11490000
113700     05  FILLER                  PIC X.                          11500000
113800     05  D001-IN-6               PIC X(32).                      11510000
113900     05  FILLER                  PIC X(6).                       11520000
114000     05  C035-IN-7               PIC X(5).                       11530000
114100     05  C038-IN-7               PIC X.                          11540000
114200     05  FILLER                  PIC X.                          11550000
114300     05  D001-IN-7               PIC X(32).                      11560000
114400     05  FILLER                  PIC X.                          11570000
114500     05  C035-IN-8               PIC X(5).                       11580000
114600     05  C038-IN-8               PIC X.                          11590000
114700     05  FILLER                  PIC X.                          11600000
114800     05  D001-IN-8               PIC X(32).                      11610000
114900     05  FILLER                  PIC X.                          11620000
115000     05  C035-IN-9               PIC X(5).                       11630000
115100     05  C038-IN-9               PIC X.                          11640000
115200     05  FILLER                  PIC X.                          11650000
115300     05  D001-IN-9               PIC X(32).                      11660000
115400     05  FILLER                  PIC X(6).                       11670000
115500*****************************************************************11680000
115600*****************************************************************11690000
115700 01  WS-Z-REC.                                                   11700000
115800     05  IM-HDR-Z.                                               11710000
115900         10  IM-FILE-ID-Z        PIC X(5).                       11720000
116000         10  IM-REQR-ID-Z        PIC X(7).                       11730000
116100         10  HDR-LRC-Z           PIC XXX.                        11740000
116200         10  HDR-FGC-Z           PIC X(4).                       11750000
116300         10  HDR-F-REL-Z         PIC X.                          11760000
116400         10  HDR-NIIN-Z          PIC X(9).                       11770000
116500         10  PRINT-CODE-Z        PIC X.                          11780000
116600         10  SEQ-DATA-Z          PIC X(20).                      11790000
116700     05  FILLER                  PIC XXX.                        11800000
116800     05  D093-IN                 PIC X(4).                       11810000
116900     05  FILLER                  PIC X(7).                       11820000
117000     05  D095-IN-1               PIC X(4).                       11830000
117100     05  FILLER                  PIC X(6).                       11840000
117200     05  D095-IN-2               PIC X(4).                       11850000
117300     05  FILLER                  PIC X(6).                       11860000
117400     05  D095-IN-3               PIC X(4).                       11870000
117500     05  FILLER                  PIC X(6).                       11880000
117600     05  D095-IN-4               PIC X(4).                       11890000
117700     05  FILLER                  PIC X(6).                       11900000
117800     05  D095-IN-5               PIC X(4).                       11910000
117900     05  FILLER                  PIC X(6).                       11920000
118000     05  D095-IN-6               PIC X(4).                       11930000
118100     05  FILLER                  PIC X(6).                       11940000
118200     05  D095-IN-7               PIC X(4).                       11950000
118300     05  FILLER                  PIC X(6).                       11960000
118400     05  D095-IN-8               PIC X(4).                       11970000
118500     05  FILLER                  PIC X(6).                       11980000
118600     05  D095-IN-9               PIC X(4).                       11990000
118700     05  FILLER                  PIC X(6).                       12000000
118800     05  D095-IN-10              PIC X(4).                       12010000
118900     05  FILLER                  PIC X(263).                     12020000
119000*****************************************************************12030000
119100 01  WS-Z2-REC.                                                  12040000
119200     05  IM-HDR-Z2.                                              12050000
119300         10 IM-FILE-ID-Z2        PIC X(5).                       12060000
119400         10 IM-REQR-ID-Z2        PIC X(7).                       12070000
119500         10 HDR-LRC-Z2           PIC XXX.                        12080000
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119600          10 HDR-FGC-Z2                PIC X(4).                  12090000
119700          10 HDR-F-REL-Z2               PIC X.                     12100000
119800          10 HDR-NIIN-Z2                PIC X(9).                  12110000
119900          10 PRINT-CODE-Z2              PIC X.                     12120000
120000          10 SEQ-DATA-Z2                PIC X(20).                 12130000
120100      05  FILLER                        PIC XXX.                   12140000
120200      05  D093-IN-Z2-1                  PIC X(4).                  12150000
120300      05  FILLER                        PIC X(5).                  12160000
120400      05  D094-IN-Z2-1                  PIC X(8).                  12170000
120500      05  FILLER                        PIC XX.                    12180000
120600      05  D094-IN-Z2-2                  PIC X(8).                  12190000
120700      05  FILLER                        PIC XX.                    12200000
120800      05  D094-IN-Z2-3                  PIC X(8).                  12210000
120900      05  FILLER                        PIC XX.                    12220000
121000      05  D094-IN-Z2-4                  PIC X(8).                  12230000
121100      05  FILLER                        PIC XX.                    12240000
121200      05  D094-IN-Z2-5                  PIC X(8).                  12250000
121300      05  FILLER                        PIC XX.                    12260000
121400      05  D094-IN-Z2-6                  PIC X(8).                  12270000
121500      05  FILLER                        PIC XX.                    12280000
121600      05  D094-IN-Z2-7                  PIC X(8).                  12290000
121700      05  FILLER                        PIC XX.                    12300000
121800      05  D094-IN-Z2-8                  PIC X(8).                  12310000
121900      05  FILLER                        PIC XX.                    12320000
122000      05  D094-IN-Z2-9                  PIC X(8).                  12330000
122100      05  FILLER                        PIC XX.                    12340000
122200      05  D094-IN-Z2-10                 PIC X(8).                  12350000
122300      05  FILLER                        PIC XX.                    12360000
122400      05  FILLER                        PIC X(16).                 12370000
122500      05  D093-IN-Z2-2                  PIC X(4).                  12380000
122600      05  FILLER                        PIC X(5).                  12390000
122700      05  FILLER                        PIC XX.                    12400000
122800      05  D095-IN-Z2-1                  PIC X(4).                  12410000
122900      05  FILLER                        PIC X(6).                  12420000
123000      05  D095-IN-Z2-2                  PIC X(4).                  12430000
123100      05  FILLER                        PIC X(6).                  12440000
123200      05  D095-IN-Z2-3                  PIC X(4).                  12450000
123300      05  FILLER                        PIC X(6).                  12460000
123400      05  D095-IN-Z2-4                  PIC X(4).                  12470000
123500      05  FILLER                        PIC X(6).                  12480000
123600      05  D095-IN-Z2-5                  PIC X(4).                  12490000
123700      05  FILLER                        PIC X(6).                  12500000
123800      05  D095-IN-Z2-6                  PIC X(4).                  12510000
123900      05  FILLER                        PIC X(6).                  12520000
124000      05  D095-IN-Z2-7                  PIC X(4).                  12530000
124100      05  FILLER                        PIC X(6).                  12540000
124200      05  D095-IN-Z2-8                  PIC X(4).                  12550000
124300      05  FILLER                        PIC X(6).                  12560000
124400      05  D095-IN-Z2-9                  PIC X(4).                  12570000
124500      05  FILLER                        PIC X(6).                  12580000
124600      05  D095-IN-Z2-10                 PIC X(4).                  12590000
124700      05  FILLER                        PIC X(138).                12600000
 124800*****************************************************************124900**
           OUTPUT   RECORDS                                **12620000
125000*****************************************************************12630000
125100 01  OUT-REC-1.                                                   12640000
125200      05  D046D-1                      PIC X(9).                  12650000
125300      05  PRINT-CODE-1                 PIC 99 VALUE 01.           12660000
125400      05  B045-1                       PIC 9(5).                  12670000
125500      05  C016-1                       PIC X.                     12680000
125600      05  C012-1                       PIC 9(5).                  12690000
125700      05  B067E-1                      PIC X.                     12700000
125800      05  B007-1                       PIC X.                     12710000
125900      05  C006-1                       PIC XX.                    12720000
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126000      05  B055-1                  PIC 9(6).99.                    12730000
126100      05  C004-1                  PIC X(22).                      12740000
126200      05  B002B-1                 PIC XXX.                        12750000
126300      05  C001A-1                 PIC X(4).                       12760000
126400      05  C001B-1                 PIC X.                          12770000
126500      05  C003-1                  PIC XX.                         12780000
126600      05  C003A-1                 PIC X.                          12790000
126700      05  C042-1                  PIC X(4).                       12800000
126800      05  D010-A-D-1              PIC X(5).                       12810000
126900      05  C028-1                  PIC X.                          12820000
127000      05  D014A-1                 PIC XX.                         12830000
127100      05  C009-1                  PIC XX.                         12840000
127200      05  B001-1                  PIC X(5).                       12850000
127300      05  B011A-1                 PIC 99.99.                      12860000
127400      05  D025DEF-E089-1          PIC X(4).                       12870000
127500      05  C003B-1                 PIC XX.                         12880000
127600      05  B053-1                  PIC 9(6).99.                    12890000
127700      05  FILLER                  PIC X(36).                      12900000
127800**********************************************************************12910000
127900 01  OUT-REC-2.                                                     12920000
128000      05  D046D-2                 PIC X(9).                       12930000
128100      05  PRINT-CODE-2            PIC 99 VALUE 02.                12940000
128200      05  A005-2.                                                 12950000
128300          10  A005-2-M            PIC X.                          12960000
128400          10  A005-2-N            PIC 9(7).                       12970000
128500      05  A005A-2.                                                12980000
128600          10  A005A-2-M           PIC X.                          12990000
128700          10  A005A-2-N           PIC 9(7).                       13000000
128800      05  B074-2.                                                 13010000
128900          10 B074-2-M             PIC X.                          13020000
129000          10 B074-2-N             PIC 9(5).9.                     13030000
129100      05  A011-2                  PIC 9(8).                       13040000
129200      05  F007-2                  PIC 9.99.                       13050000
129300      05  D008-2                  PIC X(10).                      13060000
129400      05  FILLER                  PIC X(88).                      13070000
129500**********************************************************************13080000
129600 01  OUT-REC-3.                                                     13090000
129700      05  D046D-3                 PIC X(9).                       13100000
129800      05  PRINT-CODE-3            PIC 99 VALUE 03.                13110000
129900      05  B012-B012C-3            PIC 9.99.                       13120000
130000      05  B012F-3                 PIC 9.99.                       13130000
130100      05  F009-3                  PIC 9.99.                       13140000
130200      05  D012-3                  PIC XX.                         13150000
130300      05  D013C-3                 PIC X.                          13160000
130400      05  D120-3                  PIC XX.                         13170000
130500      05  B059-3                  PIC 9(7).99.                    13180000
130600      05  FILLER                  PIC X(106).                     13190000
130700**********************************************************************13200000
130800 01  OUT-REC-4.                                                     13210000
130900      05  D046D-4                 PIC X(9).                       13220000
131000      05  PRINT-CODE-4            PIC 99 VALUE 04.                13230000
131100**********************ACTIVITY ENTRY 1*****************************13240000
131200      05  A001-4-1                PIC XXX.                        13250000
131300      05  B046A-4-1               PIC 9(5).                       13260000
131400      05  A012A-4-1               PIC X.                          13270000
131500      05  PL-PROG-OST-4-1.                                        13280000
131600        10  PL-PROG-4-1-M         PIC X.                          13290000
131700        10  PL-PROG-4-1-N         PIC 9(7).                       13300000
131800      05  C003E-4-1               PIC X.                          13310000
131900      05  A012-4-1.                                               13320000
132000          10  A012-4-1-M          PIC X.                          13330000
132100          10  A012-4-1-N          PIC 9(7).                       13340000
132200      05  A021A-4-1.                                              13350000
132300          10  A021A-4-1-M         PIC X.                          13360000
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132400          10  A021A-4-1-N          PIC 9(6).                        13370000
132500      05  A008B-4-1.                                                13380000
132600          10  A008B-4-1-M          PIC X.                           13390000
132700          10  A008B-4-1-N          PIC 9(7).                        13400000
132800      05  FILLER                   PIC X(88).                       13410000
132900*****************************************************************13420000
133000 01  OUT-REC-5.                                                     13430000
133100      05  D046D-5                  PIC X(9).                        13440000
133200      05  PRINT-CODE-5             PIC 99 VALUE 05.                 13450000
133300      05  K001-5                   PIC XXX.                         13460000
133400      05  K002-L001-5              PIC X(15).                       13470000
133500      05  L001A-5                  PIC X(4).                        13480000
133600      05  L022-5                   PIC X(6).                        13490000
133700      05  A001-5                   PIC XXX.                         13500000
133800      05  A001-5-2ND               PIC XXX.                         13510000
133900      05  ORIG-QTY-5               PIC 9(7).                        13520000
134000      05  C003E-5                  PIC X.                           13530000
134100      05  L009-5                   PIC 9(5).                        13540000
134200      05  L034-5.                                                   13550000
134300          10  L034-5-M             PIC X.                           13560000
134400          10  L034-5-N             PIC 9(6).                        13570000
134500      05  A012A-5                  PIC X.                           13580000
134600      05  A012A-5-2ND              PIC X.                           13590000
134700      05  FILLER                   PIC X(74).                       13600000
134800*****************************************************************13610000
134900*****************************************************************13620000
135000 01  OUT-REC-6.                                                     13630000
135100      05  D046D-6                  PIC X(9).                        13640000
135200      05  PRINT-CODE-6             PIC 99 VALUE 06.                 13650000
135300      05  K001-6                   PIC XXX.                         13660000
135400      05  K002-6                   PIC X(14).                       13670000
135500      05  A012A-6                  PIC X.                           13680000
135600      05  K017-6                   PIC X(6).                        13690000
135700      05  K006-6                   PIC 9(7).                        13700000
135800      05  K018-6                   PIC 9(5).                        13710000
135900      05  K024-6                   PIC XXX.                         13720000
136000      05  FILLER                   PIC X(90).                       13730000
136100*****************************************************************13740000
136200 01  OUT-REC-7.                                                     13750000
136300      05  D046D-7                  PIC X(9).                        13760000
136400      05  PRINT-CODE-7             PIC 99 VALUE 07.                 13770000
136500      05  D016-7                   PIC X(9).                        13780000
136600      05  D016A-7                  PIC 99.                          13790000
136700      05  D016-7-2                 PIC X(9).                        13800000
136800      05  D016A-7-2                PIC 99.                          13810000
136900      05  D016-7-3                 PIC X(9).                        13820000
137000      05  D016A-7-3                PIC 99.                          13830000
137100      05  D016-7-4                 PIC X(9).                        13840000
137200      05  D016A-7-4                PIC 99.                          13850000
137300      05  D016-7-5                 PIC X(9).                        13860000
137400      05  D016A-7-5                PIC 99.                          13870000
137500      05  D016-7-6                 PIC X(9).                        13880000
137600      05  D016A-7-6                PIC 99.                          13890000
137700      05  D016-7-7                 PIC X(9).                        13900000
137800      05  D016A-7-7                PIC 99.                          13910000
137900      05  D016-7-8                 PIC X(9).                        13920000
138000      05  D016A-7-8                PIC 99.                          13930000
138100      05  D016-7-9                 PIC X(9).                        13940000
138200      05  D016A-7-9                PIC 99.                          13950000
138300      05  D016-7-10                PIC X(9).                        13960000
  138400      05  D016A-7-10               PIC 99.                      13970000
138500      05  FILLER                   PIC X(19).                       13980000
138600*****************************************************************13990000
138700 01  OUT-REC-8.                                                     14000000
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138800      05  D046D-8                PIC X(9).                        14010000
138900      05  PRINT-CODE-8           PIC 99 VALUE 08.                 14020000
139000                                                                   14030000
139100*******************APPLICATION ENTRY 1*****************************14040000
139200      05  D009-8-1               PIC X(10).                       14050000
139300      05  D011-8-1               PIC 9(6).                        14060000
139400      05  F018-8-1               PIC 999.                         14070000
139500      05  D013-8-1               PIC XX.                          14080000
139600                                                                   14090000
139700*******************APPLICATION ENTRY 2*****************************14100000
139800      05  D009-8-2               PIC X(10).                       14110000
139900      05  D011-8-2               PIC 9(6).                        14120000
140000      05  F018-8-2               PIC 999.                         14130000
140100      05  D013-8-2               PIC XX.                          14140000
140200                                                                   14150000
140300*******************APPLICATION ENTRY 3*****************************14160000
140400      05  D009-8-3               PIC X(10).                       14170000
140500      05  D011-8-3               PIC 9(6).                        14180000
140600      05  F018-8-3               PIC 999.                         14190000
140700      05  D013-8-3               PIC XX.                          14200000
140800                                                                   14210000
140900*******************APPLICATION ENTRY 4*****************************14220000
141000      05  D009-8-4               PIC X(10).                       14230000
141100      05  D011-8-4               PIC 9(6).                        14240000
141200      05  F018-8-4               PIC 999.                         14250000
141300      05  D013-8-4               PIC XX.                          14260000
141400                                                                   14270000
141500*******************APPLICATION ENTRY 5*****************************14280000
141600      05  D009-8-5               PIC X(10).                       14290000
141700      05  D011-8-5               PIC 9(6).                        14300000
141800      05  F018-8-5               PIC 999.                         14310000
141900      05  D013-8-5               PIC XX.                          14320000
142000                                                                   14330000
142100*******************APPLICATION ENTRY 6*****************************14340000
142200      05  D009-8-6               PIC X(10).                       14350000
142300      05  D011-8-6               PIC 9(6).                        14360000
142400      05  F018-8-6               PIC 999.                         14370000
142500      05  D013-8-6               PIC XX.                          14380000
142600*****************************************************************14390000
142700      05  FILLER                 PIC X(3).                        14400000
142800*****************************************************************14410000
142900*****************************************************************14420000
143000 01  OUT-REC-9.                                                   14430000
143100      05  D046D-9                PIC X(9).                        14440000
143200      05  PRINT-CODE-9           PIC 99 VALUE 09.                 14450000
143300      05  K002-K020-9            PIC X(15).                       14460000
143400      05  K036-9                 PIC 9(5).                        14470000
143500      05  K024-9                 PIC XXX.                         14480000
143600      05  K022-9                 PIC XX.                          14490000
143700      05  K025-9                 PIC 99.                          14500000
143800      05  K026-9                 PIC XX.                          14510000
143900      05  FILLER                 PIC X(100).                      14520000
144000*****************************************************************14530000
144100                                                                   14540000
144200 01  OUT-REC-10.                                                  14550000
144300      05  D046D-10               PIC X(9).                        14560000
144400      05  PRINT-CODE-10          PIC 99 VALUE 10.                 14570000
144500                                                                   14580000
144600*********************1ST REFERENCE ENTRY***************************14590000
144700                                                                   14600000
144800      05  C035-B-C-10-1          PIC X(5).                        14610000
144900      05  C038-10-1              PIC X.                           14620000
145000      05  D001-C004C-10-1        PIC X(32).                       14630000
145100                                                                   14640000
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145200**********************2ND REFERENCE ENTRY**********************14650000
145300                                                               14660000
145400      05  C035-B-C-10-2           PIC X(5).                   14670000
145500      05  C038-10-2               PIC X.                      14680000
145600      05  D001-C004C-10-2         PIC X(32).                  14690000
145700                                                               14700000
145800                                                               14710000
145900**********************3RD REFERENCE ENTRY**********************14720000
146000                                                               14730000
146100      05  C035-B-C-10-3           PIC X(5).                   14740000
146200      05  C038-10-3               PIC X.                      14750000
146300      05  D001-C004C-10-3         PIC X(32).                  14760000
146400                                                               14770000
146500*******************************************************************14780000
146600                                                               14790000
146700      05 FILLER                   PIC X(15).                  14800000
146800*******************************************************************14810000
146900 01  OUT-REC-11.                                               14820000
147000      05  D046D-11                PIC X(9).                   14830000
147100      05  PRINT-CODE-11           PIC 99 VALUE 11.            14840000
147200      05  D093-11                 PIC X(4).                   14850000
147300      05  D095-11-1               PIC X(4).                   14860000
147400      05  D095-11-2               PIC X(4).                   14870000
147500      05  D095-11-3               PIC X(4).                   14880000
147600      05  D095-11-4               PIC X(4).                   14890000
147700      05  D095-11-5               PIC X(4).                   14900000
147800      05  D095-11-6               PIC X(4).                   14910000
147900      05  D095-11-7               PIC X(4).                   14920000
148000      05  D095-11-8               PIC X(4).                   14930000
148100      05  D095-11-9               PIC X(4).                   14940000
148200      05  D095-11-10              PIC X(4).                   14950000
148300      05  FILLER                  PIC X(85).                  14960000
148400*******************************************************************14970000
148500 01  OUT-REC-12.                                               14980000
148600      05  D046D-12                PIC X(9).                   14990000
148700      05  PRINT-CODE-12           PIC 99 VALUE 12.            15000000
148800      05  D093-12-1               PIC X(4).                   15010000
148900      05  D094-12-1               PIC X(8).                   15020000
149000      05  D094-12-2               PIC X(8).                   15030000
149100      05  D094-12-3               PIC X(8).                   15040000
149200      05  D094-12-4               PIC X(8).                   15050000
149300      05  D094-12-5               PIC X(8).                   15060000
149400      05  D094-12-6               PIC X(8).                   15070000
149500      05  D094-12-7               PIC X(8).                   15080000
149600      05  D094-12-8               PIC X(8).                   15090000
149700      05  D094-12-9               PIC X(8).                   15100000
149800      05  D094-12-10              PIC X(8).                   15110000
149900      05  D093-12-2               PIC X(4).                   15120000
150000      05  D095-12-1               PIC X(4).                   15130000
150100      05  D095-12-2               PIC X(4).                   15140000
150200      05  D095-12-3               PIC X(4).                   15150000
150300      05  D095-12-4               PIC X(4).                   15160000
150400      05  D095-12-5               PIC X(4).                   15170000
150500      05  D095-12-6               PIC X(4).                   15180000
150600      05  D095-12-7               PIC X(4).                   15190000
150700      05  D095-12-8               PIC X(4).                   15200000
150800      05  D095-12-9               PIC X(4).                   15210000
150900      05  D095-12-10              PIC X(4).                   15220000
151000      05  FILLER                  PIC X.                      15230000
142800*******************************************************************15240011
       01  OUT-REC-13.                                               15250012
           05  D046D-13                PIC X(9).                   15260012
           05  PRINT-CODE-13           PIC 99.                     15270012
           05  A001-13                 PIC XXX.                    15280012
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           05  A012A-13                PIC X.                          15290012
           05  A014F-13                PIC X.                          15300012
           05  K006-13                 PIC 9(7).                       15310012
           05  FILLER                  PIC X(117).                     15320012
      ******************************************************************15330012
151100******************************************************************15340000
151200**   WS-NEG-ONE IS USED TO CREATE NEGATIVE NUMBERS              **15350000
151300******************************************************************15360000
151400 01  WS-NEG-ONE                  PIC S9  VALUE -1.               15370000
151500                                                                  15380000
151600******************************************************************15390000
151700**  THESE COUNTERS ARE USED TO HOLD DOLLARS\CENTS AND            **15400000
151800**  NUMBERS\DECIMALS FOR REDEFINING INTO A COMPUTATION FORMAT    **15410000
151900******************************************************************15420000
152000 01  WS-FORMAT-COUNTERS.                                         15430000
152100     05  HLD-B055-PRICE.                                         15440000
152200         10  HLD-B055-DOLL       PIC 9(6).                       15450000
152300         10  HLD-B055-CENTS      PIC 99.                         15460000
152400     05 PRICE-B055-HLD REDEFINES HLD-B055-PRICE                  15470000
152500                                 PIC 9(6)V99.                    15480000
152600     05  HLD-C008C-DEC           PIC 999.                        15490000
152700     05  DEC-C008C-HLD REDEFINES HLD-C008C-DEC                   15500000
152800                                 PIC V999.                       15510000
152900     05  HLD-B012-COMB.                                          15520000
153000         10  HLD-B012-NUM        PIC 9.                          15530000
153100         10  HLD-B012-DEC        PIC 99.                         15540000
153200     05  COMB-B012-HLD REDEFINES HLD-B012-COMB                   15550000
153300                                 PIC 9V99.                       15560000
153400     05  HLD-B012F-COMB.                                         15570000
153500         10  HLD-B012F-NUM       PIC 9.                          15580000
153600         10  HLD-B012F-DEC       PIC 99.                         15590000
153700     05  COMB-B012F-HLD REDEFINES HLD-B012F-COMB                 15600000
153800                                 PIC 9V99.                       15610000
153900     05  HLD-C023-COMB.                                          15620000
154000         10  HLD-C023-NUM        PIC 9(4).                       15630000
154100         10  HLD-C023-DEC        PIC 99.                         15640000
154200     05  COMB-C023-HLD REDEFINES HLD-C023-COMB                   15650000
154300                                 PIC 9(4)V99.                    15660000
154400     05  HLD-C024-COMB.                                          15670000
154500         10  HLD-C024-NUM        PIC 9(4).                       15680000
154600         10  HLD-C024-DEC        PIC 99.                         15690000
154700     05  COMB-C024-HLD REDEFINES HLD-C024-COMB                   15700000
154800                                 PIC 9(4)V99.                    15710000
154900     05  HLD-B014A-COMB.                                         15720000
155000         10  HLD-B014A-NUM       PIC 9.                          15730000
155100         10  HLD-B014A-DEC       PIC 999.                        15740000
155200     05  COMB-B014A-HLD REDEFINES HLD-B014A-COMB                 15750000
155300                                 PIC 9V999.                      15760000
155400     05  HLD-B011A-COMB.                                         15770000
155500         10  HLD-B011A-NUM       PIC 99.                         15780000
155600         10  HLD-B011A-DEC       PIC 99.                         15790000
155700     05  COMB-B011A-HLD REDEFINES HLD-B011A-COMB                 15800000
155800                                 PIC 99V99.                      15810000
155900     05  HLD-B011B-COMB.                                         15820000
156000         10  HLD-B011B-NUM       PIC 99.                         15830000
156100         10  HLD-B011B-DEC       PIC 9.                          15840000
156200     05  COMB-B011B-HLD REDEFINES HLD-B011B-COMB                 15850000
156300                                 PIC 99V9.                       15860000
156400     05  HLD-B010-COMB.                                          15870000
156500         10  HLD-B010-NUM        PIC 99.                         15880000
156600         10  HLD-B010-DEC        PIC 9.                          15890000
156700     05  COMB-B010-HLD REDEFINES HLD-B010-COMB                   15900000
156800                                 PIC 99V9.                       15910000
156900     05  HLD-B077-COMB.                                          15920000
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157000          10  HLD-B077-NUM          PIC 9(5).                    15930000
157100          10  HLD-B077-DEC          PIC 9.                       15940000
157200      05  COMB-B077-HLD REDEFINES HLD-B077-COMB                   15950000
157300                                     PIC 9(5)V9.                  15960000
157400      05  HLD-B077A-COMB.                                         15970000
157500          10  HLD-B077A-NUM         PIC 9(5).                    15980000
157600          10  HLD-B077A-DEC         PIC 9.                       15990000
157700      05  COMB-B077A-HLD REDEFINES HLD-B077A-COMB                 16000000
157800                                     PIC 9(5)V9.                  16010000
157900      05  HLD-B077B-COMB.                                         16020000
158000          10  HLD-B077B-NUM         PIC 9(5).                    16030000
158100          10  HLD-B077B-DEC         PIC 9.                       16040000
158200      05  COMB-B077B-HLD REDEFINES HLD-B077B-COMB                 16050000
158300                                     PIC 9(5)V9.                  16060000
158400      05  HLD-B077C-COMB.                                         16070000
158500          10  HLD-B077C-NUM         PIC 9(5).                    16080000
158600          10  HLD-B077C-DEC         PIC 9.                       16090000
158700      05  COMB-B077C-HLD REDEFINES HLD-B077C-COMB                 16100000
158800                                     PIC 9(5)V9.                  16110000
158900      05  HLD-B077D-COMB.                                         16120000
159000          10  HLD-B077D-NUM         PIC 9(5).                    16130000
159100          10  HLD-B077D-DEC         PIC 9.                       16140000
159200      05  COMB-B077D-HLD REDEFINES HLD-B077D-COMB                 16150000
159300                                     PIC 9(5)V9.                  16160000
159400      05  HLD-B077E-COMB.                                         16170000
159500          10  HLD-B077E-NUM         PIC 9(5).                    16180000
159600          10  HLD-B077E-DEC         PIC 9.                       16190000
159700      05  COMB-B077E-HLD REDEFINES HLD-B077E-COMB                 16200000
159800                                     PIC 9(5)V9.                  16210000
159900      05 HLD-B053-PRICE.                                          16220000
160000          10  HLD-B053-DOLL         PIC 9(6).                    16230000
160100          10  HLD-B053-CENTS        PIC 99.                      16240000
160200      05  PRICE-B053-HLD REDEFINES HLD-B053-PRICE                 16250000
160300                                     PIC 9(6)V99.                 16260000
160400      05  HLD-A023B-COMB.                                         16270000
160500          10  HLD-A023B-NUM         PIC 999.                     16280000
160600          10  HLD-A023B-DEC         PIC 999.                     16290000
160700      05  COMB-A023B-HLD REDEFINES HLD-A023B-COMB                 16300000
160800                                     PIC 999V999.                 16310000
160900      05  HLD-B019A-COMB.                                         16320000
161000          10  HLD-B019A-NUM         PIC 999.                     16330000
161100          10  HLD-B019A-DEC         PIC 9(4).                    16340000
161200      05  COMB-B019A-HLD REDEFINES HLD-B019A-COMB                 16350000
161300                                     PIC 999V9(4).                16360000
161400      05  HLD-A019D-COMB.                                         16370000
161500          10  HLD-A019D-NUM         PIC 9.                       16380000
161600          10  HLD-A019D-DEC         PIC 9(4).                    16390000
161700      05  COMB-A019D-HLD REDEFINES HLD-A019D-COMB                 16400000
161800                                     PIC 9V9(4).                  16410000
161900      05  HLD-A019E-COMB.                                         16420000
162000          10  HLD-A019E-NUM         PIC 9.                       16430000
162100          10  HLD-A019E-DEC         PIC 9(4).                    16440000
162200      05  COMB-A019E-HLD REDEFINES HLD-A019E-COMB                 16450000
162300                                     PIC 9V9(4).                  16460000
162400      05  HLD-B022D-COMB.                                         16470000
162500          10  HLD-B022D-NUM         PIC 99.                      16480000
162600          10  HLD-B022D-DEC         PIC 9(4).                    16490000
162700      05  COMB-B022D-HLD REDEFINES HLD-B022D-COMB                 16500000
162800                                     PIC 99V9(4).                 16510000
162900      05  HLD-B022E-COMB.                                         16520000
163000          10  HLD-B022E-NUM         PIC 99.                      16530000
163100          10  HLD-B022E-DEC         PIC 9(4).                    16540000
163200      05  COMB-B022E-HLD REDEFINES HLD-B022E-COMB                 16550000
163300                                     PIC 99V9(4).                 16560000
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163400     05  HLD-B019C-COMB.                                          16570000
163500         10  HLD-B019C-NUM       PIC 999.                       16580000
163600         10  HLD-B019C-DEC       PIC 999.                       16590000
163700     05  COMB-B019C-HLD REDEFINES HLD-B019C-COMB                  16600000
163800                                 PIC 999V999.                   16610000
163900     05 HLD-B055A-PRICE.                                         16620000
164000         10  HLD-B055A-DOLL      PIC 9(6).                      16630000
164100         10  HLD-B055A-CENTS     PIC 99.                        16640000
164200     05  PRICE-B055A-HLD REDEFINES HLD-B055A-PRICE                16650000
164300                                 PIC 9(6)V99.                   16660000
164400     05  HLD-F007-COMB.                                           16670000
164500         10  HLD-F007-NUM        PIC 9.                         16680000
164600         10  HLD-F007-DEC        PIC 99.                        16690000
164700     05  COMB-F007-HLD REDEFINES HLD-F007-COMB                    16700000
164800                                 PIC 9V99.                      16710000
164900     05  HLD-F009A-COMB.                                          16720000
165000         10  HLD-F009A-NUM       PIC 9.                         16730000
165100         10  HLD-F009A-DEC       PIC 99.                        16740000
165200     05  COMB-F009A-HLD REDEFINES HLD-F009A-COMB                  16750000
165300                                 PIC 9V99.                      16760000
165400     05  HLD-B020F-B-COMB.                                        16770000
165500         10  HLD-B020F-B-NUM     PIC 9.                         16780000
165600         10  HLD-B020F-B-DEC     PIC 9(4).                      16790000
165700     05  COMB-B020F-B-HLD REDEFINES HLD-B020F-B-COMB              16800000
165800                                 PIC 9V9999.                    16810000
165900     05  HLD-A019F-B-COMB.                                        16820000
166000         10  HLD-A019F-B-NUM     PIC 9.                         16830000
166100         10  HLD-A019F-B-DEC     PIC 9(4).                      16840000
166200     05  COMB-A019F-B-HLD REDEFINES HLD-A019F-B-COMB              16850000
166300                                 PIC 9V9999.                    16860000
166400     05  HLD-B012B-COMB.                                          16870000
166500         10  HLD-B012B-NUM       PIC 9.                         16880000
166600         10  HLD-B012B-DEC       PIC 9.                         16890000
166700     05  COMB-B012B-HLD REDEFINES HLD-B012B-COMB                  16900000
166800                                 PIC 9V9.                       16910000
166900     05  HLD-B012D-COMB.                                          16920000
167000         10  HLD-B012D-NUM       PIC 9.                         16930000
167100         10  HLD-B012D-DEC       PIC 9.                         16940000
167200     05  COMB-B012D-HLD REDEFINES HLD-B012D-COMB                  16950000
167300                                 PIC 9V9.                       16960000
167400     05  HLD-B012-B012C-COMB.                                     16970000
167500         10  HLD-B012-B012C-NUM  PIC 9.                         16980000
167600         10  HLD-B012-B012C-DEC  PIC 99.                        16990000
167700     05  COMB-B012-B012C-HLD REDEFINES HLD-B012-B012C-COMB        17000000
167800                                 PIC 9V99.                      17010000
167900     05  HLD-F009-COMB.                                           17020000
168000         10  HLD-F009-NUM        PIC 9.                         17030000
168100         10  HLD-F009-DEC        PIC 99.                        17040000
168200     05  COMB-F009-HLD REDEFINES HLD-F009-COMB                    17050000
168300                                 PIC 9V99.                      17060000
168400     05  HLD-B012E-COMB.                                          17070000
168500         10  HLD-B012E-NUM       PIC 9.                         17080000
168600         10  HLD-B012E-DEC       PIC 99.                        17090000
168700     05  COMB-B012E-HLD REDEFINES HLD-B012E-COMB                  17100000
168800                                 PIC 9V99.                      17110000
168900     05  HLD-B014C-DEC           PIC 999.                       17120000
169000     05  DEC-B014C-HLD REDEFINES HLD-B014C-DEC                    17130000
169100                                 PIC V999.                      17140000
169200     05  HLD-A023-1-COMB.                                         17150000
169300         10  HLD-A023-1-NUM      PIC 9(4).                      17160000
169400         10  HLD-A023-1-DEC      PIC 999.                       17170000
169500     05  COMB-A023-1-HLD REDEFINES HLD-A023-1-COMB                17180000
169600                                 PIC 9(4)V999.                  17190000
169700     05  HLD-A023-2-COMB.                                         17200000
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169800         10  HLD-A023-2-NUM      PIC 9(4).                          17210000
169900         10  HLD-A023-2-DEC      PIC 999.                           17220000
170000     05  COMB-A023-2-HLD REDEFINES HLD-A023-2-COMB                  17230000
170100                                 PIC 9(4)V999.                      17240000
170200     05  HLD-A023-3-COMB.                                           17250000
170300         10  HLD-A023-3-NUM      PIC 9(4).                          17260000
170400         10  HLD-A023-3-DEC      PIC 999.                           17270000
170500     05  COMB-A023-3-HLD REDEFINES HLD-A023-3-COMB                  17280000
170600                                 PIC 9(4)V999.                      17290000
170700     05  HLD-B059-PRICE.                                            17300000
170800         10  HLD-B059-DOLL       PIC 9(7).                          17310000
170900         10  HLD-B059-CENTS      PIC 99.                            17320000
171000     05  PRICE-B059-HLD REDEFINES HLD-B059-PRICE                    17330000
171100                                 PIC 9(7)V99.                       17340000
171200*****************************************************************17350000
171300 01  EOF-FLAG                    PIC X.                             17360000
171400*****************************************************************17370000
171500                                                                    17380000
171600*****************************************************************17390000
171700 PROCEDURE DIVISION.                                               17400000
171800*****************************************************************17410000
171900                                                                    17420000
172000*****************************************************************17430000
172100 MAINLINE-CONTROL-ROUTINE.                                         17440000
172200     PERFORM INITIALIZATION.                                        17450000
172300     PERFORM READ-AND-PROCESS UNTIL EOF-FLAG EQUAL 'Y'.             17460000
172400     PERFORM CLOSE-ROUTINE.                                         17470000
172500     STOP RUN.                                                      17480000
172600*****************************************************************17490000
172700 INITIALIZATION SECTION.                                           17500000
172800 INITIALIZE.                                                       17510000
172900     OPEN INPUT B10JX1.                                             17520000
173000     OPEN OUTPUT OFILE1, OFILE2, OFILE3, OFILE4,                    17530000
173100                 OFILE5, OFILE6, OFILE7, OFILE8,                    17540000
173200                 OFILE9, OFILE10, OFILE11, OFILE12, OFILE13.        17550014
173300     MOVE 'N' TO EOF-FLAG.                                          17560000
173400     MOVE SPACES TO OUT-REC-1, OUT-REC-2, OUT-REC-3, OUT-REC-4,     17570000
173500                    OUT-REC-5, OUT-REC-6, OUT-REC-7, OUT-REC-8,     17580000
173600                    OUT-REC-9, OUT-REC-10, OUT-REC-11, OUT-REC-12,17590014
                           OUT-REC-13.                                    17600014
173700 INITIALIZATION-EXIT.                                              17610000
173800     EXIT.                                                          17620000
173900*****************************************************************17630000
174000 READ-AND-PROCESS SECTION.                                         17640000
174100 READ-PROCESS.                                                     17174200     READ
   B10JX1 AT END MOVE 'Y' TO EOF-FLAG                    174300     GO TO READ-EXIT-
                                    ROUTINE.
                                                        1670000
174400     IF NIIN-CODE-I NOT NUMERIC                                   17680000
174500         GO TO READ-EXIT-ROUTINE                                  17690000
174600**       PERFORM ENTITY-SUM-EXIT                                  17700000
174700       ELSE                                                       17710000
174800     IF PRINT-CODE-I EQUAL 'D'                                    17720000
174900         PERFORM PROCESS-REC-D                                    17730000
175000       ELSE                                                       17740000
175100         IF PRINT-CODE-I EQUAL 'F'                                17750000
175200           PERFORM PROCESS-REC-F                                  17760000
175300         ELSE                                                     17770000
175400           IF PRINT-CODE-I EQUAL 'H'                              17780000
175500             PERFORM PROCESS-REC-H                                17790000
175600           ELSE                                                   17800000
175700             IF PRINT-CODE-I EQUAL 'J'                            17810000
175800               PERFORM PROCESS-REC-J                              17820000
175900             ELSE                                                 17830000
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                  IF PRINT-CODE-I EQUAL 'L'
                    PERFORM PROCESS-REC-L
                  ELSE
                    IF PRINT-CODE-I EQUAL 'N'
                      PERFORM PROCESS-REC-N
                    ELSE
                      IF PRINT-CODE-I EQUAL 'P'
                        PERFORM PROCESS-REC-P
                      ELSE
                        IF PRINT-CODE-I EQUAL 'R'
                          PERFORM PROCESS-REC-R
                        ELSE
                          IF PRINT-CODE-I EQUAL 'T'
                            PERFORM PROCESS-REC-T
                          ELSE
                            IF PRINT-CODE-I EQUAL 'V'
                              PERFORM PROCESS-REC-V
                            ELSE
                              IF PRINT-CODE-I EQUAL 'Z'
                                PERFORM MULTI-MOE-CHECK.
******************************************************************
 READ-EXIT-ROUTINE.
     EXIT.
******************************************************************
*ENTITY-SUM-EXIT SECTION.
*ENT-SUM-EXIT.
*    EXIT.
******************************************************************
 PROCESS-REC-D SECTION.
 PROCESS-D-REC.
     MOVE B10-INPUT-REC TO WS-D-REC.
     MOVE HDR-NIIN-D TO D046D-1.
     MOVE 01 TO PRINT-CODE-1.
     MOVE B045 TO B045-1.
     MOVE C016 TO C016-1.
     MOVE C012 TO C012-1.
     MOVE B067E TO B067E-1.
     MOVE B007 TO B007-1.
     MOVE C005 TO C005-1.
     MOVE B055-DOLLARS-IN TO HLD-B055-DOLL.
     MOVE B055-CENTS-IN TO HLD-B055-CENTS.
     MOVE PRICE-B055-HLD TO B055-1.
     MOVE C004 TO C004-1.
     MOVE B002B TO B002B-1.
     MOVE C001A TO C001A-1.
     MOVE C001B TO C001B-1.
     MOVE C003 TO C003-1.
     MOVE C003A TO C003A-1.
     MOVE C042 TO C042-1.
     MOVE D010A-D TO D010-A-D-1.
     MOVE C028 TO C028-1.
     MOVE D014A TO D014A-1.
     MOVE C009 TO C009-1.
     MOVE B001 TO B001-1.
     MOVE B011A-NUM-IN TO HLD-B011A-NUM.
     MOVE B011A-DEC-IN TO HLD-B011A-DEC.
     MOVE COMB-B011A-HLD TO B011A-1.
     MOVE D025DEF-E089 TO D025DEF-E089-1.
     MOVE C003B TO C003B-1.
     MOVE B053-DOLLARS-IN TO HLD-B053-DOLL.
     MOVE B053-CENTS-IN TO HLD-B053-CENTS.
     MOVE PRICE-B053-HLD TO B053-1.
     PERFORM WRITE-REC-1-TO-FILE-1.
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182300 PROCESS-D-REC-EXIT.                                              18470000
182400     EXIT.                                                        18480000
182500*****************************************************************18490000
182600 WRITE-REC-1-TO-FILE-1 SECTION.                                   18500000
182700 WRITE-REC-1.                                                     18510000
182800     MOVE OUT-REC-1 TO OUTPUT-REC-1.                              18520000
182900     WRITE OUTPUT-REC-1.                                          18530000
183000     MOVE SPACES TO OUT-REC-1.                                    18540000
183100 WRITE-REC-1-EXIT.                                                18550000
183200     EXIT.                                                        18560000
183300*****************************************************************18570000
183400 PROCESS-REC-F SECTION.                                           18580000
183500 PROCESS-F-REC.                                                   18590000
183600     MOVE B10-INPUT-REC TO WS-F-REC.                              18600000
183700     MOVE HDR-NIIN-F TO D046D-2.                                  18610000
183800     MOVE 02 TO PRINT-CODE-2.                                     18620000
183900     IF A005 LESS THAN ZERO                                       18630000
184000        MOVE '-' TO A005-2-M                                      18640000
184100     ELSE                                                         18650000
184200        MOVE SPACES TO A005-2-M.                                  18660000
184300     MOVE A005 TO A005-2-N.                                       18670000
184400     IF A005A LESS THAN ZERO                                      18680000
184500        MOVE '-' TO A005A-2-M                                     18690000
184600     ELSE                                                         18700000
184700        MOVE SPACES TO A005A-2-M.                                 18710000
184800     MOVE A005A TO A005A-2-N.                                     18720000
184900     IF B074 LESS THAN ZERO                                       18730000
185000        MOVE '-' TO B074-2-M                                      18740000
185100     ELSE                                                         18750000
185200        MOVE SPACES TO B074-2-M.                                  18760000
185300     MOVE B074 TO B074-2-N.                                       18770000
185400     MOVE A011 TO A011-2.                                         18780000
185500     MOVE F007-NUM-IN TO HLD-F007-NUM.                            18790000
185600     MOVE F007-DEC-IN TO HLD-F007-DEC.                            18800000
185700     MOVE COMB-F007-HLD TO F007-2.                                18810000
185800     MOVE D008 TO D008-2.                                         18820000
185900     PERFORM WRITE-REC-2-TO-FILE-2.                               18830000
186000 PROCESS-F-REC-EXIT.                                              18840000
186100     EXIT.                                                        18850000
186200*****************************************************************18860000
186300 WRITE-REC-2-TO-FILE-2 SECTION.                                   18870000
186400 WRITE-REC-2.                                                     18880000
186500     MOVE OUT-REC-2 TO OUTPUT-REC-2.                              18890000
186600     WRITE OUTPUT-REC-2.                                          18900000
186700     MOVE SPACES TO OUT-REC-2.                                    18910000
186800 WRITE-REC-2-EXIT.                                                18920000
186900     EXIT.                                                        18930000
187000*****************************************************************18940000
187100 PROCESS-REC-H SECTION.                                           18950000
187200 PROCESS-H-REC.                                                   18960000
187300     MOVE B10-INPUT-REC TO WS-H-REC.                              18970000
187400     MOVE HDR-NIIN-H TO D046D-3.                                  18980000
187500     MOVE 03 TO PRINT-CODE-3.                                     18990000
187600     MOVE B012-NUM-IN TO HLD-B012-NUM.                            19000000
187700     MOVE B012-DEC-IN TO HLD-B012-DEC.                            19010000
187800     MOVE COMB-B012-HLD TO B012-B012C-3.                          19020000
187900     MOVE B012F-NUM-IN TO HLD-B012F-NUM.                          19030000
188000     MOVE B012F-DEC-IN TO HLD-B012F-DEC.                          19040000
188100     MOVE COMB-B012F-HLD TO B012F-3.                              19050000
188200     MOVE F009-NUM-IN TO HLD-F009-NUM.                            19060000
188300     MOVE F009-DEC-IN TO HLD-F009-DEC.                            19070000
188400     MOVE COMB-F009-HLD TO F009-3.                                19080000
188500     MOVE D012 TO D012-3.                                         19090000
188600     MOVE D013C TO D013C-3.                                       19100000
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188700     MOVE D120 TO D120-3.                                          19110000
188800     MOVE B059-DOLLARS-IN TO HLD-B059-DOLL.                        19120000
188900     MOVE B059-CENTS-IN TO HLD-B059-CENTS                          19130000
189000     MOVE PRICE-B059-HLD TO B059-3.                                19140000
189100     PERFORM WRITE-REC-3-TO-FILE-3.                                19150000
189200 PROCESS-H-REC-EXIT.                                               19160000
189300     EXIT.                                                         19170000
189400*****************************************************************19180000
189500 WRITE-REC-3-TO-FILE-3 SECTION.                                    19190000
189600 WRITE-REC-3.                                                      19200000
189700     MOVE OUT-REC-3 TO OUTPUT-REC-3.                               19210000
189800     WRITE OUTPUT-REC-3.                                           19220000
189900     MOVE SPACES TO OUT-REC-3.                                     19230000
190000 WRITE-REC-3-EXIT.                                                 19240000
190100     EXIT.                                                         19250000
      *****************************************************************19260007
184000 PROCESS-REC-J SECTION.                                            19270007
184100 PROCESS-J-REC.                                                    19280007
184200     MOVE B10-INPUT-REC TO WS-J-REC.                               19290007
184300     MOVE HDR-NIIN-J TO D046D-4.                                   19300007
184400     MOVE 04 TO PRINT-CODE-4.                                      19310007
184500     MOVE A001-1 TO A001-4-1.                                      19320007
184600     MOVE B046A-1 TO B046A-4-1.                                    19330007
184700     MOVE A012A-1 TO A012A-4-1.                                    19340007
184800     MOVE PL-PROG-OST-1-IN TO PL-PROG-4-1-N.                       19350007
184900     MOVE PL-PROG-OST-1-MIN-IN TO PL-PROG-4-1-M.                   19360007
185000     MOVE C003E-1 TO C003E-4-1.                                    19370007
185100     MOVE A012-1-IN TO A012-4-1-N.                                 19380007
185200     MOVE A012-1-MINUS-IN TO A012-4-1-M.                           19390007
185300     MOVE A021A-1-IN TO A021A-4-1-N.                               19400007
185400     MOVE A021A-1-MINUS-IN TO A021A-4-1-M.                         19410007
185500     MOVE A008B-1-IN TO A008B-4-1-N.                               19420007
185600     MOVE A008B-1-MINUS-IN TO A008B-4-1-M.                         19430007
188100     PERFORM WRITE-REC-4-TO-FILE-4.                                19440007
           IF A001-2 NOT EQUAL SPACES                                    19450007
               PERFORM MOVE-2ND-ENTRY.                                   19460007
           IF A001-3 NOT EQUAL SPACES                                    19470007
               PERFORM MOVE-3RD-ENTRY.                                   19480007
188200 PROCESS-J-REC-EXIT.                                               19490007
188300     EXIT.                                                         19500007
      *****************************************************************19510007
       MOVE-2ND-ENTRY SECTION.                                          19520007
       MOVE-2ND.                                                        19530007
184300     MOVE HDR-NIIN-J TO D046D-4.                                   19540007
184400     MOVE 04 TO PRINT-CODE-4.                                      19550007
185700     MOVE A001-2 TO A001-4-1.                                      19560007
185800     MOVE B046A-2 TO B046A-4-1.                                    19570007
185900     MOVE A012A-2 TO A012A-4-1.                                    19580007
186000     MOVE PL-PROG-OST-2-IN TO PL-PROG-4-1-N.                       19590007
186100     MOVE PL-PROG-OST-2-MIN-IN TO PL-PROG-4-1-M.                   19600007
186200     MOVE C003E-2 TO C003E-4-1.                                    19610007
186300     MOVE A012-2-IN TO A012-4-1-N.                                 19620007
186400     MOVE A012-2-MINUS-IN TO A012-4-1-M.                           19630007
186500     MOVE A021A-2-IN TO A021A-4-1-N.                               19640007
186600     MOVE A021A-2-MINUS-IN TO A021A-4-1-M.                         19650007
186700     MOVE A008B-2-IN TO A008B-4-1-N.                               19660007
186800     MOVE A008B-2-MINUS-IN TO A008B-4-1-M.                         19670007
188100     PERFORM WRITE-REC-4-TO-FILE-4.                                19680007
       MOVE-2ND-EXIT.                                                   19690007
           EXIT.                                                        19700007
      *****************************************************************19710007
       MOVE-3RD-ENTRY SECTION.                                          19720007
       MOVE-3RD.                                                        19730007
184300     MOVE HDR-NIIN-J TO D046D-4.                                   19740007
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184400      MOVE 04 TO PRINT-CODE-4.                                    19750007
186900      MOVE A001-3 TO A001-4-1.                                    19760007
187000      MOVE B046A-3 TO B046A-4-1.                                  19770007
187100      MOVE A012A-3 TO A012A-4-1.                                  19780007
187200      MOVE PL-PROG-OST-3-IN TO PL-PROG-4-1-N.                     19790007
187300      MOVE PL-PROG-OST-3-MIN-IN TO PL-PROG-4-1-M.                 19800007
187400      MOVE C003E-3 TO C003E-4-1.                                  19810007
187500      MOVE A012-3-IN TO A012-4-1-N.                               19820007
187600      MOVE A012-3-MINUS-IN TO A012-4-1-M.                         19830007
187700      MOVE A021A-3-IN TO A021A-4-1-N.                             19840007
187800      MOVE A021A-3-MINUS-IN TO A021A-4-1-M.                       19850007
187900      MOVE A008B-3-IN TO A008B-4-1-N.                             19860007
188000      MOVE A008B-3-MINUS-IN TO A008B-4-1-M.                       19870007
188100      PERFORM WRITE-REC-4-TO-FILE-4.                              19880007
       MOVE-3RD-EXIT.                                                   19890007
           EXIT.                                                        19900007
188400*****************************************************************19910007
195300*****************************************************************19920000
195400 WRITE-REC-4-TO-FILE-4 SECTION.                                   19930000
195500 WRITE-REC-4.                                                     19940000
195600      MOVE OUT-REC-4 TO OUTPUT-REC-4.                            19950000
195700      WRITE OUTPUT-REC-4.                                        19960000
195800      MOVE SPACES TO OUT-REC-4.                                  19970000
195900 WRITE-REC-4-EXIT.                                               19980000
196000      EXIT.                                                      19990000
196100*****************************************************************20000000
196200 PROCESS-REC-L SECTION.                                           20010000
196300 PROCESS-L-REC.                                                   20020000
196400      MOVE BIO-INPUT-REC TO WS-L-REC.                            20030000
196500      MOVE HDR-NIIN-L TO D046D-5.                                20040000
196600      MOVE 05 TO PRINT-CODE-5.                                   20050000
196700      MOVE K001-L TO K001-5.                                     20060000
196800      MOVE K002-L001-L TO K002-L001-5.                           20070000
196900      MOVE L001A-L TO L001A-5.                                   20080000
197000      MOVE L022-L TO L022-5.                                     20090000
197100      MOVE A001-FROM-L TO A001-5.                                20100000
197200      MOVE A001-TO-L TO A001-5-2ND.                              20110000
197300      MOVE ORIG-QTY-L TO ORIG-QTY-5.                             20120000
197400      MOVE C003E-L TO C003E-5.                                   20130000
197500      MOVE DELY-DATE-L TO L009-5.                                20140000
197600      MOVE L034-L-MINUS-IN TO L034-5-M.                          20150000
197700      MOVE L034-L-IN TO L034-5-N.                                20160000
197800      MOVE A012A-FROM-L TO A012A-5.                              20170000
197900      MOVE A012A-TO-L TO A012A-5-2ND.                            20180000
198000      PERFORM WRITE-REC-5-TO-FILE-5.                             20190000
198100 PROCESS-L-REC-EXIT.                                             20200000
198200      EXIT.                                                      20210000
198300*****************************************************************20220000
198400 WRITE-REC-5-TO-FILE-5 SECTION.                                   20230000
198500 WRITE-REC-5.                                                     20240000
198600      MOVE OUT-REC-5 TO OUTPUT-REC-5.                            20250000
198700      WRITE OUTPUT-REC-5.                                        20260000
198800      MOVE SPACES TO OUT-REC-5.                                  20270000
198900 WRITE-REC-5-EXIT.                                               20280000
199000      EXIT.                                                      20290000
199100*****************************************************************20300000
192300 PROCESS-REC-N SECTION.                                          20310009
192400 PROCESS-N-REC.                                                  20320009
192500      MOVE BIO-INPUT-REC TO WS-N-REC.                            20330009
192600      MOVE HDR-NIIN-N TO D046D-6, D046D-13.                      20340009
192700      MOVE 06 TO PRINT-CODE-6.                                   20350009
           MOVE 13 TO PRINT-CODE-13.                                    20360009
           MOVE PPR-A001-IN TO A001-13.                                 20370009
192800      MOVE PPP-K001-IN TO K001-6.                                20380009
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192900     MOVE PPR-K002-IN TO K002-6.                                  20390009
193000     MOVE PPR-A012A-IN TO A012A-6, A012A-13.                      20400009
193100     MOVE PPR-K017-IN TO K017-6.                                  20410009
193200     MOVE PPR-QTY-IN TO K006-6, K006-13.                          20420009
           MOVE A014F-IN TO A014F-13.                                   20430009
193300     MOVE PPR-K018-IN TO K018-6.                                  20440009
193400     MOVE PPR-K024-IN TO K024-6.                                  20450009
193500     PERFORM WRITE-REC-6-TO-FILE-6.                               20460009
193500     PERFORM WRITE-REC-13-TO-FILE-13.                             20470009
193600 PROCESS-N-REC-EXIT.                                              20480009
193700     EXIT.                                                        20490009
200700*****************************************************************20500000
200800 WRITE-REC-6-TO-FILE-6 SECTION.                                   20510000
200900 WRITE-REC-6.                                                    20520000
201000     MOVE OUT-REC-6 TO OUTPUT-REC-6.                              20530000
201100     WRITE OUTPUT-REC-6.                                          20540000
201200     MOVE SPACES TO OUT-REC-6.                                    20550000
201300 WRITE-REC-6-EXIT.                                               20560000
201400     EXIT.                                                        20570000
201500*****************************************************************20580000
193900 WRITE-REC-13-TO-FILE-13 SECTION.                                 20590010
194000 WRITE-REC-13.                                                   20600010
194100     MOVE OUT-REC-13 TO OUTPUT-REC-13.                            20610010
194200     WRITE OUTPUT-REC-13.                                         20620010
194300     MOVE SPACES TO OUT-REC-13.                                   20630010
194400 WRITE-REC-13-EXIT.                                              20640010
194500     EXIT.                                                        20650010
194600*****************************************************************20660010
201600 PROCESS-REC-P SECTION.                                          20670000
201700 PROCESS-P-REC.                                                  20680000
201800     MOVE B10-INPUT-REC TO WS-P-REC.                              20690000
201900     MOVE HDR-NIIN-P TO D046D-7.                                  20700000
202000     MOVE 07 TO PRINT-CODE-7.                                     20710000
202100     MOVE D016-1ST TO D016-7.                                     20720000
202200     MOVE D016A-1ST TO D016A-7.                                   20730000
202300     IF D016-2-1ST NOT EQUAL SPACES                               20740000
202400        PERFORM MOVE-2-ENTRY.                                     20750000
202500     IF D016-3-1ST NOT EQUAL SPACES                               20760000
202600        PERFORM MOVE-3-ENTRY.                                     20770000
202700     IF D016-4-1ST NOT EQUAL SPACES                               20780000
202800        PERFORM MOVE-4-ENTRY.                                     20790000
202900     IF D016-5-1ST NOT EQUAL SPACES                               20800000
203000        PERFORM MOVE-5-ENTRY.                                     20810000
203100     IF D016-2ND NOT EQUAL SPACES                                 20820000
203200        PERFORM MOVE-6-ENTRY.                                     20830000
203300     IF D016-2-2ND NOT EQUAL SPACES                               20840000
203400        PERFORM MOVE-7-ENTRY.                                     20850000
203500     IF D016-3-2ND NOT EQUAL SPACES                               20860000
203600        PERFORM MOVE-8-ENTRY.                                     20870000
203700     IF D016-4-2ND NOT EQUAL SPACES                               20880000
203800        PERFORM MOVE-9-ENTRY.                                     20890000
203900     IF D016-5-2ND NOT EQUAL SPACES                               20900000
204000        PERFORM MOVE-10-ENTRY.                                    20910000
204100     PERFORM WRITE-REC-7-TO-FILE-7.                               20920000
204200     IF D016-3RD NOT EQUAL SPACES                                 20930000
204300        PERFORM MOVE-11-ENTRY                                     20940000
204310     ELSE                                                         20950000
204320        GO TO PROCESS-P-REC-EXIT.                                 20960000
204400     IF D016-2-3RD NOT EQUAL SPACES                               20970000
204500        PERFORM MOVE-12-ENTRY.                                    20980000
204600     IF D016-2-3RD NOT EQUAL SPACES                               20990000
204700        PERFORM MOVE-12-ENTRY.                                    21000000
204800     IF D016-2-3RD NOT EQUAL SPACES                               21010000
204900        PERFORM MOVE-12-ENTRY.                                    21020000
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205000     IF D016-2-3RD NOT EQUAL SPACES                              21030000
205100        PERFORM MOVE-12-ENTRY.                                   21040000
205110     IF D016-3-3RD NOT EQUAL SPACES                              21050000
205120        PERFORM MOVE-13-ENTRY.                                   21060000
205130     IF D016-4-3RD NOT EQUAL SPACES                              21070000
205140        PERFORM MOVE-14-ENTRY.                                   21080000
205150     IF D016-5-3RD NOT EQUAL SPACES                              21090000
205160        PERFORM MOVE-15-ENTRY.                                   21100000
205200     PERFORM WRITE-REC-7-TO-FILE-7.                              21110000
205210 PROCESS-P-REC-EXIT.                                             21120000
205220     EXIT.                                                       21130000
205300*****************************************************************21140000
205400 MOVE-2-ENTRY SECTION.                                           21150000
205500 MOVE-2.                                                         21160000
205600     MOVE D016-2-1ST TO D016-7-2.                                21170000
205700     MOVE D016A-2-1ST TO D016A-7-2.                              21180000
205800 MOVE-2-ENTRY-EXIT.                                              21190000
205900     EXIT.                                                       21200000
206000*****************************************************************21210000
206100 MOVE-3-ENTRY SECTION.                                           21220000
206200 MOVE-3.                                                         21230000
206300     MOVE D016-3-1ST TO D016-7-3.                                21240000
206400     MOVE D016A-3-1ST TO D016A-7-3.                              21250000
206500 MOVE-3-ENTRY-EXIT.                                              21260000
206600     EXIT.                                                       21270000
206700*****************************************************************21280000
206800 MOVE-4-ENTRY SECTION.                                           21290000
206900 MOVE-4.                                                         21300000
207000     MOVE D016-4-1ST TO D016-7-4.                                21310000
207100     MOVE D016A-4-1ST TO D016A-7-4.                              21320000
207200 MOVE-4-ENTRY-EXIT.                                              21330000
207300     EXIT.                                                       21340000
207400*****************************************************************21350000
207500 MOVE-5-ENTRY SECTION.                                           21360000
207600 MOVE-5.                                                         21370000
207700     MOVE D016-5-1ST TO D016-7-5.                                21380000
207800     MOVE D016A-5-1ST TO D016A-7-5.                              21390000
207900 MOVE-5-ENTRY-EXIT.                                              21400000
208000     EXIT.                                                       21410000
208100*****************************************************************21420000
208200 MOVE-6-ENTRY SECTION.                                           21430000
208300 MOVE-6.                                                         21440000
208400     MOVE D016-2ND TO D016-7-6.                                  21450000
208500     MOVE D016A-2ND TO D016A-7-6.                                21460000
208600 MOVE-6-ENTRY-EXIT.                                              21470000
208700     EXIT.                                                       21480000
208800*****************************************************************21490000
208900 MOVE-7-ENTRY SECTION.                                           21500000
209000 MOVE-7.                                                         21510000
209100     MOVE D016-2-2ND TO D016-7-7.                                21520000
209200     MOVE D016A-2-2ND TO D016A-7-7.                              21530000
209300 MOVE-7-ENTRY-EXIT.                                              21540000
209400     EXIT.                                                       21550000
209500*****************************************************************21560000
209600 MOVE-8-ENTRY SECTION.                                           21570000
209700 MOVE-8.                                                         21580000
209800     MOVE D016-3-2ND TO D016-7-8.                                21590000
209900     MOVE D016A-3-2ND TO D016A-7-8.                              21600000
210000 MOVE-8-ENTRY-EXIT.                                              21610000
210100     EXIT.                                                       21620000
210200*****************************************************************21630000
210300 MOVE-9-ENTRY SECTION.                                           21640000
210400 MOVE-9.                                                         21650000
210500     MOVE D016-4-2ND TO D016-7-9.                                21660000
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210600     MOVE D016A-4-2ND TO D016A-7-9.                                21670000
210700 MOVE-9-ENTRY-EXIT.                                                21680000
210800     EXIT.                                                         21690000
210900*****************************************************************21700000
211000 MOVE-10-ENTRY SECTION.                                            21710000
211100 MOVE-10.                                                          21720000
211200     MOVE D016-5-2ND TO D016-7-10.                                 21730000
211300     MOVE D016A-5-2ND TO D016A-7-10.                               21740000
211400 MOVE-10-ENTRY-EXIT.                                               21750000
211500     EXIT.                                                         21760000
211600*****************************************************************21770000
211610 MOVE-11-ENTRY SECTION.                                            21780000
211620 MOVE-11.                                                          21790000
211700     MOVE HDR-NIIN-P TO D046D-7.                                   21800000
211800     MOVE 07 TO PRINT-CODE-7.                                      21810000
211900     MOVE D016-3RD TO D016-7.                                      21820000
212000     MOVE D016A-3RD TO D016A-7.                                    21830000
212010 MOVE-11-ENTRY-EXIT.                                               21840000
212020     EXIT.                                                         21850000
212030*****************************************************************21860000
212040 MOVE-12-ENTRY SECTION.                                            21870000
212050 MOVE-12.                                                          21880000
212100     MOVE D016-2-3RD TO D016-7-2.                                  21890000
212200     MOVE D016A-2-3RD TO D016A-7-2.                                21900000
212210 MOVE-12-ENTRY-EXIT.                                               21910000
212220     EXIT.                                                         21920000
212230*****************************************************************21930000
212240 MOVE-13-ENTRY SECTION.                                            21940000
212250 MOVE-13.                                                          21950000
212300     MOVE D016-3-3RD TO D016-7-3.                                  21960000
212400     MOVE D016A-3-3RD TO D016A-7-3.                                21970000
212410 MOVE-13-ENTRY-EXIT.                                               21980000
212420     EXIT.                                                         21990000
212430*****************************************************************22000000
212440 MOVE-14-ENTRY SECTION.                                            22010000
212450 MOVE-14.                                                          22020000
212500     MOVE D016-4-3RD TO D016-7-4.                                  22030000
212600     MOVE D016A-4-3RD TO D016A-7-4.                                22040000
212610 MOVE-14-ENTRY-EXIT.                                               22050000
212620     EXIT.                                                         22060000
212630*****************************************************************22070000
212640 MOVE-15-ENTRY SECTION.                                            22080000
212650 MOVE-15.                                                          22090000
212700     MOVE D016-5-3RD TO D016-7-5.                                  22100000
212800     MOVE D016A-5-3RD TO D016A-7-5.                                22110000
212810 MOVE-15-ENTRY-EXIT.                                               22120000
212820     EXIT.                                                         22130000
212830*****************************************************************22140000
213200*****************************************************************22150000
213300 WRITE-REC-7-TO-FILE-7 SECTION.                                    22160000
213400 WRITE-REC-7.                                                      22170000
213500     MOVE OUT-REC-7 TO OUTPUT-REC-7.                               22180000
213600     WRITE OUTPUT-REC-7.                                           22190000
213700     MOVE SPACES TO OUT-REC-7.                                     22200000
213800 WRITE-REC-7-EXIT.                                                 22210000
213900     EXIT.                                                         22220000
214000*****************************************************************22230000
214100 PROCESS-REC-R SECTION.                                            22240000
214200 PROCESS-R-REC.                                                    22250000
214300     MOVE B10-INPUT-REC TO WS-R-REC.                               22260000
214400     MOVE HDR-NIIN-R TO D046D-8.                                   22270000
214500     MOVE 08 TO PRINT-CODE-8.                                      22280000
214600     MOVE D009-1ST TO D009-8-1.                                    22290000
214700     MOVE D011-1ST TO D011-8-1.                                    22300000
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214800     MOVE F018-1ST TO F018-8-1.                                    22310000
214900     MOVE D013-1ST TO D013-8-1.                                    22320000
214910     IF D009-2-1ST NOT EQUAL SPACES                                22330000
214920        PERFORM MOVE-2-APPL.                                       22340000
214930     IF D009-3-1ST NOT EQUAL SPACES                                22350000
214940        PERFORM MOVE-3-APPL.                                       22360000
214950     IF D009-2ND NOT EQUAL SPACES                                  22370000
214960        PERFORM MOVE-4-APPL.                                       22380000
214970     IF D009-2-2ND NOT EQUAL SPACES                                22390000
214980        PERFORM MOVE-5-APPL.                                       22400000
214990     IF D009-3-2ND NOT EQUAL SPACES                                22410000
214991        PERFORM MOVE-6-APPL.                                       22420000
214992     PERFORM WRITE-REC-8-TO-FILE-8.                                22430000
214993     IF D009-3RD NOT EQUAL SPACES                                  22440000
214994        PERFORM MOVE-7-APPL.                                       22450000
214997     IF D009-2-3RD NOT EQUAL SPACES                                22460000
214998        PERFORM MOVE-8-APPL.                                       22470000
214999     IF D009-3-3RD NOT EQUAL SPACES                                22480000
215000        PERFORM MOVE-9-APPL.                                       22490000
215001     IF D009-3RD NOT EQUAL SPACES OR D009-2-3RD                    22500005
215002           NOT EQUAL SPACES OR D009-3-3RD NOT EQUAL SPACES         22510005
215003        PERFORM WRITE-REC-8-TO-FILE-8.                             22520000
215004 PROCESS-R-REC-EXIT.                                               22530000
215005     EXIT.                                                         22540000
215006*****************************************************************22550000
215007 MOVE-2-APPL SECTION.                                              22560000
215008 MOVE-APPL-2.                                                      22570000
215010     MOVE D009-2-1ST TO D009-8-2.                                  22580000
215100     MOVE D011-2-1ST TO D011-8-2.                                  22590000
215200     MOVE F018-2-1ST TO F018-8-2.                                  22600000
215300     MOVE D013-2-1ST TO D013-8-2.                                  22610000
215310 MOVE-2-APPL-EXIT.                                                 22620000
215320     EXIT.                                                         22630000
215330*****************************************************************22640000
215340 MOVE-3-APPL SECTION.                                              22650000
215350 MOVE-APPL-3.                                                      22660000
215400     MOVE D009-3-1ST TO D009-8-3.                                  22670000
215500     MOVE D011-3-1ST TO D011-8-3.                                  22680000
215600     MOVE F018-3-1ST TO F018-8-3.                                  22690000
215700     MOVE D013-3-1ST TO D013-8-3.                                  22700000
215701 MOVE-3-APPL-EXIT.                                                 22710000
215702     EXIT.                                                         22720000
215710*****************************************************************22730000
215720 MOVE-4-APPL SECTION.                                              22740000
215730 MOVE-APPL-4.                                                      22750000
215800     MOVE D009-2ND TO D009-8-4.                                    22760000
215900     MOVE D011-2ND TO D011-8-4.                                    22770000
216000     MOVE F018-2ND TO F018-8-4.                                    22780000
216100     MOVE D013-2ND TO D013-8-4.                                    22790000
216110 MOVE-4-APPL-EXIT.                                                 22800000
216120     EXIT.                                                         22810000
216130*****************************************************************22820000
216140 MOVE-5-APPL SECTION.                                              22830000
216150 MOVE-APPL-5.                                                      22840000
216200     MOVE D009-2-2ND TO D009-8-5.                                  22850000
216300     MOVE D011-2-2ND TO D011-8-5.                                  22860000
216400     MOVE F018-2-2ND TO F018-8-5.                                  22870000
216500     MOVE D013-2-2ND TO D013-8-5.                                  22880000
216510 MOVE-5-APPL-EXIT.                                                 22890000
216520     EXIT.                                                         22900000
216530*****************************************************************22910000
216540 MOVE-6-APPL SECTION.                                              22920000
216550 MOVE-APPL-6.                                                      22930000
216600     MOVE D009-3-2ND TO D009-8-6.                                  22940000
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216700     MOVE D011-3-2ND TO D011-8-6.                                 22950000
216800     MOVE F018-3-2ND TO F018-8-6.                                 22960000
216900     MOVE D013-3-2ND TO D013-8-6.                                 22970000
216910 MOVE-6-APPL-EXIT.                                                22980000
216920     EXIT.                                                        22990000
216930*****************************************************************23000000
216940 MOVE-7-APPL SECTION.                                             23010000
216950 MOVE-APPL-7.                                                     23020000
217100     MOVE HDR-NIIN-R TO D046D-8.                                  23030000
217200     MOVE 08 TO PRINT-CODE-8.                                     23040000
217300     MOVE D009-3RD TO D009-8-1.                                   23050000
217400     MOVE D011-3RD TO D011-8-1.                                   23060000
217500     MOVE F018-3RD TO F018-8-1.                                   23070000
217600     MOVE D013-3RD TO D013-8-1.                                   23080000
217610 MOVE-7-APPL-EXIT.                                                23090000
217620     EXIT.                                                        23100000
217630*****************************************************************23110000
217640 MOVE-8-APPL SECTION.                                             23120000
217650 MOVE-APPL-8.                                                     23130000
217700     MOVE D009-2-3RD TO D009-8-2.                                 23140000
217800     MOVE D011-2-3RD TO D011-8-2.                                 23150000
217900     MOVE F018-2-3RD TO F018-8-2                                  23160000
218000     MOVE D013-2-3RD TO D013-8-2.                                 23170000
218010 MOVE-8-APPL-EXIT.                                                23180000
218020     EXIT.                                                        23190000
218030*****************************************************************23200000
218040 MOVE-9-APPL SECTION.                                             23210000
218050 MOVE-APPL-9.                                                     23220000
218100     MOVE D009-3-3RD TO D009-8-3.                                 23230000
218200     MOVE D011-3-3RD TO D011-8-3.                                 23240000
218300     MOVE F018-3-3RD TO F018-8-3                                  23250000
218400     MOVE D013-3-3RD TO D013-8-3.                                 23260000
218410 MOVE-9-APPL-EXIT.                                                23270000
218420     EXIT.                                                        23280000
218800*****************************************************************23290000
218900 WRITE-REC-8-TO-FILE-8 SECTION.                                   23300000
219000 WRITE-REC-8.                                                     23310000
219100     MOVE OUT-REC-8 TO OUTPUT-REC-8.                              23320000
219200     WRITE OUTPUT-REC-8.                                          23330000
219300     MOVE SPACES TO OUT-REC-8.                                    23340000
219400 WRITE-REC-8-EXIT.                                                23350000
219500     EXIT.                                                        23360000
219600*****************************************************************23370000
219700 PROCESS-REC-T SECTION.                                           23380000
219800 PROCESS-T-REC.                                                   23390000
219900     MOVE B10-INPUT-REC TO WS-T-REC.                              23400000
220000     MOVE HDR-NIIN-T TO D046D-9.                                  23410000
220100     MOVE 09 TO PRINT-CODE-9.                                     23420000
220200     MOVE BB-K002-K020-IN TO K002-K020-9.                         23430000
220300     MOVE BB-K036-IN TO K036-9.                                   23440000
220400     MOVE BB-K024-IN TO K024-9.                                   23450000
220500     MOVE BB-K022-IN TO K022-9.                                   23460000
220600     MOVE BB-K025-IN TO K025-9.                                   23470000
220700     MOVE BB-K026-IN TO K026-9.                                   23480000
220800     PERFORM WRITE-REC-9-TO-FILE-9.                               23490000
220900 PROCESS-T-REC-EXIT.                                              23500000
221000     EXIT.                                                        23510000
221100*****************************************************************23520000
221200 WRITE-REC-9-TO-FILE-9 SECTION.                                   23530000
221300 WRITE-REC-9.                                                     23540000
221400     MOVE OUT-REC-9 TO OUTPUT-REC-9.                              23550000
221500     WRITE OUTPUT-REC-9.                                          23560000
221600     MOVE SPACES TO OUT-REC-9.                                    23570000
221700 WRITE-REC-9-EXIT.                                                23580000
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221800     EXIT.                                                        23590000
221900*****************************************************************23600000
222000 PROCESS-REC-V SECTION.                                           23610000
222100 PROCESS-V-REC.                                                   23620000
222200     MOVE B10-INPUT-REC TO WS-V-REC.                              23630000
222300     MOVE HDR-NIIN-V TO D046D-10.                                 23640000
222400     MOVE 10 TO PRINT-CODE-10.                                    23650000
222500     MOVE C035-IN-1 TO C035-B-C-10-1.                             23660000
222600     MOVE C038-IN-1 TO C038-10-1.                                 23670000
222700     MOVE D001-IN-1 TO D001-C004C-10-1.                           23680000
           IF C035-IN-2 NOT EQUAL SPACES                                23690006
              PERFORM MOVE-2-REFNR.                                     23700006
           IF C035-IN-3 NOT EQUAL SPACES                                23710006
              PERFORM MOVE-3-REFNR.                                     23720006
           PERFORM WRITE-REC-10-TO-FILE-10.                             23730006
           IF C035-IN-4 NOT EQUAL SPACES                                23740006
              PERFORM MOVE-4-REFNR.                                     23750006
           IF C035-IN-5 NOT EQUAL SPACES                                23760006
              PERFORM MOVE-5-REFNR.                                     23770006
           IF C035-IN-6 NOT EQUAL SPACES                                23780006
              PERFORM MOVE-6-REFNR.                                     23790006
           IF C035-IN-4 NOT EQUAL SPACES OR C035-IN-5 NOT EQUAL         23800006
              SPACES OR C035-IN-6 NOT EQUAL SPACES                      23810006
              PERFORM WRITE-REC-10-TO-FILE-10.                          23820006
           IF C035-IN-7 NOT EQUAL SPACES                                23830006
              PERFORM MOVE-7-REFNR.                                     23840006
           IF C035-IN-8 NOT EQUAL SPACES                                23850006
              PERFORM MOVE-8-REFNR.                                     23860006
           IF C035-IN-9 NOT EQUAL SPACES                                23870006
              PERFORM MOVE-9-REFNR.                                     23880006
           IF C035-IN-7 NOT EQUAL SPACES OR C035-IN-8 NOT EQUAL         23890006
              SPACES OR C035-IN-9 NOT EQUAL SPACES                      23900006
              PERFORM WRITE-REC-10-TO-FILE-10.                          23910006
       PROCESS-V-REC-EXIT.                                              23920006
           EXIT.                                                        23930006
      *****************************************************************23940006
       MOVE-2-REFNR SECTION.                                            23950006
       MOVE-REFNR-2.                                                    23960006
222800     MOVE C035-IN-2 TO C035-B-C-10-2.                             23970000
222900     MOVE C038-IN-2 TO C038-10-2.                                 23980000
223000     MOVE D001-IN-2 TO D001-C004C-10-2.                           23990000
       MOVE-2-REFNR-EXIT.                                               24000006
           EXIT.                                                        24010006
      *****************************************************************24020006
       MOVE-3-REFNR SECTION.                                            24030006
       MOVE-REFNR-3.                                                    24040006
223100     MOVE C035-IN-3 TO C035-B-C-10-3.                             24050000
223200     MOVE C038-IN-3 TO C038-10-3.                                 24060000
223300     MOVE D001-IN-3 TO D001-C004C-10-3.                           24070000
       MOVE-3-REFNR-EXIT.                                               24080006
           EXIT.                                                        24090006
      *****************************************************************24100006
       MOVE-4-REFNR SECTION.                                            24110006
       MOVE-REFNR-4.                                                    24120006
223500     MOVE HDR-NIIN-V TO D046D-10.                                 24130000
223600     MOVE 10 TO PRINT-CODE-10.                                    24140000
223700     MOVE C035-IN-4 TO C035-B-C-10-1.                             24150000
223800     MOVE C038-IN-4 TO C038-10-1.                                 24160000
223900     MOVE D001-IN-4 TO D001-C004C-10-1.                           24170000
       MOVE-4-REFNR-EXIT.                                               24180006
           EXIT.                                                        24190006
      *****************************************************************24200006
       MOVE-5-REFNR SECTION.                                            24210006
       MOVE-REFNR-5.                                                    24220006
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224000      MOVE C035-IN-5 TO C035-B-C-10-2.                          24230000
224100      MOVE C038-IN-5 TO C038-10-2.                              24240000
224200      MOVE D001-IN-5 TO D001-C004C-10-2.                        24250000
        MOVE-5-REFNR-EXIT.                                            24260006
            EXIT.                                                     24270006
      ******************************************************************24280006
        MOVE-6-REFNR SECTION.                                         24290006
        MOVE-REFNR-6.                                                 24300006
224300      MOVE C035-IN-6 TO C035-B-C-10-3.                          24310000
224400      MOVE C038-IN-6 TO C038-10-3.                              24320000
224500      MOVE D001-IN-6 TO D001-C004C-10-3.                        24330000
        MOVE-6-REFNR-EXIT.                                            24340006
            EXIT.                                                     24350006
      ******************************************************************24360006
        MOVE-7-REFNR SECTION.                                         24370006
        MOVE-REFNR-7.                                                 24380006
224700      MOVE HDR-NIIN-V TO D046D-10.                              24390000
224800      MOVE 10 TO PRINT-CODE-10.                                 24400000
224900      MOVE C035-IN-7 TO C035-B-C-10-1.                          24410000
225000      MOVE C038-IN-7 TO C038-10-1.                              24420000
225100      MOVE D001-IN-7 TO D001-C004C-10-1.                        24430000
        MOVE-7-REFNR-EXIT.                                            24440006
            EXIT.                                                     24450006
      ******************************************************************24460006
        MOVE-8-REFNR SECTION.                                         24470006
        MOVE-REFNR-8.                                                 24480006
225200      MOVE C035-IN-8 TO C035-B-C-10-2.                          24490000
225300      MOVE C038-IN-8 TO C038-10-2.                              24500000
225400      MOVE D001-IN-8 TO D001-C004C-10-2.                        24510000
        MOVE-8-REFNR-EXIT.                                            24520006
            EXIT.                                                     24530006
      ******************************************************************24540006
        MOVE-9-REFNR SECTION.                                         24550006
        MOVE-REFNR-9.                                                 24560006
225500      MOVE C035-IN-9 TO C035-B-C-10-3.                          24570000
225600      MOVE C038-IN-9 TO C038-10-3.                              24580000
225700      MOVE D001-IN-9 TO D001-C004C-10-3.                        24590000
        MOVE-9-REFNR-EXIT.                                            24600006
            EXIT.                                                     24610006
226100******************************************************************24620000
226200 WRITE-REC-10-TO-FILE-10 SECTION.                               24630000
226300 WRITE-REC-10.                                                  24640000
226400      MOVE OUT-REC-10 TO OUTPUT-REC-10.                        24650000
226500      WRITE OUTPUT-REC-10.                                     24660000
226600      MOVE SPACES TO OUT-REC-10.                               24670000
226700 WRITE-REC-10-EXIT.                                            24680000
226800      EXIT.                                                    24690000
226900******************************************************************24700000
227000 MULTI-MOE-CHECK SECTION.                                       24710000
227100 CHECK-MULTI-MOE.                                               24720000
227200      IF Z-FLAG-I NOT EQUAL SPACES                             24730000
227300         PERFORM PROCESS-REC-Z2                                24740000
227400      ELSE                                                     24750000
227500         PERFORM PROCESS-REC-2.                                24760000
227600 CHECK-MULTI-MOE-EXIT.                                          24770000
227700      EXIT.                                                    24780000
227800******************************************************************24790000
227900 PROCESS-REC-Z2 SECTION.                                        24800000
228000 PROCESS-Z2-REC.                                               24810000
228100      MOVE B10-INPUT-REC TO WS-Z2-REC.                         24820000
228200      MOVE HDR-NIIN-Z2 TO D046D-12.                            24830000
228300      MOVE 12 TO PRINT-CODE-12.                                24840000
228400      MOVE D093-IN-Z2-1 TO D093-12-1.                          24850000
228500      MOVE D094-IN-Z2-1 TO D094-12-1.                          24860000
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228600     MOVE D094-IN-Z2-2 TO D094-12-2.                              24870000
228700     MOVE D094-IN-Z2-3 TO D094-12-3.                              24880000
228800     MOVE D094-IN-Z2-4 TO D094-12-4.                              24890000
228900     MOVE D094-IN-Z2-5 TO D094-12-5.                              24900000
229000     MOVE D094-IN-Z2-6 TO D094-12-6.                              24910000
229100     MOVE D094-IN-Z2-7 TO D094-12-7.                              24920000
229200     MOVE D094-IN-Z2-8 TO D094-12-8.                              24930000
229300     MOVE D094-IN-Z2-9 TO D094-12-9.                              24940000
229400     MOVE D094-IN-Z2-10 TO D094-12-10.                            24950000
229500     MOVE D093-IN-Z2-2 TO D093-12-2.                              24960000
229600     MOVE D095-IN-Z2-1 TO D095-12-1.                              24970000
229700     MOVE D095-IN-Z2-2 TO D095-12-2.                              24980000
229800     MOVE D095-IN-Z2-3 TO D095-12-3.                              24990000
229900     MOVE D095-IN-Z2-4 TO D095-12-4.                              25000000
230000     MOVE D095-IN-Z2-5 TO D095-12-5.                              25010000
230100     MOVE D095-IN-Z2-6 TO D095-12-6.                              25020000
230200     MOVE D095-IN-Z2-7 TO D095-12-7.                              25030000
230300     MOVE D095-IN-Z2-8 TO D095-12-8.                              25040000
   230400     MOVE D095-IN-Z2-9 TO D095-12-9.                            00
230500     MOVE D095-IN-Z2-10 D095-12-10.          230600     PERFORM WRITE-REC-12-TO
                                  230700 PROCESS-Z2-REC-EXIT.
                                    25080000
230800     EXIT.                                                        25090000
230900*****************************************************************25100000
231000 PROCESS-REC-Z SECTION.                                           25110000
231100 PROCESS-Z-REC.                                                   25120000
231200     MOVE B10-INPUT-REC TO WS-Z-REC.                              25130000
231300     MOVE HDR-NIIN-Z TO D046D-11.                                 25140000
231400     MOVE 11 TO PRINT-CODE-11.                                    25150000
231500     MOVE D093-IN TO D093-11.                                     25160000
231600     MOVE D095-IN-1 TO D095-11-1.                                 25170000
231700     MOVE D095-IN-2 TO D095-11-2.                                 25180000
231800     MOVE D095-IN-3 TO D095-11-3.                                 25190000
231900     MOVE D095-IN-4 TO D095-11-4.                                 25200000
232000     MOVE D095-IN-5 TO D095-11-5.                                 25210000
232100     MOVE D095-IN-6 TO D095-11-6.                                 25220000
232200     MOVE D095-IN-7 TO D095-11-7.                                 25230000
232300     MOVE D095-IN-8 TO D095-11-8.                                 25240000
232400     MOVE D095-IN-9 TO D095-11-9.                                 25250000
232500     MOVE D095-IN-10 TO D095-11-10.                               25260000
232600     PERFORM WRITE-REC-11-TO-FILE-11.                             25270000
232700 PROCESS-Z-REC-EXIT.                                             25280000
232800     EXIT.                                                        25290000
232900*****************************************************************25300000
233000 WRITE-REC-11-TO-FILE-11 SECTION.                                 25310000
233100 WRITE-REC-11.                                                    25320000
233200     MOVE OUT-REC-11 TO OUTPUT-REC-11.                            25330000
233300     WRITE OUTPUT-REC-11.                                         25340000
233400     MOVE SPACES TO OUT-REC-11.                                   25350000
233500 WRITE-REC-11-EXIT.                                              25360000
233600     EXIT.                                                        25370000
233700*****************************************************************25380000
233800 WRITE-REC-12-TO-FILE-12 SECTION.                                 25390000
233900 WRITE-REC-12.                                                    25400000
234000     MOVE OUT-REC-12 TO OUTPUT-REC-12.                            25410000
234100     WRITE OUTPUT-REC-12.                                         25420000
234200     MOVE SPACES TO OUT-REC-12.                                   25430000
234300 WRITE-REC-12-EXIT.                                              25440000
234400     EXIT.                                                        25450000
234500*****************************************************************25460000
234600 CLOSE-ROUTINE SECTION.                                           25470000
234700 CLOSE-FILES-ROUTINE.                                             25480000
234800     CLOSE B10JX1, OFILE1, OFILE2, OFILE3, OFILE4,                25490000
234900           OFILE5, OFILE6, OFILE7, OFILE8, OFILE9,                25500000
```

```
235000           OFILE10, OFILE11, OFILE12, OFILE13.                    25510014
235100 CLOSE-ROUTINE-EXIT.                                              25520000
235200     EXIT.                                                        25530000
235300*****************************************************************25540000
```

APPENDIX E

SAMPLE NSN5B DATAFILES

1. OFILE1

```
0005195870100000E68064R EA041776.00SWASH PLATE,ASSY RO  5MTKPGAM7RE1615TQH  0ARKESS SZ18.0053PCMH039580.00
0005195990100000E68064R EA031698.00SWASH PLATE ASSY,AF  5MTKU6AM7RE1615TQH  0ARKE X MZ14.3353ACMH026530.00
0005213580100000E67185R EA000579.94FILTER,FLUID         5ME     H7RH2915TQ   0ARKE Z Z 05.00C3HVMH000579.00
0005213600100000X67185  EA000013.21PARTS KIT,PUMP,CURE   5KR     H1RM2915T    000KE Z Z 10.3364HVBH000015.50
0005213660100000X67185  EA000344.89PARTS KIT,PUMP,OVER   5KR     H1RM2915T    000KE Z Z 10.3364HVBH000397.00
0005244550100000Y68038 1EA001048.51GEAR ROTOR            5MMELLBM1RM1615T     000KE Z Z 07.63500VMH001310.00
0005244570100000Y68038  EA005415.62GEAR ROTOR            5MMELLBH1RM1615TQ    000KE Z Z 13.5353HVMH006240.00
0005263550100000E67206R1EA000885.09MOTOR,ALTERNATING C  5MEUG3AM7RE6105LTT U0ARKE Z Z 06.33100VMH001450.00
0005265750100000E67206R EA001027.25VALVE,FLOAT,AIRCRAF  5ML     H7RH2915TL   0ARKE X M 08.3364HVMH000860.00
0005320640100000G69334  EA000992.14CHANNEL ASSEMBLY      5HC     H1RD5826TL   000CL X M 07.63C30VAH001180.00
0005446260100000Y67185  EA000056.34TRANSDUCER,MOTIONAL   5MA     H1RM6695TLC  000KE   P 07.0353BDMH000071.00
0005447290100000Y67206  EA000199.03JET,OIL,GEARBOX       5KR     H1RM1615T    000KE     08.5053CDBH000248.00
0005447380100000Y67206  EA005027.74HOUSING AND LINER     5KR     H1RM1615TQ   000KEW1 M 15.5053CDBH005570.00
0005448730100000Y67185  EA000041.49COCK,POPPET DRAIN     5MC     H1RM4820T    000KE     06.3325BDMH000052.00
0005516620100000G67185  EA000584.81CONTROL PANEL ASSY    5H3     H1RD6220T    000KE X M 07.6323HDAH000729.00
0005551230100000 63259  EA000004.39BUSHING,SLEEVE        5KD     H1RM1620T    000KE     09.00200DBH000005.50
0005595140100000E64197R EA002643.43VALVE,TRANSFER,AUTO  5KB     H7RH6615TQL  7ARKEMX M 10.3313CCBH002600.00
0005609020100000E64197R1EA000636.01CYLINDER ASSEMBLY,A  5KBCVUAM7RH6615T     0ARKEMZ Z 09.0033HVBH000625.00
0005609030100000E64197R1EA000452.15CYLINDER ASSEMBLY,A  5KBMN2AM7RH6615T     0ARKEMZ Z 09.0063HVBH000445.00
0005609040100000E64197R EA001293.81ACCELEROMETER,HYDRA  5KB     H7RH1650T    0ARKESS SZ10.3363HCBH001280.00
0005622860100000 64123 1EA000429.00SERVOCYLINDER         5H3JRQBM1RD1650TQU  000CTMZ Z 05.3030CVAH000429.00
0005623390100000 64208  EA000684.00VALVE,LINEAR,DIRECT   5MC     H1RD1650TQUC 000CTMX M 06.0323HCMH000684.00
```

2. OFILE2

```
00051958702 0000004 0000000 00000.1000000120.04GB48RDX
00051959902 0000000 0000000 00000.2000000000.04GB49RAX
00052135802 0000000 0000000 00000.0000000000.02AD56RAX
00052136002 0000000 0000000 00000.6000000000.00
00052136602 0000000 0000000 00000.3000000000.00
00052445502 0000000 0000000 00000.0000000000.00
00052445702 0000000 0000000 00000.6000000000.00
00052635502 0000000 0000000 00000.0000000000.10ASGAA0X
00052657502 0000001 0000000 00000.1000000000.02AD51VAX
00053206402 0000000 0000000 00000.3000000000.00
00054462602 0000003 0000052 00027.1000000000.00
00054472902 0000000 0000000 00000.0000000000.00
00054473802 0000000 0000000 00000.1000000000.00
00054487302 0000000 0000000 00000.2000000000.00
00055166202 0000000 0000000 00000.3000000000.00
00055512302 0000000 0000000 00000.0000000000.00
00055951402 0000002 0000000 00001.9000000030.22JX61AAX
00056090202 0000000 0000000 00000.0000000000.10AD14VAX
00056090302 0000000 0000000 00000.0000000000.02AD14WAX
00056090402 0000000 0000000 00002.2000000000.05AR11CAX
00056228602 0000000 0000000 00000.0000000000.00
00056233902 0000053 0000000 00000.6000000140.00
```

3. OFILE3

```
000519587030.320.400.99PAD220003410.00
000519599030.340.420.99PAD220002650.00
000521358034.814.890.98PAD220000471.00
000521360030.000.000.00PAZ060000000.00
000521366030.000.000.00PAZ060000000.00
000524455030.000.000.00PAZ060000000.00
000524457030.000.000.00PAZ060000000.00
000526355030.430.620.91PAD220000646.00
000526575030.160.240.98PAD220000415.00
000532064030.000.000.00PAG220000000.00
000544626030.000.000.00PAZ060000000.00
000544729030.000.000.00PAZ060000000.00
000544738030.000.000.00PAD060000000.00
000544873030.000.000.00PAZ060000000.00
000551662030.000.000.00PAG060000000.00
000555123030.000.000.00PAZ060000000.00
000559514030.240.320.78PAD220000842.00
000560902030.320.000.90PAD220000478.00
000560903030.600.000.98PAD220000247.00
000560904030.390.470.95PAD220000640.00
000562286030.000.000.00PAG8D0000000.00
000562339030.000.000.00PAG8D0000000.00
```

4. OFILE4

```
000519587O4NDZ      1      2      000000006    AF      3      0      0V      3      0      000000004
000519587O4NDZ                                  AG     30      0      0
000519587O4NDZ                                  AM     26      0      0
000519587O4NVZ      9      4      000000003
000519587O4NXZ      0      0      000000000                           W      0      0      000000001
000519587O4PDZ      0      0      000000000                           L      5      0      000000000
000519587O4PDZ                                                      W      1      0      000000001
000519587O4PEZ      0      0      000000000                           W      1      0      000000001
000519587O4PNZ      0      0      000000000                           L      6      0      000000000
000519587O4PNZ                                                      W      2      0      000000002
000519587O4PRZ      0      0      000000000                           W      0      0      000000001
000519587O4PSZ      0      0      000000000                           W      0      0      000000001
000519587O4PTZ      0      0      000000000    AD      3      0      0V      0      0      000000003
000519587O4PTZ                                  AF      6      0      0W      2      0      000000002
000519587O4PTZ                                  AG      2      0      0
000519587O4PTZ                                  AM     20      0      0
000519587O4P48      1      0      000000000                           W      0      0      000000000
000519587O4Q18      0      0      000000000    AD      0      0      0W      0      0      000000001
000519599O4NDZ      0     14      000000000    AD      0      0      0V      1      0      001000005
000519599O4NDZ                                  AF      2      0      0W      0      0      000000000
000519599O4NDZ                                  AG     33      0      0
000519599O4NDZ                                  AM     26      0      0
000519599O4NNZ      6      0      000000000    AF      0      0      0
000519599O4NVZ     12      4      000000004
000519599O4NXZ      0      0      000000000                           W      1      0      000000001
000519599O4PDZ      0      0      000000000                           L      9      0      000000002
000519599O4PDZ                                                      W      0      0      000000001
000519599O4PEZ      1      1      000000000                           W      2      0      000000002
000519599O4PNZ      1      0      000000000                           L-     1      0      000000003
000519599O4PNZ                                                      W      2      0      000000002
000519599O4PRZ      0      0      000000000                           W      0      0      000000001
000519599O4PSZ      0      0      000000000                           W      0      0      000000001
000519599O4PTZ      2      0      000000000    AD      1      0      0V      0      0      000000003
000519599O4PTZ                                  AF      4      0      0W      2      0      000000002
000519599O4PTZ                                  AG      1      0      0
000519599O4PTZ                                  AM     10      0      0
000519599O4QQQ      0      0      000000001                           L      0      0      000000000
000519599O4QQQ                                                      W      0      0      000000000
000519599O4R63                                                      W      0      0      000000000
000521358O4NDZ      3      0      000000000    AF     15      0      0
000521358O4NNZ      2      0      000000000
000521358O4PDZ     10      0      000000000                           W      1      0      000000001
000521358O4PTZ      2      0      000000000
000521360O4NAZ    338      0      000000000
000521366O4NAZ     74      0      000000000
000521366O4PDZ      1      0      000000000
000524457O4NDZ      1      0      000000001
000524457O4PTZ     75      0      000000000
000526355O4NAZ                                  AF      1      0      0
000526355O4NDZ                                  AF      3      0      0
```

00052635504NVZ	1	0	000000000								
00052635504PDZ							L	1	0	000000000	
00052635504PTZ	0	0	000000000	AF	376	0	0				
00052657504NVZ	0	0	000000002								
00052657504PDZ	0	0	000000000				L	0	0	000000009	
00052657504PDZ							W	1	0	000000001	
00052657504PEZ	0	0	000000000				W	0	0	000000000	
00052657504PNZ	0	0	000000000				L	7	0	000000009	
00052657504PNZ							W	0	0	000000001	
00053206404NBZ	3	0	000000000								
00053206404NDZ	5	0	000000000	AF-	1	0	0				
00053206404NNZ	2	0	000000000								
00053206404NVZ	4	0	000000001								
00053206404PCZ	19	0	000000002								
00053206404PDZ	2	0	000000000								
00053206404PEZ	6	0	000000000								
00053206404PTZ	1	0	000000000								
00053206404P26	1	0	000000000				W	2	0	000000002	
00054462604NDZ	80	0	000000020								
00054462604NNZ	1	0	000000000								
00054462604NVZ	16	0	000000019								
00054462604NXZ	2	0	000000001								
00054462604PDZ	3	0	000000004				L	10	0	000000016	
00054462604PEZ	34	0	000000007								
00054462604PNZ	2	0	000000003				L	8	0	000000006	
00054462604PRZ	3	0	000000003								
00054462604PTZ	145	0	000000000								
00054462604P48	1	0	000000000								
00054462604QQQ							L	0	0	000000000	
00054462604Q18	1	0	000000000								
00054472904NAZ	20	0	000000000								
00054473804NAZ	27	0	000000000								
00054487304NDZ	42	0	000000000								
00054487304NOZ	1	0	000000000								
00054487304NVZ	3	0	000000002								
00054487304NXZ	4	0	000000000								
00054487304PDZ	0	0	000000000				L	10	0	000000016	
00054487304PNZ							L	8	0	000000006	
00054487304PTZ	48	0	000000000								
00054487304P63	0	0	000000001								
00055166204NAZ	4	0	000000000								
00055166204NBZ	2	0	000000000								
00055166204NDZ	4	0	000000000								
00055166204PCZ	33	0	000000000								
00055166204P36	2	0	000000000				W	0	0	000000000	
00055512304NAZ	14	0	000000000								
00055512304NBZ	17	0	000000000								
00055512304NDZ	26	0	000000000								
00055512304NNZ	22	0	000000000								
00055512304NVZ	2	0	000000000								
00055512304PDZ	11	0	000000000								
00055512304PLZ	3	0	000000000								
00055512304PNZ	3	0	000000000								
00055512304PRZ	6	0	000000000								
00055512304PTZ	36	0	000000000								
00055951404NDZ	0	3	000000000								
00055951404NNZ	0	4	000000000	AF	0	0	0				
00055951404PNZ	1	0	100000000				W	0	0	000000001	
00056090204NAZ				AE	5	0	0				
00056090204NAZ				AF	4	0	0				
00056090204NDZ				AF	1	0	0				
00056090204NNZ				AE	1	0	0				
00056090304NAZ				AE	5	0	0				
00056090304NAZ				AF	2	0	0				
00056090304NAZ				AM	1	0	0				
00056090304PTZ				AE	5	0	0				
00056090304PTZ				AF	1	0	0				
00056090404NAZ	0	0	000000000	AF	14	0	1				
00056090404NAZ				AG	4	0	1				
00056090404NAZ				AH	0	0	0				
00056090404NAZ				AM	1	0	1				
00056090404NDZ	0	0	000000000	AF	3	0	0				
00056090404NVZ	1	0	000000000								
00056090404PDZ	0	0	000000000				W	1	0	000000001	
00056090404P31	0	0	000000000				W	1	0	000000001	
00056233904NDZ	3	0	000000002								
00056233904NNZ	1	0	000000000								

5. OFILES

```
00051958705DDKN0065182350507                NVZ      2A88366      0A
00051958705DDKN0065182451723                NVZ      2A89011      0A
00051958705DDKN0024482360550                NDZ      1A89061      0A
00051958705DDKN0024481970437                ND2      1A89061      0A
00051958705D9CNWHN3261785135                ND2      1G88301      0A
00051958705D9CNWHN3270025135                ND2      3G88295      0A
00051958705D9CNWHN3270165135                ND2      1G88301      0A
00051958705D9CNWHN3270445135                PTZ      1G88302      0A
00051958705D9CNWHN3270755135                PTZ      3G88302      0A
00051958705D9CNWHN3270795135                PTZ      1G88302      0A
00051958705D9CNWHN3270865135                PTZ      1G88310      0A
00051958705D9CNWHN3270905135                PTZ      1G88310      0A
00051958705D9CNWHN3270935135                PTZ      2G88310      0A
00051958705D9CNWHN3270965135                PTZ      1G88310      0A
00051958705D9CNWHN3271005135                NDZ      1G88307      0A
00051958705D9CNWHN3271005135                PTZ      1G88310      0A
00051958705D9CNWHN3271145135                NDZ      1G88301      0A
00051958705D9CNWHN3271145135                PTZ      2G88316      0A
00051958705D9CNWHN3271285135                PTZ      1G88316      0A
00051958705D9CNWHN3271565135                NDZ      1G88307      0A
00051958705D9CNWHN3271635135                ND2      1G88307      0A
00051958705D9CNWHN3271805502                PTZ      1G88316      0A
00051958705D9CNWHN3271875502                PTZ      1G88316      0A
00051958705D9CNWHN3272395502                PTZ      2G88316      0A
00051958705D9CNWHN3272815502                PTZ      2G88316      0A
00051958705D9CNWHN3280085135                NDZ      1G88307      0A
00051958705D9CNWHN3281065502                PTZ      1F8  38      1A
00051958705D9CNWRN3262923643                NDZ      1G88316      0A
00051958705D9CNWRN3263414297                ND2      1G88316      0A
00051958705D9CNWRN3263484459                NDZ      1G88316      0A
00051958705D9CNWRN3263504492                NDZ      1G88316      0A
00051958705D9CNWRN3270264936                NDZ      2G88295      0A
00051958705D9CNWRN3280821369                NDi      1F88112      1A
00051958705D9CNWRN3282362772                NDZ      4F88266      0A
00051958705D9CNWRN3282572984                NDZ      5F88287      0A
00051959905DDKN0065180560467                NVZ      1A88313      0A
00051959905DDKN0065180700362                NVZ      1A88321      0A
00051959905DDKN0065181471315                NVZ      2A88321      0A
00051959905DDSN0038384G4503  02370001AC     NDZ     14A87120      0A
00051959905DDSN0038384G4503  02370001AD     PEZ      1A87120      0A
00051959905D9CNWHN3261785133                NDZ      1G88296      0A
00051959905D9CNWHN3261995133                ND2      1G88296      0A
00051959905D9CNWHN3262065133                ND2      2G88296      0A
00051959905D9CNWHN3270095133                NDZ      2G88303      0A
00051959905D9CNWHN3270165133                NDZ      2G88309      0A
00051959905D9CNWHN3270795133                NDZ      1G88303      0A
00051959905D9CNWHN3270935133                NDZ      1G88303      0A
00051959905D9CNWHN3271285133                NDZ      1G88318      0A
00051959905D9CNWHN3271945501                PTZ      2G88312      0A
00051959905D9CNWHN3272195133                NDZ      2G88309      0A
00051959905D9CNWHN3272395501                PTZ      2G88304      0A
00051959905D9CNWHN3272495501                PTZ      2G88304      0A
00051959905D9CNWHN3272525501                PTZ      1G88304      0A
00051959905D9CNWHN3272595501                PTZ      1G88312      0A
00051959905D9CNWHN3272825133                NDZ      1G88296      0A
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00051959905D9CNWHN3273105133                NDZ      1G88318      0A
00051959905D9CNWHN3280085133                NDZ      2G88318      0A
00051959905D9CNWHN3280995501                PTZ      2F88133      1A
00051959905D9CNWHN3281135501                PTZ      1F88147      1A
00051959905D9CNWHN3281835133                NDZ      1F88218      0A
00051959905D9CNWHN3281905133                NDZ      1F88224      0A
00051959905D9CNWRN3263494472                NDZ      1G88296      0A
00051959905D9CNWRN3281151806                NDZ      0F88149      0A
00051959905D9CNWRN3282362773                NDZ      3F88268      0A
00051959905D9CNWRN3282572985                NDZ      3F88289      0A
00052635505D9CNWHN3281415141                PTZ      7F88174      0A
00052635505D9CNWHN3281905141                PTZ      1F88222      1A
00055951405A4AN6588982570JJ6             NAZPNZ      1A    0      0A
00055951405DDSN0038385X9005      0001AB     NDZ      3A85365      0A
00055951405DDSN0038385X9005      0001AA     NN2      4A85365      0A
00055951405D9CNWSN3282250204                NA2      0F88252      1A
00056090405D9CNWSN3281200218                NA2      3F88145      2A
00056090405D9CNWSN3282460209                NA2      0F88286      1A
00056090405D9CNWSN3282530209                NA2      1F88291      0A
```

6. OFILE6

```
00051958706BPRN629956285013 4WVV1086      199999799
00051958706BPRN600506256004 9WVV0986      199999799
00051958706BPRN002447323002 2V87SDLM      499999799
00051958706BPRN001467323001 2V87SDLM      399999799
00051958706BPRN002466227013 5WVV0886      199999799
00051958706BPRN631268203022 3WVV0688      199999799
00051958706BPRN001887342022 7WVV1287      299999799
00051958706BPRN611198217025 4WVV0888      199999799
00051958706BPRN006516356041 2AVV1286      399999799
00051958706BPRN004218134029 6WVV0388      199999799
00051958706BPRN001465135002 0WP25OSI      199999799
00051958706BPRN001465140002 5WVV0585      199999799
00051958706DGAN003838105W621A             699999PH9
00051958706501V091675360014 3WOSIXXX      699999Q48
00051958706501N626135213004 0WVV0685      199999P41
00051958706501R091167192013 6WOSIXXX     1799999Q46
00051958706501R071986170010 4WOSIXXX      299999R4X
00051958706501N003187079003 5WVV0387      199999PUZ
00051958706501N002627188005 7WVV0887      199999PVZ
00051958706501V528416082015 3WOSIXXX      899999Q39
00051959906BPRN001888137002 6L46DPRE      399999799
00051959906BPRN001887342022 8WVV1287      299999799
00051959906BPRN002447323002 3V87SDLM      599999799
00051959906BPRN004218134029 7WVV0388      199999799
00051959906BPRN631268203022 4WVV0688      199999799
00051959906BPRN024681370026 L46DPRE       299999799
00051959906BPRN024663480007 WSRM46P       199999799
00051959906BPRN001451400026 WVV0585       199999799
00051959906BPRN001467323001 3V87SDLM      399999799
00051959906BPRN600507260001 6WACR131      299999799
00051959906BPRN611198217025 5WVV0888      199999799
00051959906BPRN006518193000 3AVV0788      499999799
00051959906BPRN001465135002 1WP25OSI      199999799
00051959906501R091168148007 6WOSIXXX     2099999Q46
00051959906501N003187079003 6WVV0387      199999PUZ
00051959906501N626135213004 1WVV0685      199999P41
00051959906501N002627188005 8WVV0887      199999PVZ
00051959906501R071986170010 5WOSIXXX      399999R4X
00051959906501V091675360014 4WSRMSPL      199999Q48
00051959906501V528416082015 4WOSIXXX      699999Q39
00051959906101X001884152052 7ARIMSTP      190274CSL
00052135806BPRN002466227013 7WVV0886      199999799
00052445706BPRN002448182481 3AY00001      199999799
00052657506BPRN002468089000 2WPCH46D      199999799
00052657506BPRN001888125002 1LH46DPU      999999799
00052657506BPRN001887342022 9WVV1287      199999799
00052657506BPRN002468127002 1LH46DPU      999999799
00052657506BPRN006517247015 VAVV1087      299999799
00052657506501R091367084019 0WOSIXXX      299999Q53
00052657506501V091676272009 9WOSIXXX      199999Q48
00052657506501N628768175002 1LHH46AX      499999QWZ
00053206406BPRN001967288001 9WVV1087      299999799
00053206406BPRN006518125015 0ARSTOCK      199999799
00053206406DGAN003838105W654A             299999PH9
00053206406501R098087237008 9WOSIXXX      299999R65
00053206406501R091367084019 3WOSIXXX      199999Q53
00054462606BPRN002467015004 4LH46SRM      299999799
00054462606BPRNC0246CH460019 LPPDETA      999999799
00054462606BPRN002468178508 3ARSTOCK      499999799
00054462606BPRN002467231022 8LH46SRM      599999799
00054462606BPRN002448182244 0AY00029     1899999799
00054462606BPRN004218082172 2ARSTOCK      399999799
00054462606BPRN611198177172 7AY00001      199999799
00054462606BPRN006518125216 1ARSTOCK     1999999799
00054462606BPRN001887365038 2ARSTOCK      399999799
00054462606BPRN600508174287 2AY00011      799999799
00054462606BPRN001887015104 4LH46SRM      699999799
00054462606DGAN003838105W695A             299999PH9
00054487306BPRN002042038000 7APPDETA      199999799
00054487306BPRN001887015104 5LH46SRM      699999799
00054487306BPRN00246CH460020 LPPDETA      999999799
00054487306BPRN002467015004 5LH46SRM      299999799
00054487306BPRN002467231022 9LH46SRM      599999799
00054487306BPRN006518125199 7ARSTOCK      299999799
00055166206501N613313251000 5WVV0983      199999P87
```

7. OFILE7

```
000519587070121680 5106
000519599070007324064101215557906
000524455070005244 5721
000524457070005244 5541
000526355070043168 8121
000560902070018629242700948059421
000560903070094805 9521
000562286070091241222100944817021
000571827070044675764401143563224
```

8. OFILE8

```
00051958708B1891          11000G
00051958708B1892          11000G
00051958708CH46AX         1 980G
00051958708CH46DM         1 980G
00051958708CH46DX         1 980G
00051958708CH46EX         1 990G
00051958708CH46FX         1 980G
00051958708HH46AX         1 980G
00051958708UH46AX         1 980G
00051958708UH46DM         1 980G
00051958708UH46DX         1 980G
00051958708LEVREP         0100GG
00051959908B1891          11000G
00051959908B1892          11000G
00051959908B1895          11000G
00051959908CH46AX         1 990G
00051959908CH46DM         1 990G
00051959908CH46DX         1 990G
00051959908CH46EX         1 990G
00051959908CH46FX         1 990G
00051959908HH46AX         1 990G
00051959908UH46AX         1 990G
00051959908UH46DM         1 990G
00051959908UH46DX         1 990G
00051959908LEVREP         0100GG
00052135808CH46AX         21000G
00052135808CH46DM         21000G
00052135808CH46DX         21000G
00052135808CH46EX         21000G
00052135808CH46FX         21000G
00052135808HH46AX         21000G
00052135808UH46AX         21000G
00052135808UH46DM         21000G
00052135808UH46DX         21000G
00052136008HHX2DX         1100GZ
00052136008SHX2DX         1100GZ
00052136008SHX2FX         1100GZ
00052136608HHX2DX         1100GZ
00052136608SHX2DX         1100GZ
00052136608SHX2FX         1100GZ
00052445508AJ81RVX        1100DZ
00052445508AP23RQX        1100DZ
00052445508BG28RAX        1  00Z
00052445708AJ81RVX        1100DZ
00052445708AP23RQX        1100DZ
00052445708BG28RAX        1100DZ
00052635508CH46AX         6 400G
00052635508CH46DM         6 400G
00052635508CH46DX         6 400G
00052635508CH46EX         6 400G
00052635508CH46FX         6 400G
00052635508HH46AX         6 400G
00052635508UH46AX         6 400G
00052635508UH46DM         6 400G
00052635508UH46DX         6 400G
00052657508CH46AX         21000G
00052657508CH46DM         21000G
00052657508CH46DX         21000G
00052657508CH46EX         21000G
00052657508CH46FX         21000G
00052657508HH46AX         21000G
00052657508UH46AX         21000G
00052657508UH46DM         21000G
```

```
0005265750B3UH46DX        21000G
0005320640BB2021          11000G
0005320640BB2025          11000G
0005320640BL5AGQNX        11000G
0005320640BL5AGWHX        11000G
0005446260BB1891          1100OZ
0005446260BB1895          1100OZ
0005446260B3CH46AX        1100OZ
0005446260B3CH46DM        1100OZ
0005446260B3CH46DX        1100OZ
0005446260B3CH46EX        1100OZ
0005446260B3CH46FX        1 50OZ
0005446260B3HH46AX        1100OZ
0005446260B3UH46AX        1100OZ
0005446260B3UH46DM        1100OZ
0005446260B3UH46DX        1100OZ
0005446260B9XRDXXX        1100OZ
0005447290BGB47RAX        1100DZ
0005447290BL1ADBLX        1100DZ
0005447380BGB46RAX        1100OD
0005448730BB1895          2100OZ
0005448730B3CH46AX        2100OZ
0005448730B3CH46DM        2100OZ
0005448730B3CH46DX        2100OZ
0005448730B3CH46EX        2100OZ
0005448730B3CH46FX        2 50OZ
0005448730B3HH46AX        2100OZ
0005448730B3UH46AX        2100OZ
0005448730B3UH46DM        2100OZ
0005448730B3UH46DX        2100OZ
0005516620BB1911          1100OG
0005516620BB1912          1100OG
0005516620BB1915          1100OG
0005516620B3UH1EXX        1 50OG
0005551230BB2011          1100OZ
0005551230BST11EAX        1100OZ
0005551230B3SHX2DX        1100OZ
0005551230B3SHX2FX        1100OZ
0005595140BAAAAAA1        1  00F
0005595140BL2AFTCX        2100GD
0005609020BAAAAAA1        1  00F
0005609020B3HHX2DX        1  00G
0005609020B3SHX2DX        1  00G
0005609030B3HHX2DX        1 50OG
0005609030B3SHX2DX        1 50OG
0005609040BL2AFTCX        2100OG
0005622860B3THX1LX        1  00G
0005622860B3UHX1LX        1  00G
0005622860B3UH1EXX        1  10G
0005622860B3XHH1KX        1  00G
0005623390BB1891          1100OG
0005623390BB1895          1100OG
0005623390B3CH46AX        1100OG
0005623390B3CH46DM        1100OG
0005623390B3CH46DX        1100OG
0005623390B3CH46EM        1100OG
0005623390B3CH46EX        1100OG
0005623390B3CH46FX        1100OG
0005623390B3HH46AX        1100OG
0005623390B3UH46AX        1100OG
0005623390B3UH46DM        1100OG
```

9. Ofile9

```
00051958709N00651823505C7     27702605BB
00051958709N00651824517Z3     27702605BB
0005195B709N001467258l683     17702606BB
00051958709R09116825718Z7     1AE9VZ06BB
00051958709R09116825718Z9     1AE9VZ06BB
00051958709N002448137019J     27702615BB
00051958709N002448138042J     17702615BB
00051958709N00244813704J7E    17702615BB
00051958709N002448236055O     17702615BB
00055951409N658898272096J6    1ZN3XGC3BB
00055951409N001888134A262     1AK1U506BB
00055951409N001888216685B     1770U506BB
00056233909N003835084V80CE    6753QS08BB
00056233909N003835084V80CE    8753QS08BB
```

10. OFILE10

```
000519587l0RT000XREV DCC 48,49 REWK AFT SRM
00051958710T0000XBRK OUT GP INT
00051958710Z0000XGB48RD
00051958710T0003XN0T INTERCHANGABLE AFTER AFC 342
00051958710T0002X0BS0LETE AFTER INC0RP AFC 342
00051958710T0001XH46 DCN 522-03-010
00051959910UTERE 10732406
000519599l077272P107R3504-10
00051959910T0003XN0T INTERCHANG WITH SRM C0NFIG
00051959910T0000XBRK OUT GP INT
00051959910Z0000XGB49RA
00051959910T0002X0BS0LETE AFTER INC0RP AFC 342
00051959910T0001XH46 DCN 522-03-011
00051959910RT000XREV DCC 48 49 REWK AFTER SRM
00052135810INAVY OBSAFTAFC288INCORP
000521358108895l3X52-2902-001
000521358l077272XA02PS417-1
00052135810Z0000XAD56KA
00052136010
000521360105l663XRA22695
00052136010T0000XUTE THEN XA H-2 DCN B470-21
00052136610T0000XUTE THEN XA0ZZ H-2 DCN B470-20
000521366105l663XRA22694
000524455l0WEURE 00524457
00052445510
000524455l077272X107D2256-3
000524457l0SBYRL 07583299
000524457l0UTERE 00524455
000524457l077272X107D2256-2
00052445710T0000XBRK OUT GP INT
000524457l077272X107D2256-4
000524457l081205X107D2256-2
000526355l0WEURE 04316881
000526355l0INAVY USEWITH A1RRESC ACT
000526355102000XASGAA0
000526355107021 0X541634-2-1
000526355l077272XA02RS600-7
000526575102000XAD51VA
000526575l077272XA02PS424-11
000526575l092003X7-117745-1
00052657510T0000XALT 9I0081645011AW CHPTMSG 5-81
000532064109749 9X570-074-037-15
000532064l0RT000X9YD6615C02606314
000532064l0T0000XNARF PNCL DCN H1-7-84/323
000532064102000 0XEA32BA
000532064l0T0001XNACN 10054 85252
000544626101187 1P1332-3000
000544626108l692X721865
000544626108l692X1332-3000
000544626l0T0000XBRK OUT GP INT
000544729l0SBYRL 08347475
00054472910
000544729l084955PK671751-3
000544738l0SBYRL 09853326
000544738l084955PK674827-7
000544738l084955XK674827-5
000544738l0T0000XBRK OUT GP INT
000544873l077272P114PS460-1
000544873l092003X3-114314
000544873l096906XMS51957-14
000551662l0SCBRD 09428208
000551662107291 4P80-0099-5
000551662109682P4369-100-23
000551662l097499X204-075-705
000551662l020000XAMTAB2
000551662109682X4408-100-23
000551662l097499X204-075-705-23
000551662l097499X2041075-705-23
000551662l020000XAMUABB
000555123103966l P611687-1
000559514l0SBYRL 03191768
000559514l0SBYRL 03191770
000559514l0SBYRL 00559513
000559514l010237P18241-4
000559514l010237P18241-5
000559514l010237X18241-3
```

```
0005595141OS0000X6615-000559514
0005595141OZ0000XJX61AA
0005609021OWEURE 09480594
0005609021ORT000XREV AFC181
0005609021OZ0000XAD14VA
0005609021OS0000X1650-001068510
0005609021010237X20053-1
00056090310
0005609031OINAVY USEBEFOREAFC181INCORP
0005609031OWEURE 09480595
0005609031010237X20366-1
0005609031OZ0000XAD14WA
0005609041010237P19720
0005609041OZ0000XAR11CA
0005622861OWEURE 09448170
0005622861OS0000X1650-009124122
0005622861OZ0000X003496
0005622861092003XSGT220-1
0005623391070236P6402
0005623391019204X11615819
0005623391OZ0000XCD58JA
```

11. OFILE11

```
000521358llN2R4DPYl
000544626llNlR5MN7B
```

12. OFILE12

```
0005320641 2A502A501PS60                                    NALL
0005622861 2N2R2A702XS10                                    F5CTFG37NATT
0005623391 2A702A702PS4H                                    F5CTFG37NATT
```

APPENDIX F

LOCATION OF DEN NUMBERS IN THE NSN SNAPSHOT

NSN Snapshot

Nov 16, 1988

D046D

NSN: C003 + C003A + C042 +D046D SMIC: C003B

Name: C004

DRIPR:	B001	LRC:	B002B	Wear Out:	F007	CNS:	B007
RIC:	D008	PLT:	B011A	Survival:	F009	Shelf:	C028
Source:	D012	IMC:	C016	Entry DTD:	C012	FGC:	C001A
Recovery:	D013C			Hold DTD:	B045	PAC:	C009
				ISC:	D025DEF_E089		
Std Price:	B053	Net Price:	B059				
Rpl Price:	B055	Unit Issue:	C005				

PNC	FSCM	Part #
C038	C035_BC	D001_C004C

These Three Fields Are Repeating.

MGR MOE	MULTI MGR_MOE	USER MOE
D095	D094	D095-A

These Three Fields Are Repeati

Current Qtr Maint DMD Obs:	A005
Current Qtr OVHL DMD Obs:	A005A
Est Qtrly DMD During PLT:	B074
Total Back Orders:	A011
Total Awarded Due_ins:	calculated
Total UnAwarded Due_ins:	calculated

Application Data

ACT	Application	UPA	PCT	MC	ACT	Application	UPA	PCT	MC
	D009	D011	F018	D013		D009	D011	F018	D013

These Four fields are repeating in two columns.

PTAS Data

	RFI					NON-RFI					PUR ALL				
Site	OnHand	Due-In	Due-Out	PPRs	SD	PC	CC	OnHand	Due-In	Due-Out	PC	OnHand	Due-In	Due-Out	PPRs
A001	A012	A008B	A021A	A014	B046A	A012A	C003E	A012	A008B	A021A	A012	A012	A008B	A021A	A014
TOTAL	SUM	SUM	SUM	SUM				SUM	SUM	SUM		SUM	SUM	SUM	SUM

Due-Ins

Total = 0

Document ID	Document / Call	CLIN	From	To	QTY Contracted	QTY Shipped	Purpose Code	Condition Code	EST Delivery Date
K001	K002_L001	L022	A001	A001_2ND	L034	A012A	C003E	L009	

Repeating Fields.

Back Orders

Total BB= 0

DOC	QTY	PRJ	PR	FD	BBD	STATUS
K002_K020	K036	K024	K025	K022		K026

Planned Program Requirements

Total DGA= 0 Total 101 0 Total 50 0
Total BPR= 0 Total 301 0

DOC ID	Document	PC	SUPAD	QTY	REQD	PROJ
K001	K002	A012A	K017	K006	K018	K024

APPENDIX G

PHANTOM USER LOGIN MACRO

```
'*****************************************************************************
' nsn_snapshot - selection Macro to build NSN Snapshot
' Written by Lt George Marentic Dec 1988
'*****************************************************************************
'
include "app_ids.h"
include "errorcodes.h"
include "field_read.h"
include "filing.h"
include "spreadsheet.h"
include "windows.h"

Command snap_1
    var of1,of2,of3,of5,of6,of8,of9,of10,of11,of12
    var line_count, NIIN, D046D_1, D046D_2, D046D_3, D046D_5, D046D_8
    var D046D_6,D046D_9,D046D_10, D046D_11,tmp,The_current_window
    var D046D1_1, D046D1_2, D046D1_3, NIIN_2, D046D_12, CHECK
'*****************************************************************************
'out_rec_1
    var D046D,B045,C016,C012,B076E,B007,C005,B055,C004,B002B
    var C001A,C001B,C003,C003A,C042,D010_A_D,C028,D014A
    var C009,B001,B011A,DC25DEF_E089,C003B,B053,E089,ACC_T
    var B001_A,B001_B,B001_C,B001_D,B001_E
'*****************************************************************************
'out_rec_2
    var A005,A005A,B074,A011,F007,D008
'*****************************************************************************
'out_rec_3
    var B012_B012C,B012F,F009,D012,D013C,D120,B059
'*****************************************************************************
'out_rec_5
    var K001,K002_L001,L001A,L022 ,A001 ,A001_2ND ,ORIG_QTY
    var A012A ,A012A_2ND,C003E ,L009-L034,count_5,print_5,hold_5
    var loop_5, spot_5
'*****************************************************************************
'out_rec_6
    var K001_6,K002_6,A012A_6,K017_6,K006_6,K018_6,K024_6
    var print_6,hold_6,count_6,loop_6,spot_6
'*****************************************************************************
'out_rec_8
    var D009_1,D011_1,F018_1,D013_1
    var print_8,hold_8,count_8,loop_8,spot_8
'*****************************************************************************
'out_rec_9
    var K002_K020,K036,K022,K025,K026,K024_9
    var print_9,hold_9,count_9,loop_9,spot_9
'*****************************************************************************
'out_rec_10
    var C035_B_C_1,C038_1,D001_C004C_1
    var print_10,hold_10,count_10,loop_10
'*****************************************************************************
'out_rec_11
    var D093,D095_1,D095_2,D095_3,D095_4,D095_5,D095_6,D095_7,D095_8
    var D095_9,D095_10
    var print_11,hold_11,count_11,loop_11
'*****************************************************************************
'out_rec_12
    var D093_12, D094_1, D094_2, D094_3, D094_4, D094_5, D094_6, D094_7
```

```
    var D094_8, D094_9, D094_10
    var D09512_1,D09512_2,D09512_3,D09512_4,D09512_5,D09512_6
    var D09512_7,D09512_8,D09512_9,D09512_10
    var print_12,hold_12,count_12,loop_12
'*************************************************************************
'*   Open each file so the data can be read from it.
'*************************************************************************
open:
    open_file("info/ofile1.txt","r")
    open_file("info/ofile2.txt","r")
    open_file("info/ofile3.txt","r")
    open_file("info/ofile5.txt","r")
    open_file("info/ofile6.txt","r")
    open_file("info/ofile8.txt","r")
    open_file("info/ofile9.txt","r")
    open_file("info/ofile10.txt","r")
    open_file("info/ofile11.txt","r")
    open_file("info/ofile12.txt","r")
'*************************************************************************
'* Initial opening & reading of the file to determine the NIIN for the 1st line.
'*************************************************************************
    of5 = read_file("info/ofile5.txt")
    D046D_5 = substr(of5,1,9)
    hold_5 = D046D_5
    of6 = read_file("info/ofile6.txt")
    D046D_6 = substr(of6,1,9)
    hold_6 = D046D_6
    of8 = read_file("info/ofile8.txt")
    D046D_8 = substr(of8,1,9)
    hold_8 = D046D_8
    of9 = read_file("info/ofile9.txt")
    D046D_9 = substr(of9,1,9)
    hold_9 = D046D_9
    of10 = read_file("info/ofile10.txt")
    D046D_10 = substr(of10,1,9)
    hold_10 = D046D_10
    of11 = read_file("info/ofile11.txt")
    D046D_11 = substr(of11,1,9)
    hold_11 = D046D_11
    of12 = read_file("info/ofile12.txt")
    D046D_12 = substr(of12,1,9)
    hold_12 = D046D_12
line_count = 0
pull:
line_count = line_count + 1
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-1
'* READ THE FIRST 9 CHARACTERS OF THE LINE...CALL THEM "NIIN" THIS WILL BE
'* THE VALUE THAT WILL BE CHECKED IN EACH OUT_REC PULL.
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
    of1 = read_file("info/ofile1.txt")
    D046D = substr(of1,1,9)
    NIIN = D046D
if D046D = "000000000" then goto finish
    D046D1_1 = substr(of1,1,2)
    D046D1_2 = substr(of1,3,3)
    D046D1_3 = substr(of1,6,4)
    NIIN_2 = D046D1_1++"-"++D046D1_2++"-"++D046D1_3
    B045 = substr(of1,12,5)
    C016 = substr(of1,17,1)
    C012 = substr(of1,18,5)
    B076E = substr(of1,23,1)
    B007 = substr(of1,24,1)
```

```
    C005 = substr(of1,25,2)
    B055 = substr(of1,27,9)
    C004 = substr(of1,36,22)
    B002B = substr(of1,58,3)
    C001A = substr(of1,61,4)
    C001B = substr(of1,65,1)
    C003 = substr(of1,66,2)
    C003A = substr(of1,68,1)
    C042 = substr(of1,69,4)
    D010_A_D = substr(of1,73,5)
    C028 = substr(of1,78,1)
    D014A = substr(of1,79,2)
    C009 = substr(of1,81,2)
    B001_A = substr(of1,83,1)
    B001_B = substr(of1,84,1)
    B001_C = substr(of1,85,1)
    B001_D = substr(of1,86,1)
    B001_E = substr(of1,87,1)
    B011A = substr(of1,88,5)
    D025DEF_E089 = substr(of1,93,4)
    E089 = substr(of1,96,1)
    C003B = substr(of1,97,2)
    B053 = substr(of1,99,9)
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-2
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
start_2:
if D046D_2 = NIIN goto out_rec_3
    if D046D_2 = "000000000" goto out_rec_3
    of2 = read_file("info/ofile2.txt")

    D046D_2 = substr(of2,1,9)
    if D046D_2 = "" goto out_rec_3
pull_2:
    A005 = substr(of2,12,8)
    A005A = substr(of2,20,8)
    B074 = substr(of2,28,8)
    A011 = substr(of2,36,8)
    F007 = substr(of2,44,4)
    D008 = substr(of2,48,10)
if D046D_2 = NIIN goto out_rec_3
'%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
'%   IF NOT = NIIN (Set values pulled items (X D046D_2) to null)
'%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
A005=A005A=B074=A011=F007=D008=" "
goto out_rec_3
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-3
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
out_rec_3:
if D046D_3 = NIIN goto out_rec_5
    if D046D_3 = "000000000" goto out_rec_5
    of3 = read_file("info/ofile3.txt")


    D046D_3 = substr(of3,1,9)
if D046D_3 = "" goto out_rec_5
pull_3:
    B012_B012C = substr(of3,12,4)
    B012F = substr(of3,16,4)
    F009 = substr(of3,20,4)
    D012 = substr(of3,24,2)
```

```
    D013C = substr(of3,26,1)
    D120 = substr(of3,27,2)
    B059 = substr(of3,29,10)
if D046D_3 = NIIN goto out_rec_5
'%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
'%   IF NOT = NIIN (Set values pulled items (X D046D_3) to null)
'%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
 B012_B012C=B012F=F009=D012=D013C=D120=B059=" "
goto out_rec_5
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-5
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
out_rec_5:
    count_5 = 1
    if D046D_5 = NIIN goto pull_5
    if D046D_5 <> NIIN goto out_rec_6

next_line_5:
    of5 = read_file("info/ofile5.txt")
    count_5 = count_5 + 1
    D046D_5= substr(of5,1,9)
    if D046D_5 <> NIIN goto out_rec_6
pull_5:
    K001[count_5] = substr(of5,12,3)
    K002_L001[count_5] = substr(of5,15,15)
    L001A[count_5] = substr(of5,30,4)
    L022[count_5] = substr(of5,34,6)
    A001[count_5] = substr(of5,40,3)
    A001_2ND[count_5] = substr(of5,43,3)
    ORIG_QTY[count_5] = substr(of5,46,7)
    C003E[count_5] = substr(of5,53,1)
    L009[count_5] = substr(of5,54,5)
    L034[count_5] = substr(of5,59,7)
    A012A[count_5] = substr(of5,66,1)
    A012A_2ND[count_5] = substr(of5,67,1)
    hold_5 = D046D_5
    goto next_line_5
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-6
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
out_rec_6:
    count_6 = 1
    if D046D_6 = NIIN goto pull_6
    if D046D_6 <> NIIN goto out_rec_8

next_line_6:
    of6 = read_file("info/ofile6.txt")
    count_6 = count_6 + 1
    D046D_6 = substr(of6,1,9)
    if D046D_6 <> NIIN goto out_rec_8
pull_6:
    K001_6[count_6] = substr(of6,12,3)
    K002_6[count_6] = substr(of6,15,14)
    A012A_6[count_6] = substr(of6,29,1)
    K017_6[count_6] = substr(of6,30,6)
    K006_6[count_6] = substr(of6,36,7)
    K018_6[count_6] = substr(of6,43,5)
    K024_6[count_6] = substr(of6,48,3)
    hold_6 = D046D_6
    goto next_line_6
'*************************************************************************
'* START PULLING DATA FROM OUT-REC-8
```

```
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*****************************************************************************
out_rec_8:
    count_8 = 1
    if D046D_8 = NIIN goto pull_8
    if D046D_8 <> NIIN goto out_rec_9

next_line_8:
    of8 = read_file("info/ofile8.txt")
    count_8 = count_8 + 1
    D046D_8 = substr(of8,1,9)
    if D046D_8 <> NIIN goto out_rec_9
pull_8:
    D009_1[count_8] = substr(of8,12,10)
    D011_1[count_8] = substr(of8,22,5)
    FC18_1[count_8] = substr(of8,28,3)
    D013_1[count_8] = substr(of8,31,2)
    hold_8 = D046D_8
    goto next_line_8

'*****************************************************************************
'* START PULLING DATA FROM OUT-REC-9
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*****************************************************************************
out_rec_9:
    count_9 = 1
    if D046D_9 = NIIN goto pull_9
    if D046D_9 <> NIIN goto out_rec_10

next_line_9:
    of9 = read_file("info/ofile9.txt")
    count_9 = count_9 + 1
    D046D_9 = substr(of9,1,9)
    if D046D_9 <> NIIN goto out_rec_10
pull_9:
    K002_K020[count_9] = substr(of9,12,15)
    K036[count_9] = substr(of9,27,5)
    K024_9[count_9] = substr(of9,32,3)
    K022[count_9] = substr(of9,35,2)
    K025[count_9] = substr(of9,37,2)
    K026[count_9] = substr(of9,39,2)
    hold_9 = D046D_9
    goto next_line_9
'*****************************************************************************
'* START PULLING DATA FROM OUT-REC-10
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*****************************************************************************
out_rec_10:
    count_10 = 1
    if D046D_10 = NIIN goto pull_10
    if D046D_10 <> NIIN goto out_rec_11

next_line_10:
    of10 = read_file("info/ofile10.txt")
    count_10 = count_10 + 1
    D046D_10 = substr(of10,1,9)
    if D046D_10 <> NIIN goto out_rec_11
pull_10:
    C035_B_C_1[count_10] = substr(of10,12,5)
    C038_1[count_10]  = substr(of10,17,1)
    D001_C004C_1[count_10]  = substr(of10,18,32)

'    C035_B_C_2[count_10]  = substr(of10,50,5)
'    C038_2[count_10]  = substr(of10,55,1)
```

```
'     D001_C004C_2[count_10]  = substr(of10,56,32)
'     C035_B_C_3[count_10]  = substr(of10,88,5)
'     C038_3[count_10]  = substr(of10,93,1)
'     D001_C004C_3[count_10]  = substr(of10,94,32)

    hold_10 = D046D_10
    goto next_line_10
'*******************************************************************************
'* START PULLING DATA FROM OUT-REC-11
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*******************************************************************************
out_rec_11:
    count_11 = 1
    if D046D_11 = NIIN goto pull_11
    if D046D_11 <> NIIN goto out_rec_12

next_line_11:
    of11 = read_file("info/ofile11.txt")
    count_11 = count_11 + 1
    D046D_11 = substr(of11,1,9)
    if D046D_11 <> NIIN goto out_rec_12
pull_11:
    D093[count_11] = substr(of11,12,4)
    D095_1[count_11] = substr(of11,16,4)
    D095_2[count_11] = substr(of11,20,4)
    D095_3[count_11] = substr(of11,24,4)
    D095_4[count_11] = substr(of11,28,4)
    D095_5[count_11] = substr(of11,32,4)
    D095_6[count_11] = substr(of11,36,4)
    D095_7[count_11] = substr(of11,40,4)
    D095_8[count_11] = substr(of11,44,4)
    D095_9[count_11] = substr(of11,48,4)
    D095_10[count_11] = substr(of11,52,4)
hold_11 = D046D_11
    goto next_line_11
'*******************************************************************************
'* START PULLING DATA FROM OUT-REC-12
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*******************************************************************************
out_rec_12:
    count_12 = 1
    if D046D_12 = NIIN goto pull_12
    if D046D_12 <> NIIN goto out_rec_end

next_line_12:
    of12 = read_file("info/ofile12.txt")
    count_12 = count_12 + 1
    D046D_12 = substr(of12,1,9)
    if D046D_12 <> NIIN goto out_rec_end
pull_12:
    D093_12[count_12] = substr(of12,12,4)
    D094_1[count_12] = substr(of12,16,8)
    D094_2[count_12] = substr(of12,24,8)
    D094_3[count_12] = substr(of12,32,8)
    D094_4[count_12] = substr(of12,40,8)
    D094_5[count_12] = substr(of12,48,8)
    D094_6[count_12] = substr(of12,56,8)
    D094_7[count_12] = substr(of12,64,8)
    D094_8[count_12] = substr(of12,72,8)
    D094_9[count_12] = substr(of12,80,8)
    D094_10[count_12] = substr(of12,88,8)
    D09512_1[count_12] = substr(of12,96,4)
    D09512_2[count_12] = substr(of12,100,4)
    D09512_3[count_12] = substr(of12,104,4)
```

```
    D09512_4[count_12] = substr(of12,108,4)
    D09512_5[count_12] = substr(of12,112,4)
    D09512_6[count_12] = substr(of12,116,4)
    D09512_7[count_12] = substr(of12,120,4)
    D09512_8[count_12] = substr(of12,124,4)
    D09512_9[count_12] = substr(of12,128,4)
    D09512_10[count_12] = substr(of12,132,4)
hold_12 = D046D_12
    goto next_line_12
'line_count = line_count + 1
out_rec_end:
'*************************************************************************
'* Make sure that the Main Menu is the current window.
'*************************************************************************
'on error goto data_pull
'check = find_DOC(NIIN++" ss"++" 1",0)
'goto pull
data_pull:
Interrupt_key
type("M")
Execute_key
Escape_key (5)
Back_return_key (2)
'*************************************************************************
'*  Open the Spreadsheet.
'*    1. If the spreadsheet already exists the old data is removed.
'*    2. If the spreadsheet does not exists it is created.
'*************************************************************************
open_SS:
    menu_type("e","Main menu option: ")
    return_key
    menu_type(NIIN++" ss"++" 1","Name: ")
    return_key(1)
Wait_while_busy()
tmp = CURRENT_WINDOW_NUM_()
The_current_window = WINDOW_INFO (tmp)
if The_current_window [WINDEX#APP_TYPE_] <> APP#MAIN_ goto Start_ss
return_key    menu_type("thesis","Drawer: ")
    return_key
    menu_type("data","Folder: ")
    return_key(2)
    menu_type("s","Pick a document type: ")
    return_key
    menu_type("snap ss 1","Style guide/model document: ")
    return_key
    execute_key
    wait_while_busy()
Start_ss:
' make sure the spreadsheet is purged of old data
purge
' move cursor to A1
home_line_key
    return_key
    Wait_while_busy()
    menu_type("r","Pick an option: ")
    return_key
    menu_type("a1","Range or cell: ")
    return_key

write:
'*************************************************************
'*   Start writing data to view 1
'*************************************************************
```

```
return_key
type("'"++C003++C003A++" "++C042++"-"++NIIN_2)
 return_key (5)
 type(C003B)
return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("b3","Range or cell: ")
    return_key
type(C004)
down_arrow_key down_arrow_key

'##Places an _ if the DRIPR Char space is blank
if B001_A <> " " then goto DRIPR1
B001_A  = "_"
DRIPR1:
if B001_B <> " " then goto DRIPR2
B001_B  = "_"
DRIPR2:
if B001_C <> " " then goto DRIPR3
B001_C  = "_"
DRIPR3:
if B001_D <> " " then goto DRIPR4
B001_D  = "_"
DRIPR4:
if B001_E <> " " then goto DRIPR5
B001_E  = "_"
DRIPR5:
B001 = B001_A++B001_B++B001_C++B001_D++B001_E

type(B001) Down_arrow_key
type(D008) Down_arrow_key
type(D012) Down_arrow_key
type(D013C) Down_arrow_key (2)
type(B053) Down_arrow_key
type(B055) return_key (2)
Type(C005) up_arrow_key
type(B059) up_arrow_key (3)
type(C016) up_arrow_key
type(B011A) up_arrow_key
type(B002B) return_key (3)
type(F007) Down_arrow_key
type(F009) Down_arrow_key
type(C012) Down_arrow_key
type(B045) Down_arrow_key
type(D025DEF_E089) return_key (2) up_arrow_key
type(C009) up_arrow_key
type(C001A) up_arrow_key
type(C028) up_arrow_key
type(B007) up_arrow_key (2) left_arrow_key
'*************************************************************************
'*    Write the Acquisition advice code
'*************************************************************************
    if E089 = "T" then
        ACC_T = "CONDEMNED" else goto next_1
goto print
next_1:
    if E089 = "V" then
        ACC_T = "TERMINAL ITEM" else goto next_2
goto print
next_2:
    if E089 = "Y" then
```

```
        ACC_T = "TERMINAL ITEM"  else goto next_3
goto print
next_3:
        ACC_T = ""
print:
type(ACC_T) return_key


home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("a14","Range or cell: ")
    return_key
write_10:
loop_10 = 1
if hold_10 <> NIIN goto after_10
write_10_A:
type("^"++C038_1[loop_10]) return_key type("'"++C035_B_C_1[loop_10]) return_key
type("'"++D001_C004C_1[loop_10])
return_key goto_key goto_key left_arrow_key down_arrow_key

'type("^"++C038_2[loop_10]) return_key type("'"++C035_B_C_2[loop_10])
'return_key type("'"++D001_C004C_2[loop_10])
'return_key goto_key goto_key left_arrow_key down_arrow_key
'type("^"++C038_3[loop_10]) return_key type("'"++C035_B_C_3[loop_10])
'return_key type("'"++D001_C004C_3[loop_10])
'return_key goto_key goto_key left_arrow_key down_arrow_key

loop_10 = loop_10 + 1
if loop_10 < count_10 goto write_10_A
after_10:
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("g14","Range or cell: ")
    return_key
write_11:
loop_11 = 1
if hold_11 <> NIIN goto after_11
type(D093[loop_11]) return_key (2)
write_11_A:
type(D095_1[loop_11]) Down_arrow_key
type(D095_2[loop_11]) Down_arrow_key
type(D095_3[loop_11]) Down_arrow_key
type(D095_4[loop_11]) Down_arrow_key
type(D095_5[loop_11]) Down_arrow_key
type(D095_6[loop_11]) Down_arrow_key
type(D095_7[loop_11]) Down_arrow_key
type(D095_8[loop_11]) Down_arrow_key
type(D095_9[loop_11]) Down_arrow_key
type(D095_10[loop_11]) Down_arrow_key
loop_11 = loop_11 + 1
if loop_11 < count_11 goto write_11_A
after_11:
write_12:
loop_12 = 1
if hold_12 <> NIIN goto after_12
type(D093[loop_11]) return_key
write_12_A:
type(D094_1[Loop_12]) Down_arrow_key
type(D094_2[Loop_12]) Down_arrow_key
type(D094_3[Loop_12]) Down_arrow_key
```

```
type(D094_4[Loop_12]) Down_arrow_key
type(D094_5[Loop_12]) Down_arrow_key
type(D094_6[Loop_12]) Down_arrow_key
type(D094_8[Loop_12]) Down_arrow_key
type(D094_9[Loop_12]) Down_arrow_key
type(D094_10[Loop_12]) Down_arrow_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("I14","Range or cell: ")
    return_key
type(D095_1[loop_12]) Down_arrow_key
type(D095_2[loop_12]) Down_arrow_key
type(D095_3[loop_12]) Down_arrow_key
type(D095_4[loop_12]) Down_arrow_key
type(D095_5[loop_12]) Down_arrow_key
type(D095_6[loop_12]) Down_arrow_key
type(D095_7[loop_12]) Down_arrow_key
type(D095_8[loop_12]) Down_arrow_key
type(D095_9[loop_12]) Down_arrow_key
type(D095_10[loop_12]) Down_arrow_key
loop_12 = loop_12 + 1
if loop_12 < count_12 goto write_12_A
after_12:
'*****************************************************************
'*   Start writing data to view 2
'*****************************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("n1","Range or cell: ")
    return_key
type(A005) Down_arrow_key
type(A005A) Down_arrow_key
Type(B074) Down_arrow_key
type(A011) down_arrow_key
'*****************************************************************
'*   Start writing data to view 3
'*****************************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("p2","Range or cell: ")
    return_key
write_8:
loop_8 = 1
spot_8 = 2
'* Start out_rec_8 printing
if hold_8 <> NIIN goto after_8
write_8_A:
spot_8 = spot_8 + 1
return_key
type(D009_1[loop_8]) return_key
type(D011_1[loop_8]) return_key
type(FC18_1[loop_8]) return_key
type(D013_1[loop_8]) return_key (2)
return_key
loop_3 = loop_8 + 1
type(D009_1[loop_8]) return_key
type(D011_1[loop_8]) return_key
type(FC18_1[loop_8]) return_key
```

```
type(D013_1[loop_8]) return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("p"++spot_8,"Range or cell: ")
    return_key
if loop_8 < count_8 goto write_8_A
after_8:
spot_8 = spot_8 + 1
'*****************************************************************
'*   Start writing data to view 4
'*****************************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("ab5","Range or cell: ")
    return_key
write_5:
loop_5 = 1
spot_5 = 5
'* Start out_rec_5 printing
if hold_5 <> NIIN goto after_5
write_5_A:
spot_5 = spot_5 + 1
type("^"++K001[loop_5]) return_key
type(K002_L001[loop_5]++" / "++L001A[loop_5]) return_key
type("^"++L022[loop_5]) return_key
type("^"++A001[loop_5]) return_key
type("^"++A001_2nd[loop_5]) return_key
type(ORIG_QTY[loop_5]) return_key
type(L034[loop_5]) return_key
type("^"++A012A[loop_5]) return_key
type("^"++C003E[loop_5]) return_key
type(L009[loop_5]) return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("ab"++spot_5,"Range or cell: ")
    return_key
loop_5 = loop_5 + 1
if loop_5 < count_5 goto write_5_A
after_5:
'*****************************************************************
'*   Start writing data to view 5
'*****************************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("am4","Range or cell: ")
    return_key
write_9:
loop_9 = 1
spot_9 = 4
'* Start out_rec_9 printing
if hold_9 <> NIIN goto after_9
write_9_A:
spot_9 = spot_9 + 1
type(K002_K020[loop_9]) return_key
type(K036[loop_9]) return_key
type("^"++K024_9[loop_9]) return_key
```

```
type("^"++K025[loop_9]) return_key
type("^"++K022[loop_9]) return_key (2)
type("^"++K026[loop_9]) return_key (2)
if (K026[loop_9] = "BB") then type("1") else type("0") return_key
if (K026[loop_9] = "BD") then type("1") else type("0") return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("am"++spot_9,"Range or cell: ")
    return_key
loop_9 = loop_9 + 1
if loop_9 < count_9 goto write_9_A
after_9:
'*************************************************************
'*   Start writing data to view 6
'*************************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("az5","Range or cell: ")
    return_key
write_6:
loop_6 = 1
spot_6 = 5
'* Start out_rec_6 printing
if hold_6 <> NIIN goto after_6
write_6_A:
spot_6 = spot_6 + 1
type("^"++K001_6[loop_6]) return_key
type(K002_6[loop_6]) return_key
type("^"++A012A_6[loop_6]) return_key
type("^"++K017_6[loop_6]) return_key
type(K006_6[loop_6]) return_key
type(K018_6[loop_6]) return_key
type("^"++K024_6[loop_6]) return_key
if (K001_6[loop_6] = "DGA")  then type("1") else type("0") return_key
if (K001_6[loop_6] = "BPR") then type("1") else type("0") return_key
if (K001_6[loop_6] = "101") then type("1") else type("0") return_key
if (K001_6[loop_6] = "301") then type("1") else type("0") return_key
if (K001_6[loop_6] = "501") then type("1") else type("0") return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("az"++spot_6,"Range or cell: ")
    return_key
loop_6 = loop_6 + 1

if loop_6 < count_6 goto write_6_A
after_6:


'*close the open spreadsheet
selection_line(2,"C")
menu_type("c","Clerk option: ")
return_key

goto pull
'if line_count < 1 goto pull
finish:
    close_file("info/ofile1.txt")
    close_file("info/ofile2.txt")
```

```
    close_file("info/ofile3.txt")
    close_file("info/ofile5.txt")
    close_file("info/ofile6.txt")
    close_file("info/ofile8.txt")
    close_file("info/ofile9.txt")
    close_file("info/ofile10.txt")
    close_file("info/ofile11.txt")
    close_file("info/ofile12.txt")

add_ptas
back_return_key (2)
joey
wait_while_busy ()
endcommand


'*****************************************************************
'* Program to add the PTAS data to the snap spreadsheet
'* built by snap_1.
'*****************************************************************
include "app_ids.h"
include "errorcodes.h"
include "field_read.h"
include "filing.h"
include "spreadsheet.h"
include "windows.h"
function add_ptas
   var of1,of4,NIIN,D046D
   var A001,A012_1,A008B_1,A021A_1,A014_1,B046A,A012A_2,C003E,A012_2
   var A008B_2,A021A_2,A012A_3,A012_3,A008B_3, A021A_3,A014_3,hold_4
   var count, count_4, loop_4, spot_4,sum_spot, line_count
   var tmp,The_current_window
    open_file("info/ofile1.txt","r")
    open_file("info/ofile4.txt","r")

    count = 0
Start_reading:
    of4 = read_file("info/ofile4.txt")
    D046D = substr(of4,1,9)
next_niin:
    of1 = read_file("info/ofile1.txt")
    NIIN = substr(of1,1,9)
    if NIIN = "000000000" goto jump
    if NIIN <> D046D goto next_niin
    count = count +1
'if count > 1 goto jump

'*************************************************************************
'* START PULLING DATA FROM OUT-REC-4
'* HOLD DATA IN PROGRAM FROM ALL PULLS UNTIL THE END.
'*************************************************************************
out_rec_4:
    count_4 = 1
    if D046D = NIIN goto pull_4
    if D046D <> NIIN goto next_niin

next_line_4:
    of4 = read_file("info/ofile4.txt")
    count_4 = count_4 + 1
    D046D = substr(of4,1,9)
    if D046D <> NIIN goto write_it
pull_4:
    A001[count_4] = substr(of4,12,3)
    A012_1[count_4] = substr(of4,15,8)
```

```
    A008B_1[count_4] = substr(of4,23,8)
    A021A_1[count_4] = substr(of4,31,7)
    A014_1[count_4] = substr(of4,38,8)
    B046A[count_4] = substr(of4,46,5)
    A012A_2[count_4] = substr(of4,51,1)
    C003E[count_4] = substr(of4,52,1)
    A012_2[count_4] = substr(of4,53,8)
    A008B_2[count_4] = substr(of4,61,8)
    A021A_2[count_4] = substr(of4,69,7)
    A012A_3[count_4] = substr(of4,76,1)
    A012_3[count_4] = substr(of4,77,8)
    A008B_3[count_4] = substr(of4,85,8)
    A021A_3[count_4] = substr(of4,93,7)
    A014_3[count_4] = substr(of4,100,8)
    hold_4 = D046D
    goto next_line_4

write_it:
open_SS:
    menu_type("e","Main menu option: ")
    return_key
    menu_type(NIIN++" ss"++" 1","Name: ")
    return_key(1)
wait_while_busy()
tmp = CURRENT_WINDOW_NUM_()
The_current_window = WINDOW_INFO (tmp)
if The_current_window [WINDEX#APP_TYPE_] = APP#MAIN_ goto jump
'*****************************************************
'*   Start writing data to view 7
'*****************************************************
home_line_key
    return_key
    menu_type("r","Pick an option: ")
    return_key
    menu_type("br3","Range or cell: ")
    return_key
write_4:
loop_4 = 1
spot_4 = 3
'* Start out_rec_4 printing
if hold_4 <> NIIN goto after_4
write_4_A:
spot_4 = spot_4 + 1
type("^"++A001[loop_4]) return_key
type(A012_1[loop_4]) return_key
type(A008B_1[loop_4]) return_key
type(A021A_1[loop_4]) return_key
type(A014_1[loop_4]) return_key
type(B046A[loop_4]) return_key
type("^|") return_key
type("^"++A012A_2[loop_4]) return_key
type("^"++C003E[loop_4]) return_key
type(A012_2[loop_4]) return_key
type(A008B_2[loop_4]) return_key
type(A021A_2[loop_4]) return_key
type("^|") return_key
type("^"++A012A_3[loop_4]) return_key
type(A012_3[loop_4]) return_key
type(A008B_3[loop_4]) return_key
type(A021A_3[loop_4]) return_key
type(A014_3[loop_4]) return_key
home_line_key
    return_key
    menu_type("r","Pick an option: ")
```

```
    return_key
    menu_type("br"++spot_4,"Range or cell: ")
    return_key
loop_4 = loop_4 - 1

if loop_4 < count_4 goto write_4_A
sum_spot = spot_4 - 1
type("TOTAL") return_key
type("+sum(bs3..bs"++sum_spot++")") return_key
type("+sum(bt3..bt"++sum_spot++")") return_key
type("+sum(bu3..bu"++sum_spot++")") return_key
type("+sum(bv3..bv"++sum_spot++")") return_key
return_key
type("^|") return_key
return_key (2)
type("+sum(ca3..ca"++sum_spot++")") return_key
type("+sum(cb3..cb"++sum_spot++")") return_key
type("+sum(cc3..cc"++sum_spot++")") return_key
type("^|") return_key
return_key
type("+sum(cf3..cf"++sum_spot++")") return_key
type("+sum(cg3..cg"++sum_spot++")") return_key
type("+sum(ch3..ch"++sum_spot++")") return_key
type("+sum(ci3..ci"++sum_spot++")") return_key
after_4:
'*close the open spreadsheet
selection_line(2,"C")
menu_type("c","Clerk option: ")
return_key

goto next_niin
jump:
    close_file("info/ofile1.txt")
    close_file("info/ofile4.txt")
endfunction

'*****************************************************************
'* Program to build the NSN Snapshot Document from the
'* from the NSN Snapshot spreadsheet built by snap_1.
'*****************************************************************
'include "app_ids.h"
'include "errorcodes.h"
'include "field_read.h"
'include "filing.h"
'include "spreadsheet.h"
'include "windows.h"
function joey
    var of1,NIIN,NIIN_2,D046D_1,D046D_2,D046D_3,E089
    var tmp, The_current_window, count_ptas, check

    open_file("info/ofile1.txt","r")

    count_ptas = 0
Start_reading:
    of1 = read_file("info/ofile1.txt")
    NIIN = substr(of1,1,9)
    D046D_1 = substr(of1,1,2)
    D046D_2 = substr(of1,3,3)
    D046D_3 = substr(of1,6,4)
    E089 = substr(of1,96,1)
    NIIN_2 = D046D_1++"-"++D046D_2++"-"++D046D_3
    count_ptas = count_ptas + 1
if D046D_1 = "000000000" then goto bottom
'    if count_ptas > 1 goto bottom
```

```
on error goto build
check = find_doc(NIIN_2,-1)
error on error
goto start_reading
'*************************************************************
'* Start building the DOC.
'*************************************************************
build:
    menu_type("e","Main menu option: ")
    return_key
     menu_type(NIIN_2,"Name: ")
'    menu_type(D046D_1++"-"++D046D_2++"-"++D046D_3,"Name: ")
    return_key
wait_while_busy()
tmp = CURRENT_WINDOW_NUM_()
The_current_window = WINDOW_INFO (tmp)
if The_current_window {WINDEX#APP_TYPE_} <> APP#MAIN_ goto start_reading
return_key    menu_type("thesis","Drawer: ")
    return_key
    menu_type("data","Folder: ")
    return_key(2)
    menu_type("t","Pick a document type: ")
    return_key
    menu_type("model snapshot","Style guide/model document: ")
    return_key
    execute_key
    wait_while_busy()
' Now inside document writing to Document.
    type(NIIN_2)
    return_key
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 1","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 2","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 3","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
```

```
    menu_type("view 7","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 4","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 5","View name: ")
    return_key(3)
    selection_line(5,"E")
    menu_type("i","Edits option: ")
    return_key
    menu_type("i","Inset type option: ")
    return_key
    menu_type(NIIN++" ss 1","Document name: ")
    return_key
    menu_type("view 6","View name: ")
    return_key(2)
    selection_line(8,"C")
    menu_type("rc","Controls option: ")
    return_key
    selection_line(8,"C")
    menu_type("nc","Controls option: ")
    return_key
    selection_line(2,"C")
    menu_type("c","Clerk option: ")
    return_key
    goto start_reading
bottom:
close_file("info/ofile1.txt")
endfunction
'*****************************************************************************
'*  Purges the old data from the spreadsheet.
'*****************************************************************************
'
function purge
    selection_line(3,"M")
    menu_type("m","Pick an option: ")
    return_key
menu_type("b1,g1,b3,b5..b8,d5..d8,g5..g9,i5..i9,b10..b11,d10..d11,a14..","Materi
al: ")

menu_type("c100,g14..i100,n1..n4,p2..z100,ab5..ak100,am4..av100,az5..bk","Materi
al: ")
    menu_type("100,br3..ci100","Material: ")
    return_key
wait_while_busy()
    home_line_key
    type("b")
    return_key
endfunction
```

APPENDIX H

INVENTORY MANAGEMENT MACROS

```
'*************************************************************************
' command m - Main menu for Inventory management.
' Written by LT George Marentic
' Dec 1988
'
'*************************************************************************
Command m
    var strs     ' Array of Display strings.
    var result ' return of string from run menu

do_again:
    strs =  "    (N)      NSN Snapshot",
            "    (R)      Requisition Processing",
            "    (B)      NSN Notebook",
            "    (X)      Exit Program",
           "",
            "Pick an option: "
    result = run_menu("Inventory Management",strs)
    result = upcase(result)
    if result = "N"  n
    else if result = "R" rqn_process
    else if result = "B" b
    else if result = "X" goto finish
'    goto do_again
finish:
endcommand
'*************************************************************************
' command n - NSN Snapshot extract macro
' Written by LT George Marentic
' Dec 1988
'
'*************************************************************************
command n
    var screen_1    ' Array of display strings
    var result ' Inputed NSN
    var NIIN, home_dir,not_found

do_again:
    screen_1 = " Enter the NIIN you need the Snapshot for",
               "",
               " Format 01-123-1234",
               "",
               " Requested NIIN: "
    result = run_menu("NSN Snapshot",screen_1)
    result = upcase(result)
    if result = " " goto do_again
    NIIN = result
start:
status_message ("Pulling your requested Snapshot")
    interrupt_key
    type("m")
    Execute_key
    Escape_key (5)
    Back_return_key (2)
    menu_type("e","Main menu option: ")
    return_key
    menu_type(NIIN,"Name: ")
    return_key
    wait_while_busy()
    on error goto bottom
status_message ("Snapshot is ready.")
goto done
bottom:
status_message("NSN not found.")
done:
endcommand
'*************************************************************************
' Command b NSN Notebook input and creation macro
' Written by LT George Marentic
' Dec 1988
'*************************************************************************
command b
```

```
    var strs, promptids_2, values_2, init_2, start_here_2,i, result
    var strs_1, date_1, NIIN, check, date, date_2
    var strs_2, strs_3, promptids_3, values_3, init_3, start_here_3
    var strs_4, promptids_4, values_4, init_4, start_here_4
    var strs_5, promptids_5, values_5, init_5, start_here_5, data_5
    var strs_6, promptids_6, values_6, init_6, start_here_6
    var strs_7, promptids_7, values_7, init_7, start_here_7
    var strs_8, promptids_8, values_8, init_8, start_here_8

do_again:
    strs =  "",
            "Please enter the NIIN for the STOCK NUMBER NOTEBOOK ",
            "that you want add to or read information about. ",
            "",
            " Format 01-123-1234",
            "",
            " Requested NIIN: "
    result = run_menu("STOCK NUMBER NOTEBOOK",strs)
    result = upcase(result)
    if result = " " goto do_again
    NIIN = result
start:
    strs_1 =    "",
                "Please select the function you need. ",
                "",
                "   (V)     View the Stock Number Notebook",
                "   (A)     Alternate NIIN Information ",
                "   (E)     Contract Expedite Information ",
                "   (R)     Contract Reconsignment Information ",
                "   (T)     Contract Termination Information ",
                "   (P)     Points of Contact for this NIIN ",
                "   (C)     Pending Change Information ",
                "   (N)     Misc Notes & Remarks ",
                "   (X)     Exit this Program ",
                "",
                "Pick an option: "
problem:
    result = run_menu("NOTEBOOK Input Selection",strs_1)
    result = upcase(result)
    if result = "A" goto  ab
    else if result = "V" goto vb
    else if result = "E" goto eb
    else if result = "R" goto rb
    else if result = "T" goto tb
    else if result = "P" goto pb
    else if result = "C" goto cb
    else if result = "N" goto nb
    else if result = "X" goto finish

    if (result <> "A") or (result <> "E") or (result <> "R") or
       (result <> "T") or (result <> "P") or (result <> "C") or
       (result <> "N") or (result <> "X"){
       strs_1[1] = "Not a valid selection! Please try again."
       goto problem
;
ab:

strs_2 =    "",
            " Alternate NIIN Information ",
            "",
            " Please input alternate NIIN information for "++NIIN,
            "",
            "Alt #1: ",
            "Alt #2: ",
            "Alt #3: ",
            "Alt #4: ",
            "Alt #5: ",
            "Alt #6: ",
            "",
            "Hit return for blank fields"
promptids_2 = 5,6,7,8,9,10
start_here_2 = 0
values_2 = ""
init_2 = true
problem_2:
values_2 = run_menu("Alternate NIIN
Information",strs_2,values_2,init_2,promptids_2,start_here_2)
IF IS_NULL (values_2)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
```

```
        END
init_2 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
'date_2 = TRIM (date_1)
write_file(NIIN++"_Notebook","Alternate NIIN Information")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook",values_2[0])
write_file(NIIN++"_Notebook",values_2[1])
write_file(NIIN++"_Notebook",values_2[2])
write_file(NIIN++"_Notebook",values_2[3])
write_file(NIIN++"_Notebook",values_2[4])
write_file(NIIN++"_Notebook",values_2[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start

eb:

strs_3 =    "",
            " Contract Expedite Information ",
            "",
            " Please input Contract Expedite Information for "++NIIN ,
            "",
            "Contract Number : ",
            "Message/Letter: ",
            "Reply Date : ",
            "QTY : ",
            "CLIN : ",
            "Received Delivery: ",
            "",
            "Use return key for blank fields"
promptids_3 = 5,6,7,8,9,10
start_here_3 = 0
values_3 = ""
init_3 = true
problem_3:
values_3 = run_menu("Contract Expedite
Information",strs_3,values_3,init_3,promptids_3,start_here_3)
IF IS_NULL (values_3)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_3 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
write_file(NIIN++"_Notebook","Contract Expedite Information")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook","Contract Number : "++values_3[0])
write_file(NIIN++"_Notebook","Message/Letter: "++values_3[1])
write_file(NIIN++"_Notebook","Reply Date : "++values_3[2])
write_file(NIIN++"_Notebook","QTY : "++values_3[3])
write_file(NIIN++"_Notebook","CLIN : "++values_3[4])
write_file(NIIN++"_Notebook","Received Delivery: "++values_3[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start


error_report:
status_message ("This is not a valid NIIN!")
goto do_again
vb:
    interrupt_key
    menu_type("m","Interrupt option: ")
    return_key
    escape_key(7)
    back_return_key(2)
    menu_type("u","Main menu option: ")
    return_key
    menu_type("a","Utilities option: ")
    return_key
    menu_type("a","Ascii Editor option: ")
    return_key
    menu_type(NIIN++"_Notebook","Name: ")
    return_key
goto finish
rb:
```

```
strs_4 =    "",
            " Contract Reconsignment Information ",
            "",
            " Please input Contract Reconsignment Information for "++NIIN ,
            "",
            "Contract Number : ",
            "Message/Letter: ",
            "From Destination : ",
            "To Document Number : ",
            "Est Devlivery Date : ",
            "QTY : ",
            "",
            "Use return key for blank fields"
promptids_4 = 5,6,7,8,9,10
start_here_4 = 0
values_4 = ""
init_4 = true
problem_4:
values_4 = run_menu("Contract Reconsignment
Information",strs_4,values_4,init_4,promptids_4,start_here_4)
IF IS_NULL (values_4)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_4 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
write_file(NIIN++"_Notebook","Contract Expedite Information")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook","Contract Number : "++values_4[0])
write_file(NIIN++"_Notebook","Message/Letter: "++values_4[1])
write_file(NIIN++"_Notebook","From Destination : "++values_4[2])
write_file(NIIN++"_Notebook","To Document Number : "++values_4[3])
write_file(NIIN++"_Notebook","Est Delivery Date : "++values_4[4])
write_file(NIIN++"_Notebook","Qty: "++values_4[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start

tb:

strs_5 =    "",
            " Contract Terminations Information ",
            "",
            " Please Input Contract Termination Information for "++NIIN ,
            "",
            "Contract Number : ",
            "Termination Date: ",
            "Terminated (Y or N): ",
            "Original Quantity Due : ",
            "Terminated Quantity : ",
            "Balance Due : ",
            "",
            "Use return key for blank fields"
promptids_5 = 5,6,7,8,9,10
start_here_5 = 0
values_5 = ""
init_5 = true
problem_5:
values_5 = run_menu("Contract Termination
Information",strs_5,values_5,init_5,promptids_5,start_here_5)
IF IS_NULL (values_5)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_5 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
write_file(NIIN++"_Notebook","Contract Termination Information")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook","Contract Number : "++values_5[0])
write_file(NIIN++"_Notebook","Termination Date: "++values_5[1])
values_5[2] = upcase(values_5[2])
if values_5[2] = "Y"  data_5 = "Contract has been terminated."
else  data_5 = "Contract has not yet been terminated."
write_file(NIIN++"_Notebook", data_5)
write_file(NIIN++"_Notebook","Original Quantity Due : "++values_5[3])
```

```
write_file(NIIN++"_Notebook","Terminated Quantity : "++values_5[4])
write_file(NIIN++"_Notebook","Balance Due : "++values_5[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start


pb:

strs_6 =    "",
            " Points of Contact",
            "",
            " Please Input Points of contact for:"++NIIN ,
            "",
            "Last Name : ",
            "First Name: ",
            "Company / Command: ",
            "Code / Division : ",
            "Commerical phone number : ",
            "Autovon phone number : ",
            "",
            "Use return key for blank fields",
            "Use the Misc Notes form for mailing addresses"
promptids_6 = 5,6,7,8,9,10
start_here_6 = 0
values_6 = ""
init_6 = true
problem_6:
values_6 = run_menu("Points of Contact
Information",strs_6,values_6,init_6,promptids_6,start_here_6)
IF IS_NULL (values_6)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_6 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
write_file(NIIN++"_Notebook","Points of Contacts")
write_file(NIIN++"_Notebook",date_1[0:])
write_file(NIIN++"_Notebook","Name : "++values_6[0]++", "++values_6[1])
write_file(NIIN++"_Notebook", "Company : "++values_6[2])
write_file(NIIN++"_Notebook","Code / Division : "++values_6[3:])
write_file(NIIN++"_Notebook","Comm : "++values_6[4])
write_file(NIIN++"_Notebook","Autovon : "++values_6[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start


cb:
strs_7 =    "",
            " Pending Change Information ",
            "",
            " Please input pending change information for "++NIIN,
            "",
            "line #1: ",
            "line #2: ",
            "line #3: ",
            "line #4: ",
            "line #5: ",
            "line #6: ",
            "",
            "Hit return for blank fields"
promptids_7 = 5,6,7,8,9,10
start_here_7 = 0
values_7 = ""
init_7 = true
problem_7:
values_7 = run_menu("Pending Change
Information",strs_7,values_7,init_7,promptids_7,start_here_7)
IF IS_NULL (values_7)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_7 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
date_2 = TRIM (date_1)
```

```
write_file(NIIN++"_Notebook","Pending Change Information")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook",values_7[0])
write_file(NIIN++"_Notebook",values_7[1])
write_file(NIIN++"_Notebook",values_7[2])
write_file(NIIN++"_Notebook",values_7[3])
write_file(NIIN++"_Notebook",values_7[4])
write_file(NIIN++"_Notebook",values_7[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start

nb:
strs_8 =    "",
            " Misc Notes & Remarks ",
            "",
            " Please input Misc Notes & Remarks for "++NIIN,
            "",
            "line #1: ",
            "line #2: ",
            "line #3: ",
            "line #4: ",
            "line #5: ",
            "line #6: ",
            "",
            "Hit return for blank fields"
promptids_8 = 5,6,7,8,9,10
start_here_7 = 0
values_8 = ""
init_8 = true
problem_8:
values_8 = run_menu("Misc Notes & Remarks",
strs_8,values_8,init_8,promptids_8,start_here_8)
IF IS_NULL (values_8)  BEGIN
        STATUS_MESSAGE ("\"Notebook\" program exited.")
        EXIT
        END
init_8 = false
open_file(NIIN++"_Notebook","a")
date = "date"
date_1 = SHELL_COMMAND(date)
'date_2 = TRIM (date_1)
write_file(NIIN++"_Notebook","Misc Notes & Remarks")
write_file(NIIN++"_Notebook",date_1[0])
write_file(NIIN++"_Notebook",values_8[0])
write_file(NIIN++"_Notebook",values_8[1])
write_file(NIIN++"_Notebook",values_8[2])
write_file(NIIN++"_Notebook",values_8[3])
write_file(NIIN++"_Notebook",values_8[4])
write_file(NIIN++"_Notebook",values_8[5])
write_file(NIIN++"_Notebook"," ")
close_file(NIIN++"_Notebook")
goto start

finish:
endcommand
```

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