Administrative Automated Office Systems

Feasibility Study, Implementation and

Operational Guidelines

EPA

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SECTION 1

INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of these guidelines is to provide a framework within which word processing and office automation can be planned, implemented, and managed in the Environmental Protection Agency. The software and hardware used to implement word processing and automated office systems in the Agency will be selected from that available via two Agencywide contracts: one for Word Processing, and another for Office Computers.

This version of the guidelines specifically applies to those applications supported by equipment available under the Agency-wide word processing contract. A later release will expand the scope of these guidelines to address other automated office applications that can be supported by the Agency-wide contract for office computers. For each Program Office, a Word Processing Coordinator will be identified. The coordinator will be responsible for implementing these guidelines with respect to word processing acquisitions.

Fundamental EPA policy is to provide each operating and staff unit with the appropriate support (equipment and services) to enable them to produce their key products in a timely manner, at required quantity levels, and at the least overall cost. However, the level of justification required will be related to the scope and size of the equipment and services that the unit proposes to acquire. This justification can be expressed in terms of both cost-avoidance and value-added benefits. The scope and size of the feasibility study supporting this justification is determined by the user-community to be supported (e.g., clerical, technical, and professional

staff) and the functions to be provided (e.g., word processing, electronic transmission of documents, and simple records management). A typical study might require 4 to 6 person days to prepare.

These guidelines encompass the entire systems life cycle and provide a framework (or methodology) for planning, acquiring, implementing, and managing EPA word processing. This methodology addresses six phases in the systems life cycle. They are:

- Preliminary Investigation
- Feasibility Study
- System Design (Specification and Procurement)
- Implementation
- System Operation, and
- Review and Evaluation.

The phases are addressed in detail in Sections 2 through 8. Figure 1-1 outlines the major activities and responsibilities for each phase.

I. PRELIMINARY INVESTIGATION

- o User discusses available technology and potential applications with MIDSD (Optional)
- o User determines general requirements and potential benefits of new or modified system
- o If potential benefits warrant, user plans for feasibility study

II. FEASIBILITY STUDY

- o User contacts MIDSD for coordination and any assistance required
- o User develops comprehensive definition of requirements with assistance from MIDSD as required
- o Alternative solutions are identified and analyzed
- o Cost-Benefits of alternative solutions are developed
- o Recommended alternative is examined in detail

III. SYSTEM DESIGN

- o MIDSD assists user in:
  - Determining size and configuration of recommended system
  - Preparing required procurement documentation

IV. IMPLEMENTATION

The Implementation Phase is a joint venture involving the User organization, MIDSD, EPA Facilities Management Staff, and Vendor personnel. However, the user has the primary responsibility for coordinating all activities in this phase.

AUTOMATED OFFICE SYSTEMS GUIDELINES:
MAJOR ACTIVITIES AND RESPONSIBILITIES

Figure 1-1 (Page 1 of 2)

- o Implementation Plan is developed

- o Software/Hardware Installation activities including:

  - Order Processed by EPA Contracting Office
  - Site Preparation
  - Delivery and Installation
  - Training (by vendor)
  - Acceptance Testing (by the user)

- o If existing software or data files are to be converted to the new system:

  - Programming (for conversion to new system)
  - Integration and System Test
  - Acceptance Testing

- o Conversion: New equipment tested with existing equipment

V. SYSTEM OPERATION

- o User Operates System

- o Vendor provides refresher/new staff training

- o Vendor provides hardware and software maintenance as required

VI. REVIEW AND EVALUATION

- o MIDSD assists user in evaluating expected vs. actual system benefits

- o Assessment of System to refine and enhance as appropriate.

AUTOMATED OFFICE SYSTEMS GUIDELINES:
MAJOR ACTIVITIES AND RESPONSIBILITIES

Figure 1-1 (Page 2 of 2)

SECTION 2

THE PRELIMINARY INVESTIGATION

2.1 SCOPE OF THE INVESTIGATION

The preliminary investigation is initiated by management based on general objectives of the organization. The investigation will provide management with general requirements and the benefits to be derived from implementing a new system or from modification to an on-going system. The investigation will also indicate if a comprehensive and detailed Feasibility Study is needed. Based on the results of the investigation, management can determine the need for an in-depth analysis, areas of concentration and factors to be considered in the Feasibility Study.

The preliminary investigation should focus primarily on (1) the use of the current system and (2) the identification of office problems. Structured Interviews or questionnaires may be used as appropriate to gather pertinent information.

Figure 2-1 illustrate a representative table-of-contents for the preliminary investigation report. The preliminary investigation may identify alternatives to word processing or office automation. For example: (1) retraining in the basic typing skills (2) redefining of current office procedures, (3) centralized typing functions and (4) contract typing services. These may be more cost-effective than the installation of word processing equipment or Office Computers.

CONTENTS OF PRELIMINARY INVESTIGATION

1. **Introduction**

1.1 Background (Mission Statement)

1.2 Define Organization Objectives

2. **Definition of General Requirements**

2.1 Identify Problem Areas

2.2 Determine Overall Requirements

3. **Alternatives**

3.1 Identify Potential Benefits

3.2 Identify Opportunities for Greatest Return on Investment

3.3 Define Scope and Focus and Level of Effort for Subsequent Feasibility Study

Figure 2-1

2.2 INVESTIGATION PROCEDURES

The following outlines the series of procedures that should be followed in performing the preliminary investigation.

A. DETERMINE GENERAL OBJECTIVES OF THE ORGANIZATIONAL UNIT (E.G., DIVISION, BRANCH OR SECTION)

1. What is the mission of the program or functional office?

2. What are the goals of the program or functional office?

3. What are the major office processes or systems required to support these goals? What are the established or desired information flows? (i.e., What are the key decision processes of the office and what information is required to support these decisions?)

4. What leads one to believe that office automation will help accomplish these goals?

Answers to the above four questions should define the general objectives and processes of the organizational unit.

B. SURVEY THE CURRENT SYSTEM AND IDENTIFY PROBLEMS

1. Survey instruments to be used.

   - Interview Questionnaires
     - Managers/Professionals
     - Support Level Personnel

2. A summary of the data collected during the survey should identify problems with the existing system. For example:

   - Change in workload (Define how it has changed)
   - Information flows (Define and illustrate)

- Quality of work (Why is it below expected standards?)
- Employee morale (What has caused it? Explain.)
- Increase in overtime (Why? What are the reasons? Is overtime a continuing problem? If so? Why? Explain.)
- Reduction in staff (What are the losses?)
- Turnaround time (What is causing it?)
- Production backlogs (Why? How did they develop?)
- Priority demands (Can contentions for priorities be changed?)

B. DETERMINATION OF GENERAL REQUIREMENTS

With the identification of problems in the current system general requirements should be determined. For example:

1.	Requirement:	Increase in professional and administrative productivity.
	Problem(s):	Backlog, turnaround time, increased overtime.
2.	Requirement:	A need for office communications.
	Problem(s):	Information flows, turnaround time.
3.	Requirement:	Effective use of present staff and equipment.
	Problem(s):	Employee morale, increased overtime, backlogs, reduction in staff, turnaround time.
4.	Requirement:	A need to tie in data processing applications.
	Problem(s):	Information flows, turnaround time, change in workload.

2.3 MAKING A DECISION REGARDING FURTHER STUDY

The results of the preliminary investigation will indicate if a comprehensive and detailed feasibility study is needed before implementing a new system or modifying the existing system. Based on the results of the investigation management will determine whether a word processing or an office automation study is required to meet the objectives of management. In making the decision the following factors are considered:

(1) What general requirements can be met through word processing or office automation applications;

(2) What are the limitations and constraints of the organizational unit budget for the fiscal year;

(3) Will the cost of an WP/OA study be within the limitations of the budget for the fiscal year;

(4) Which EPA contract, (word processing equipment or office computer) can meet the general requirements; and

(5) What procedures are involved in conducting a comprehensive WP or OA study. (Review the Quick Reference guide which follows this section and Figure 2-2).

These factors are analyzed to determine which type of study should be performed to achieve the objectives of management. In performing the analysis, the general requirements should be ranked according to importance, taking into account what monetary resources, people and equipment are available for conducting the study and an evaluation of the WP/OA equipment contracts to determine which can meet the general requirements. Other factors for making a decision may be the size of the organization and specialized applications.

The preliminary investigation should provide sufficient information to determine:

REQUIREMENTS AND BASELINE DATA MEASUREMENTS EXAMPLES

General Requirements (Goals)	Word Processing	Office Automation	Baseline Data
A. Increase Support Staff Productivity	X	X	o Typing Volume o Typing Categories o Use of Employee Time o Equipment Use
B. Increase Professional Staff Productivity		X	o Key Product Analysis Key Product Preparation (Processing) Use of Employee Time
C. Office Communications, Information Flows	X	X	o Key Product Preparation (Processing) o Transmission/Distribution
D. Specialized Application (e.g., Administrative Services; Personal Services)		X	o Use of Employee Time Key Product Preparation (Processing)
E. Effective use of Equipment and Personnel	X	X	o Equipment Use Human Factors Use of Employee Time
F. Improve Quality of Work Output	X	X	o Quality of Work Key Product Preparation (Processing)

Figure 2-2

- the size and scope of the subsequent feasibility study, and
- the appropriate technology that can address the identified (preliminary) requirements.

It should be noted that during the course of the feasibility study, as the identified requirements are further refined and enhanced, the scope of the proposed system may expand or contract from that envisioned in the preliminary investigation.

Should findings indicate that the scope will expand, the level-of-effort required for a feasibility study will also expand. For example, one may have to collect additional data on on-going activities through use of questionnaires, interviews, and activity logs. Management review and approval should be obtained before committing additional resources for an expanded feasibility study.

The techniques that can be employed in conducting a word processing feasibility study are detailed in Section 3.

QUICK REFERENCE GUIDE

Category	Section(s)
A. Preliminary Investigation	A. 2
1. Suggested Contents	1. 2; Figure 2-1
2. Data Collection Instruments	2.
B. Feasibility Study Limited in Scope	B. 2
1. Suggested Contents	1. 3; Figure 3-1
2. Data Collection Instruments	2. 3
3. What Instruments to Use	3. Appendix A; Figure A-1
4. Analytical Procedures	4. Appendix A & B
(a) Key Product Analysis	(a) Appendix B; Figure B-1
(b) Typing Production Analysis	(b) Appendix A; Figure A-2,
(c) Workstations Required for WP Applications	(c) Appendix A; Figure A-3, A-7
(d) Personnel Required for WP Application	(d) Appendix A; Figure A-4
5. Cost Analyses Comparison	5. 3.4.3;
C. Comprehensive Feasibility Study	C. 3
1. Suggested Contents	1. 3; Figure 3-1
2. Data Collection Instruments	2. 3
3. Instruments to Use	3. Appendix A; Figure A-1

QUICK REFERENCE GUIDE

Category	Section(s)
4. Analytical Procedures	4. Appendix A & B
(a) Key Product Analysis	(a) Appendix B; Figure B-1
(b) Professional and Support Level Task Costs	(b) Appendix B; Figure B-4
(c) Typing Production Analysis	(d) Appendix A; Figure A-2
(d) Workstations Required for WP Applications	(e) Appendix A; Figure A-3, A-7
5. System Design Model	5. 3.2.3
6. Cost Analyses Comparison	6. 3.4.3; Appendix D
D. Developing The System Design	D. 4
E. Procurement of New System	E. 5
1. Preparation of Procurement Requests (PRs)	1. Appendix C
2. Overview of EPA Word Processing Contract	2. 5
3. Equipment Costs	3. Appendix D
F. Implementation of New System	F. 6
G. Operations of Implemented System	G. 7
1. Operations Monitoring Documents	1. 7.4
H. Review and Evaluation of Implemented System	H. 8

SECTION 3

THE FEASIBILITY STUDY

The word processing feasibility study consists of three major components:

- Requirements Analysis
- Alternative Equipment Analysis
- Proposed System Design

A detailed description of the contents of a feasibility is shown in Figure 3-1. The suggested level-of-effort for word processing feasibility studies is as follows:

- New Equipment or Additional Equipment

  1 to 25 workstations - Maximum of 3-4 person days
  25 to 50 workstations - Maximum of 10 person days
  over 50 workstations - 10 to 25 person days

- Replacement Equipment (using Exchange Program)

  same number (up to 25) - none
  over 25 workstations - 10 person day effort

To facilitate the review process, MIDSD is requiring the submission of **summary documentation only** for equipment available under the Agency-wide contract **for word processing equipment.** In addition, MIDSD requires a statement signed by the official authorizing the expenditure of funds (e.g., Division Director) verifying that a formal feasibility study report and supporting background information is available for MIDSD review upon request. The summary documentation shall conform to the format illustrated below.

CONTENTS OF THE FEASIBILITY STUDY

1. EXECUTIVE SUMMARY

   1.1 Background Information (org. primary responsibilities)
   1.2 Requirements of the Proposed System
   1.3 Justification of Requirements
   1.4 Objectives of the Proposed System
   1.5 Assumptions and Constraints of the Study
   1.6 Methodology Use in Arriving at Requirements
   1.7 Recommendations and an Implementation Plan
   1.8 Alternatives Considered

2. DEFINITION OF REQUIREMENTS

   2.1 Description of Existing System (Baseline)

   This section should describe in greater detail the organization and provide an overview of the major functions performed by the organization, major legislation affecting the organization, principal geographic locations, and type and size of staff.

   2.1.1 Analysis of Findings (Data Collection)

   - Describe major data flows
   - Specify workload volume
   - Personnel -skill categories, staff ratio
   - Equipment inventory
   - Limitations of the existing system

   2.2 Statement of Requirements for Proposed System such as:

   - Increased Productivity
   - Improve Management
   - Improve Manpower Utilization

Figure 3-1 (Page 1 of 2)

3. STATEMENT OF ALTERNATIVES

3.1 Describe how the alternative(s) will meet the requirements of the proposed system.

3.2 Impact of Alternatives

- o Technological
- o Organizational
- o Procedural

4. COST BENEFIT ANALYSIS

4.1 Cost of Present System

- o Personnel
- o Equipment

4.2 Cost of Proposed System

- o Personnel
- o Equipment (Leased-rent options/Purchase)
- o Environment modifications
- o Training

4.3 Identify - Benefits

- o Cost Reduction
- o Value Enhancement

5. RECOMMENDATION (Proposed System)

5.1 State the reasons which support the recommendations of the proposed system over the other alternative systems. Include all quantifiable benefits and non quantifiable benefits, required resources, possible effects on organization and consequences of not taking action.

6. DEVELOP IMPLEMENTATION PLAN

Outline a plan to include detail system design, acceptance testing, conversion and installation. Identify major milestones and management decision points.

Figure 3-1 (Page 2 of 2)

- **Specific Intended Applications of the Equipment** (e.g., repetitive typing of letters, memos and short reports; communication with Regions I, II, and IV; etc.).

- **Workload Information as Appropriate.** (e.g., 50 pages of text produced per day; three communications sessions per day estimated with an average of 10 pages of text transmitted/received per session; etc.).

- **User Population.**

  - Number, type and function (e.g., Professional vs. Clerical, routine text production vs. records management)

  - Physical layout and planned interaction

  - Geographic location and communication requirements.

- **Certification by word processing coordinator** that formal feasibility study report and supporting background information is available for MIDSD review.

3.1 CONDUCTING THE FEASIBILITY STUDY

The primary objective of the feasibility study is to examine current operations and to identify applications where efficiency could be improved through the use of word processing (or office computer) equipments. The proposed improvements should be considered in the context of potential organizational, procedural, and technological impacts. As an initial step, the scope and objectives of the feasibility study should be clearly defined.

A statement of objectives should include:

- o A description of problems to be solved;
- o An outline of results to be achieved; and
- o A list of benefits to be gained.

A statement on the scope of the study should include:

- o The name, geographic locations, and functional relations of the organization to be studied;
- o A description of the functions to be analyzed;
- o A list of types of data to be reported; and
- o A list of items to be excluded.

3.2 REQUIREMENTS ANALYSIS

This section describes the methodology and analytical procedures used to evaluate the present methods of operation.

The study methodology and analysis is characterized by a set of procedures that focus on productivity improvement and cost-effectiveness. These procedures are used during the feasibility study and in subsequent review and evaluation of word processing equipment.

Data may be measured in the following areas:

- o Productivity
- o Equipment use
- o Total costs
- o Key product preparation (processing)

Any of the above areas may be measured individually (or in combination with others) depending on the general requirements and depth of the study. Figure 2-2 gives examples of requirments and baseline data to be measured.

The current (baseline) system must be measured before the feasibility of any proposed changes can be evaluated. The system is described in terms of key products. "Products" are the output of the organization; such products may be written results or services performed. By focusing on the product, it becomes feasible to identify a set of technological, organizational, and procedural changes which can improve productivity and cost-effectiveness. It should be noted that when the productivity of a centralized word processing center is the focus of the study, the key product to be examined is expressed in terms of typing production.

Appendix A provides detailed procedures for Typing Productivity analysis. Data is collected through an examination of chronological files (or via typing activity logs) and is translated into projected annual typing workload. This workload determines the number of workstations and printers that can be justified. For example, an annual typing workload of 896,000 lines would require a minimum of 5 workstations and 2 printers (Appendix A, Figure A-8). The actual number required may be somewhat greater due to the physical location of the clerical support staff and the resultant constraints on equipment sharing. Periodic equipment utilization reviews by the Program Office Word Processing coordinator will assist management in refining and enhancing the equipment configuration initially acquired.

For other key product analysis, Appendix B provides guidance on translating the information collected on key products into, first, the level-of-effort expended and, then, the cost of preparing the key product. This baseline cost together with the cost of proposed new equipment and the projected impacts (technology, organizational, and procedural) on the

key product preparation process are the basis upon which new equipment can be justified. The projected impacts on the key preparation process can be expressed in terms of both cost-avoidance and value-added factors.

As a simplistic example, assume that four professionals are involved in the logging and tracking of projects (the "key product") and that this accounts for twenty-five percent of their time. Therefore, the professional level-of-effort (labor) involved in key product preparation is 2080 hours (assuming 2080 hours = one person year). At $25.00 per hour, the baseline cost of professional labor is $52,000.00. The equipment cost of a single workstation and printer is approximately $4,000.00 per year (assuming a three-year life cycle as in Section 3.3.2 and including approximately 10% cost of supplies). At this point, it should be noted that the proposed technology investment appears to be cost-feasible; it is less than 10% of the baseline cost. Under the assumption that the cost of professional labor is $25.00 per hour, then the equipment investment represents 160 professional person hours ($4,000.00/$25). Therefore, the equipment would be justified if its impact on the key product preparation process equalled or exceeded 160 person-hours (i.e., a total of 20 person-days or 5 person-days saved for each of the four professionals involved). Periodic post-implementation review and evaluation by the Program Office Word Processing coordinator would then provide additional guidance on key product impacts and equipment configuration and utilization. MIDSD should be contacted if additional guidance on key product analysis is required.

As a final activity, the study data should be summarized by organizational unit (e.g., Division Branch, Section, and Laboratory). Data may be summarized for each staff participant depending on the specific information is required.

It should be noted that the level-of-effort involved in data measurement is dependent on the <u>scope</u> of the proposed system. For example, when a single word processor is being considered, a perusal of chronological files would likely be appropriate. Where a sophisticated

office system is being considered, one may wish to use the complete comprehensive set of tools and techniques described in this section.

3.2.1 DEFINITION OF REQUIREMENTS

System requirements are statements of user needs. These statements are derived from analysis of baseline data, which can be both quantitative and qualitative. The analytical procedures in the previous section should provide the basis for identifying user needs. These are then translated into system requirements.

When defining the system requirements one should be aware of the following points and considerations:

- o System requirements are the difference between baseline productivity and productivity goals;
- o Projected changes to the baseline productivity;
- o Feasibility and significance of proposed requirements; and
- o Accuracy of the baseline data.

The system requirements may be described from six points of view:

- o Legislative, regulatory, security and EPA internal requirements;
- o Information flows including inputs, outputs and processing;
- o Procedures required;
- o Interfaces with other systems, and organizations, functional units or groups;
- o Workload; and
- o Current WPE or Office Computer utilization.

Factors that can generate requirements usually include but may not be limited to the following:

- New legislative or new internally established agency direction;
- Present workload increases where it is no longer feasible to maintain current equipment levels or procedures;
- Turnaround and degree of accuracy of the current system;
- Management determination that current manual procedures could be enhanced with new technical innovations;
- People efficiency/productivity; and
- Enhancement of professionals' analytic and decision making capabilities.

There is no limit to the number of system requirements that may be proposed. However, to ensure that the most important needs of the organization are met, the requirements should be prioritized.

3.2.2 SYSTEM DESIGN MODEL

The system requirements become the basis for creating a system design model. To develop a system design model, system requirements must be expressed in terms of changes that must be effected in the **areas of technology, organization and procedures.** This accomplished, one will have defined technological, organizational and procedural productivity improvements. It should be noted that any particular system requirement may impact one or two areas but might not necessarily have a significant impact on all three of these areas. The relationship of system requirements to technological, organization, and procedural improvements is illustrated in Figure 3-2.

SYSTEM DESIGN MODEL

System Requirements

- Capture of Documents Originating Outside the System
- Improve Quality of Document Creation
- Correspondence Distribution

Technological Improvements	o Use of Scanning Device (OCR) o Use of Text Editors (Visual Display) o Electronic Mailbox
Organizational Improvements	o Program Office Word Processing Coordinator o Division/Branch Word Processing Supervisor
Procedural Improvements	o Security o Correspondence Control o Redefining Procedures for Performing Well Defined Office Activities

Figure 3-2

3.3 SELECTING WORD PROCESSING EQUIPMENT

The system design model becomes the basis for developing feasible alternatives. Note that when it has been established that an office computer will best meet the requirements of the organization, the user organization will stop the feasibility study at the end of the requirements phase. The alternative anslysis will be conducted by MIDSD. For word processing equipment the user organization will precede with the alternatives analysis.

When selecting word processing equipment (WPE) alternatives one should be aware of the following questions:

- Can the requirements be met by enhancing the present system?
- Are there other systems in EPA that can wholly or in part satisfy the requirements? (e.g., Central Computer at RTP Data Center)
- Do the new requirements provide an opportunity for system consolidation?
- Does commercial software exist which will satisfy the requirements?
- Does software exist within EPA that can satisfy the requirements?
- Is there an existing system that can be used in assisting you to formulate your model(s)?
- Can the requirements be met by options other than technology?

The description of the selected equipment configuration should be stated in terms of functional capabilities and hardware/software configuration. Major features, limitations and growth potential should be highlighted for each alternative along with any other significant advantages and disadvantages. For word processing equipments available under the Agency-wide contract, refer to Appendix D for a complete description of standard and optional features.

3.3.1 REPRESENTATIVE CONFIGURATIONS

Representative equipment configurations are created to determine the required number of units and their estimate average costs. To ascertain the number of units required, information regarding typing volume, revisions rate, amount of incoming and outgoing correspondence and other pertinent data in the Analysis of the Baseline Productivity Data covered in Section 3.2.1 Appendix A and Appendix B, should be reviewed.

Hardware Configurations and Features

- o Stand-Alone
  - Lexitron VT-1202-III, single diskette drive with dual side recording in double density mode
  - Lexitron VT-1303-IV, dual diskette drives with daul side recording in double density mode

Note: Each stand-alone includes word processing, "Math Pack", alternate character set, and communications software; BASIC programming language and Records Management Software optional. Refer to Appendix D

- o Shared Printer Configuration
  - Allows multiple stand-alone workstations to share a single printer. It will support up to six (6) workstations attached to a maximum of three (3) printers.
- o Printer for Stand-Alone
  - 45 characters - per second
  - Easy load cartridge ribbon
  - Excellent print quality
  - Quiet printers

3.3.2 REFLECTING THE VALUE OF STANDARD TECHNOLOGY IN WORD PROCESSING COST ANALYSES COMPARISON

The adoption of standard, modern WP technology agency-wide will generate substantial benefits both to the agency as a whole and to individual users. These benefits, while difficult to measure for individual users, should be taken into account in making WP investment decisions. Therefore, a life-cycle cost advantage of $5,000 per workstation is to be

used in cost comparisons of Lexitron vs non-standard equipment. The average life cycle of new WP equipment should be five years whereas used WP equipment should be three years. This cost advantage was determined from the following productivity benefits which accrue to the Agency and utlimately to each user.

- Training - Common training programs and materials for all operators in the Agency. No retraining for personnel transfers.
- Workload Sharing - Work can be shared among many units and locations.
- Communications - Documentation transfer at the editing level can be shared and transmitted. Common interface to Electronic Mail System.
- Administrative Functions - reduced costs for maintenance, requirements analysis, performance reviews, etc.
- Software Support - Reduced costs for vendor software support (distribution, documentation, training, and trouble shooting).
- Software Development - Applications using RMS or SUPER CALC can be developed once an then distributed agencywide.

This "Technology Surcharge"

- Will be used to assess proposals to convert non-standard equipment from lease to purchase.
- Will not be used to force conversion in FY82 or 83.

The following is a sample cost analysis:

Assumptions: Five work stations with five printers

Three year life cycle for used equipment

Technology cost $5,000 per workstation for 5 years life cycle

10% increase per year for maintenance for non-standard

50% purchase credit options for conversion

Option 1:	Non-standard leased word processing equipment	
	Equipment lease ($450/Month x 36 months x5)	$81K
	Equipment Maintenance ($80/Month + 10% increase/yr x 3 yrs)	16K
	Technology cost ($1K x 3 yrs x 5)	15K
	Total	$112K
Option 2:	Non-standard purchase conversion of word processing equipment.	
	Equipment purchase conversion ($7200 x 5)	$36K
	Equipment Maintenance	12K
	Technology Cost ($1K x 3 yrs x 5)	15K
	Total	$63K
Option 3:	Lexitron word processing equipment	
	Equipment purchase ($6500 x 5)	$32.5K
	Equipment maintenance (113 x 36 x 5)	20.3K
	Total	$52.8K

		Total Cost	Savings for Option 3
Summary:	Option 1:	$112K	$59.2K
	Option 2:	67K	14.2K
	Option 3:	52.8K	

Note: K = 1,000

3.3.4 PROPOSED SYSTEM DESIGN

The proposed system design is the alternative that best meets the requirements for your organization both in terms of projected life cycle cost and improvements. The proposed system is based on three sources.

- The Requirements Analysis
- The Analysis of Alternative Equipment Configurations
- Cost Analysis Comparison

From these three sources and guidance from MIDSD it will be determined which equipment configuration(s) will best achieve the overall objectives for management at an acceptable cost. Importantly, overall assessment of system capabilities and benefits should not be subordinate to the cost assessment; rather the two must be weighted together.

SECTION 4

DETAILED SYSTEM DESIGN

4.1 INTRODUCTION

The proposed system design developed as part of the feasibility study may be a general description of hardware and software characteristics that best meet the organization's Office Automation requirements. For word processing, if a large number of workstations and other equipments is involved (e.g., more than 25 workstations), it may be necessary to develop a more detailed design that addresses the following elements:

- Hardware and software configuration for each work unit;
- The environmental considerations for each work unit; and
- Users of the system.

These elements should result in a work unit profile. The profiles will be used to create the total system design. An example of a work unit profile is shown in Figure 4-1. This design will provide a level of detail that will allow for an effective review by management and provide the required documentation for procurement.

4.2 HARDWARE AND SOFTWARE CONFIGURATION

Several steps should be taken in arriving at hardware/software configurations for each work unit. They include:

- A review of baseline data profile for each work unit; and
- A review of requirements defined in the feasibility study for each work unit.

SAMPLE PROFILE

Work Unit A

Location ___

Requirements	Hardware	Software	Environmental Elements	Users and Location
o To capture documents originating outside work unit and/or organization	1 OCR Unit	Word Processing	5 Terminal Tables	
		Communications	2 Printer Stands	
o To search and retrieve documents	5 Video Display Terminals	Record Processing	10 Electrical Outlets	
o To print, file, suspend, circulate or pass documents stored electronically	2 LQ Printers 2 Sheet Feeders 2 Printer Covers		5 Extension Cords	
o To create documents and messages on electronic media for storage and distribution	* All sharing Division CPU			
o Maintain records, distribution and circulation lists, calendars and schedules				
o To share work files				

Figure 4-1

These sources should provide sufficient data to decide the following for each work unit:

- Equipment requirements
- Software requirements
- Communication and interface requirements
- Number of users and location.

Costs should be identified where applicable. This will result in an inventory of hardware/software necessary to meet the requirements for each work unit.

4.3 ENVIRONMENTAL CONSIDERATIONS

It is necessary to consider the various elements of the environment in which the hardware/software must operate for each work unit. They include:

- Space
- Additional office furnishing
- Lighting
- Electrical requirements.

Costs should be identified for each item where applicable and an inventory of the above items should be created for each work unit.

4.4 THE TOTAL SYSTEM DESIGN

The two basic elements of the system design (system configuration and environmental considerations) have been developed for each work unit and are presented in a work unit profile. This now becomes the total system design. Additional resources may be required for the design including:

- Implementation Support
- Operational Support
- Maintenance Support
- Programming Support.

These items should be listed along with their costs. The different inventories created during the design process should be used in conjunction with the standard provisions of the word processing and office computer contracts.

A list of equipment and software by location (room#) and users should be developed to illustrate the total equipment configuration for the user organization.

SECTION 5

PROCUREMENT

5.1 INTRODUCTION

When EPA program offices initiate procurement requests (PR's) for supplies and/or services available within the scope of the following contracts:

- Word Processing Equipment
- Office Computers

MIDSD will provide assistance in:

- feasibility study activities;
- determining system size and configuration for office computers; and
- developing procurement-related documentation.

Guidelines for preparing procurement requests are in Appendix C of this document.

5.2 OVERVIEW OF EPA STANDARD WORD PROCESSING CONTRACT

- Contract awarded to Raytheon Data Systems Company (Lexitron) on July 22, 1982.
- Contract has five, one year equipment ordering windows plus two, one year additional maintenance ordering windows.
- Contract is a firm fixed price, indefinite quantity contract for a maximum of 2,500 stand-alone and shared resource word processors.

- o New contract provides:
  - Hardware
  - Software
  - Maintenance
  - Training
  - Conversion
  - Contractor Support Services
  - Optional Equipment and Software Features

- o Hardware Configurations and Features

  Stand-Alone
  - Lexitron VT-1202-III, single diskette drive with dual side recording in double density mode.

  - Lexitron VT-1303-IV, dual diskette drives with dual side recording in double density mode.

- o Shared Printer Configuration

  - Allows multiple stand-alone workstations to share a single printer. It will support up to six (6) workstations attached to a maximum of three (3) printers.

- o Printer for Stand-Alone

  - 45 characters-per-second
  - Easy load cartridge ribbon
  - Excellent print quality
  - Quiet printers

- o Software

  - Each standalone workstation has the following software:

    - Word Processing
    - Ansynchonous ASCII Communications
    - Math Pack software
    - Alternate character set (for GREEK/Math and other special character requirements)

- o Delivery

  - 21 days after receipt of official order

- o Maintenance

  - Mandatory response times of 2 hours in Washington, RTP and Cincinnati, 6 hours elsewhere

- Replacement machines if necessary
- Nationwide maintenance support

o Training

- Lexitron will train two (2) operators per station
- All instructional and reference manuals will be provided
- Special training courses will be offered in the future

o Conversion

- Lexitron will convert up to 1,000 pages of text per installed station
- 98% accuracy required
- Lexitron will assist in conversion of special text formats and applications

o Basic Supply Allocation

- Each system will come with
  - Three (3) printwheels
  - Ten (10) diskettes
  - One (1) box printer ribbons
  - All necessary cables and plugs needed for installations

5.3 REQUIREMENT FOR PROCUREMENT

Before an EPA program office may initiate a PR for automated office equipment and services, it must conduct a feasibility study which analyzes its present operations and justifies the proposed acquisition on economic and/or other grounds. The study must comply with these guidelines for conducting a feasibility study. The submission of summary documentation only is required for equipment available under the Agency-wide contract for word processing equipment. Refer to Section 3 of this document.

SECTION 6

IMPLEMENTATION

6.1 INTRODUCTION

This section describes the major activities involved in implementing automated office systems once the feasibility study has been approved. These quidelines include planning, controlling and implementing, preparing the site for hardware installation, and taking delivery of, installing and accepting the equipment. These implementation quidelines can be applied to a prototype or pilot installation as well as to full implementation and initial operations.

For each Program Office, a Word Processing Coordinator will be identified. The coordinator will be responsible for implementing these guidelines with respect to **word processing acquisitions.** The WP coordinator's responsibilities will also include the following:

- Quarterly review of on-going operations, and
- Quarterly assessment to MIDSD word processing contract manager which will include equipment utilization, training and quality assurance issues.

The WP coordinator is responsible for delivery, installation, and acceptance of word processing equipment and all other related activities in the implementation phase. Responsibilities of the Word Processing Coordinator are shown in Figure 6-1.

Note that the WP coordinator is responsible for maintaining all records to be used in generating reports to be submitted to the MIDSD Word Processing Contract Manager regarding contractor performance during the implementation phase.

RESPONSIBILITIES OF PROGRAM OFFICE

WORD PROCESSING COORDINATOR

DESCRIPTION OF TASK

- Guide Requirements Studies
- Review Purchase Requests
- Plan Conversion - 1,000 pages per workstation to be converted
- Plan Hardware Installation
  - Site preparation
  - Delivery*
  - 30 day acceptance*
  - Training - (initial)
- Supervise Maintenance Performance
  - 2 or 6 Hour Response Time (Exception Reporting*)
  - 95% Uptime (Exception Reporting*)
- Periodic Review* — Initially on Quarterly Basis
  - Requirements
  - Equipment Maintenance
  - Training
  - Quality Assessment

* Requires action and results sent to MIDSD

Figure 6-1

6.2 SITE PREPARATION

This section describes the procedure for planning the physical arrangement of the word processing equipment installation. In planning the site(s), there are seven components to be considered, as follows:

- Equipment Configuration
- Power supply, communications and/or connector requirements
- Disk and tape library
- Cabinets and furniture
- Site access
- GSA requirements.

At this point, close coordination ties should be established with the appropriate EPA facilities manager.

Throughout the equipment site planning and preparation process, vendor field representatives should be consulted for vendor requirements and recommendations. The vendor should furnish site preparation specifications in writing based on environmental information supplied by EPA. In accordance with the specification supplied by the vendor, EPA will prepare the site at its own expense. Subsequently, the vendor may inspect the site and report to EPA on the acceptability of the preparations. Any alterations or modifications in site preparation which are attributable to incomplete or erroneous specifications provided by the vendor are to be made at the expense of the vendor. However, this liability excludes those conditions resulting from incomplete or erroneous information supplied by EPA.

6.3 DELIVERY, INSTALLATION AND ACCEPTANCE TESTING

The equipment should be delivered, installed, run through vendor sponsored diagnostics, certified ready for the start of acceptance testing and turned over to EPA within 21 calendar days for word processing equipment and within 75 calendar days for office computers after the receipt of the delivery order by the vendor. Equipment delivery and acceptance acknowledgement forms are provided in Figures 6-2 and 6-3.

6.3.1 WITHIN 21 DAYS (WORD PROCESSOR) AND 75 DAYS (OFFICE COMPUTER) AFTER EFFECTIVE DATE OF ORDER, THE VENDOR SHOULD DELIVER THE ORDERED EQUIPMENT.

The contract between EPA and the vendor should specify that the vendor will deliver the hardware and software ordered within 21-75 days after the effective date of order. Before delivery can take place, EPA must have the site prepared as specified and approved by vendor (see Section 6.2 for site preparation guidelines). Shipments to and from the installation locations are F.O.B. destination and are shipped "All Transportation Costs Prepaid".

During periods of transportation the Government is relieved of all risks of loss or damage to the equipment except for:

1) loss or damage caused by nuclear reaction, nuclear radiation, radioactive contamination, war, insurrection, rebellion; or

2) Negligence on the part of the Government or its agents.

The vendor should notify EPA of the appropriate time of delivery. Coordination with the sales representative will help assure on-time delivery and provide EPA with a more accurate and earlier delivery

EQUIPMENT DELIVERY

I acknowledge delivery and receipt of the equipment listed below:

DATE: _____

Quantity	Description	Location
____	_____	_____
____	_____	_____
____	_____	_____
____	_____	_____
____	_____	_____

Name: _____

Address: _____

_____

_____

Point of Contact (if other than yourself):

_____

Please send to:

Robert M. Morgan
EPA Word Processing Coordinator
Management Information and Data System Division
PM 218
Environmental Protection Agency
401 M Street, S.W.
Washington, D. C. 20460

Figure 6-2

ACCEPTANCE OF EQUIPMENT

I acknowledge acceptance of the hardware and software listed below:

DATE: _____

Quantity	Description	Location
____	_____	_____
____	_____	_____
____	_____	_____
____	_____	_____
____	_____	_____

Name: _____

Address: _____

_____

_____

Point of Contact (if other than yourself):

_____

Please send to:

Robert M. Morgan
EPA Word Processing Coordinator
Management Information and Data System Division
PM 218
Environmental Protection Agency
401 M Street, S.W.
Washington, D. C. 20460

Figure 6-3

date. Before the system arrives, EPA will receive a Notification of Shipment. The WP coordinator should compare this notification to the order to check for accuracy. Any mistakes should be corrected through the local sales representative. When the actual delivery date is known, EPA should coordinate with the building manager, elevator operators and receiving area to notify them of the anticipated arrival and to plan the pathway for the equipment to be moved from the receiving area to the office area. The office area should be clear of extraneous furniture. The people who work in the office area should be warned about the forthcoming disruption, as well. When the delivery is made, the truckers will bring all the equipment either to the dock or into the office area (or temporary storage area), depending on building and union rules. In addition to the hardware cabinets, the delivery will include several large crates of documentation and miscellaneous equipment. The space required for delivering and unpacking the crates is approximately twice that of the installed equipment.

After the equipment has been delivered, the system manager should perform a check to see if the Notification of Shipment agrees with what actually arrived. There are packing slips on most of the crates and labels inside large cabinets on the system unit boxes. The system manager should be able to identify all major items and complete the check within an hour. Do not unpack the crates or remove the skids. Call vendor field service to schedule installation and perform the unpacking.

6.3.2 NOTIFICATION OF SHIPMENT/INTENT TO DELIVER

No later than five (5) days prior to shipping the items specified in an order (or five (5) days prior to the planned delivery date, whichever is later), the Vendor shall furnish the anticipated shipment (or delivery) date, a listing of the items involved, indication as to whether the shipment is partial or complete, and bill of lading number and carrier (if applicable) to the Project Officer, the Contracting Officer, and the local EPA word processing coordinator specified in the delivery order.

6.3.3 NOTICE AND CERTIFICATION

The Vendor shall, upon completion of delivery, installation, checkout, and turnover of equipment to the Government for the start of acceptance testing, issue a letter to the Contracting Officer, with copies to the Project Officer and the local EPA Word Processing Coordinator, identifying the contract/delivery order number and the model number(s), serial number(s) and date of installation of equipment, and certifying that the equipment is ready to commence standard of performance testing.

6.3.4 SOFTWARE INSTALLATION

The vendor Software Support personnel must be notified when installation of the equipment has been completed so that the software can be installed. If Software Support knows when hardware installation is taking place, they can schedule software installation immediately following hardware installation. For a timely software installation EPA should take four steps, as follows:

- Acquire the name of the Support Software person from the sales representative, prior to hardware installation;
- Make sure that the Support Software person has had experience in the installation of the software ordered;
- Contact the Software Support person and the sales representative to set a tentative date for software installation; and
- Confirm the software installation date when the hardware has been certified as ready for use and when the multi-function diagnostic has been running without errors for at least 48 hours, continuously.

6.3.5 EPA UNDERGOES ACCEPTANCE TESTING UNTIL THE SYSTEM RUNS AT AN AVERAGE EFFECTIVENESS OF 95% FOR THIRTY CONSECUTIVE DAYS.

The acceptance text period begins immediately after turnover of installed equipment to the Government. The equipment must effectively operate at a level of 95% or better for a period of 30 days after turnover.

If the equipment fails to operate at a 95% effectiveness level for 90 days from the start of acceptance testing or installation, whichever is later, the Government may request replacement or terminate the contract.

1. Minimum of Use Time

During the acce tance testing period for a system/machine, a minimum of 100 hours of operational use time with scheduled productive or simulated work will be required as a basis for computation of the effectiveness level. However, in computing the effectiveness level, the actual number of operational use hours shall be used when in excess of the minimum of 100 hours. Machines added or field modified and substitute machines are subject to the 100 hour minimum use time requirement. However, the Government shall accept such machine(s) without the addition of simulated work solely to achieve the minimum of 100 hours use time, provided the average effectiveness for the 30 day acceptance period is equal to or better than the contractually specified levels.

2. Date of Acceptance

Equipment shall not be accepted and no charges shall be paid until the standard of performance is met. The effective date of acceptance shall be the first day of the successful acceptance testing

period, if the equipment is acquired under a lease method of acquisition, or the first day following the successful acceptance testing period if the equipment is acquired under a purchase method.

3. Daily Records

The Government Project Officer, WP Coordinator, and the MIDSD Word Processing Contract Manager shall maintain appropriate daily records to satisfy the requirements of this section and shall notify the Contractor in writing of the start and finish dates of the successful acceptance testing period.

4. Notification of Date of Acceptance

Upon successful completion of the standard of performance as concurred in by the Contractor and the Project Officer, the Contractor shall promptly notify the Contracting Officer in writing, with a copy to the Project Officer and the local Word Processing Coordinator, of the effective date of acceptance of the system/item(s).

5. Authorization and Location

The Contracting Officer, or the duly authorized representative, is authorized to perform inspection and acceptance of materials and services to be provided. For the purpose of this provision, the Project Officer named in this contract and the local EPA WP Coordinators are designated as authorized representatives of the Contracting Officer. Inspection and acceptance will be performed at the installation sites specified in individual delivery orders.

6.4 MEDIA CONVERSION SUPPORT

The contractor will for each workstation provide conversion of the first 1,000 pages of text at no charge to EPA within thirty (30) days of

receipt of an official written order from any EPA facility. The user organization should carefully plan for conversion by identifying those materials that appropriately should be converted. Typically, these are mission-oriented materials. The user and vendor should coordinate the strategy and timing of conversion. All arrangements for text conversion activities should be made separately by the user.

6.5 TRAINING SUPPORT

For word processing equipment, the contractor will provide training for one primary and one back-up operator for each work station installed. Also a 1/2 day executive orientation session will be provided by the contractor.

SECTION 7

SYSTEMS OPERATIONS

7.1 INTRODUCTION

This section has been prepared to assist EPA personnel to establish and operate the Office Automation equipment by providing standard operations and management guidelines.

The information contained in this section includes the following:

- Daily Operations Guidelines
- Maintenance and Back-up
- Operations Documents.

A local System Manager (or lead operator) should be designated to maintain the system, allocate machine resources, educate users in system capabilities, schedule and control work flows and to perform routine maintenance and back-ups.

7.2 DAILY OPERATIONS GUIDELINES

Procedures for daily operations include:

- Preparation for Daily Operations
- Daily Procedures
- Correction of Problems
- End Daily Operations.

7.2.1 PREPARE FOR DAILY OPERATIONS

Preparation for daily operations includes:

- Machine Start-up
- Scheduling
- Daily Maintenance.

Machine Start-Up

Procedures for machine start-up are located in the vendor user and/or operations manual.

Scheduling

When sharing OA equipment it may be necessary to maintain a daily schedule for utilization by appropriate personnel.

Daily Maintenance

The system manager or operator is responsible for performing routine daily maintenance such as stocking supplies necessary for the day's operations. Daily maintenance should be performed at the start of the day to ensure that the equipment is in the best possible condition for daily operations.

7.2.2 DAILY PROCEDURES

An operations or production log should be maintained for use in monitoring WPE operations. This is a journal that records the day's operation or production statistics and the system manager's activities.

Most of the log may consist of computer-generated messages and operator typed system responses. An example might be an explanation of why an operation was terminated or a message noting the time of a system or hardware failure. The system manager should be able to reference the log as required to obtain a clear picture of each day's operating activities.

7.2.3 CORRECT PROBLEMS

The system manager is responsible for ascertaining operating problems and aiding in recovery operations. Categories of system failures and recovery procedures that may arise include:

- Processing halts because of devices not ready (e.g., printer)
- Application software failures
- Systems software failures
- Hardware failures
- Recovery.

When a problem develops, the operator should determine the category of the problem and follow the vendor prescribed procedures.

7.2.4 END DAILY OPERATIONS

The procedures to be followed by the system manager in ending a day's operation include:

- Back-Up and Storage (office computer)
- Machine Shutdown.

Occassionally there will be variations in the normal routine; the system manager should document these variations in the daily schedule. The manager should check the daily schedule before closing down.

Back-Up and Storage

All system and public disks should be backed-up. The back-up procedures are described in the vendor user and/or operations manual. The back-up disks and/or diskettes should be placed in a safe location to ensure availability in case they are needed. Disks and diskettes containing classified material should be backed-up and stored according to agency security procedures.

Machine Shut Down

Follow procedures provided in the vendor user and/or operations manual.

7.3 MAINTENANCE AND BACK-UP

Proper maintenance and back-up are necessary for any Office Automation Equipment. Although microprocessors and minicomputers are generally less prone to CPU type equipment failure than large computers, it is still advisable to perform periodic maintenance. Maintenance and back-up include the following categories:

- Scheduled vendor hardware maintenance
- Operator maintenance
- Software maintenance and back-up
- Supplies and material ordering.

Proper maintenance of hardware avoids costly machine downtime and component replacement. The system manager should be aware that even small maintenance oversights can lead to expensive repair jobs.

Software back-up avoids costly reprogramming and regeneration of data files in the event of a severe system crash.

Supplies and material ordering should be viewed as maintenance of the OA equipment supply stock.

7.3.1 SCHEDULED VENDOR HARDWARE MAINTENANCE

The vendor is responsible for machine and peripheral equipment maintenance and for testing for any internal hardware failure. Maintenance is provided at no additional cost during the Principal Period of Maintenance (PPM) which is between the hours of 8 A.M. and 5 P.M. Maintenance work performed on weekends, holidays and between 5 P.M. and 8 A.M. will incur additional charges. A response time of two (2) hours is guaranteed by the contractor only for Headquarters, Research Triangle Park (RTP) and Cinncinati. All other locations will have a six (6) hour response time. For additional information reference, Section 5.2.

Maintenance Procedures

(1) Anyone may place a call for maintenance, but the following information must be recorded in the required Hardware Maintenance Log (Figure 7-1):

- Equipment Serial Number (ESN)
- Specific Location (Bldg and Room #)
- Description of Problem
- Name of individual placing call.

The above information must be available and given to vendor when service call is placed.

(2) If there is no response by the vendor, the Program Office word processing coordinator should be contacted. The coordinator will, initially, follow the same procedures, as listed above, with a follow-up service call.

(3) Each month, the maintenance logs (Figures 7-1 and 7-2) will be used to generate an exception report to the MIDSD Word Processing Contract Manager. The monthly

HARDWARE MAINTENANCE LOG

Word Processing Coordinator:

Report for Month of:

Name of Individual Placing Call	Date/Time Problem Occurred	Description Of Problem	Equipment Model #	Equipment Serial #	Operator Initials	Date/Time Vendor Contacted	Date/Time Repaired	Comments (Recurring problems, replacement parts, probable cause etc.)

Figure 7-1

SOFTWARE MAINTENANCE LOG

Name of Individual Placing Call	Date/Time Problem Occurred	Nature of Problem	Software Type/Name	Operator Initials	Date/Time Vendor Contacted	Date/Time Vendor Response	Comments (Recurring problems, probable cause etc.)

Figure 7-2

exception report will identify areas where vendor performance has not been in accordance with the contract provision.

7.3.2 OPERATOR MAINTENANCE

Operator maintenance involves the care and servicing of those devices that have electro-mechanical components. The most critical of these devices that require operator servicing are disk drives and printers.

(1) Daily Maintenance

The operator should develop a simple maintenance checklist and a daily routine for maintaining and servicing equipment. A checklist could include, but is not necessarily limited to, the following:

- Visually inspect the equipment for signs of obvious defects.
- Examine all major cables, and electrical connections.
- Clean the exterior of all equipment according to manufacturer's instructions.
- Remove any unnecessary objects from the office environment, especially if they have been placed on the equipment.
- Check all printing devices and replace ribbons and paper as necessary.
- Check the condition of disk drives and other peripheral equipment.
- Check temperature and humidity indicators to ensure that the temperature and humidity are within computer operating limits.

7.3.3 SOFTWARE MAINTENANCE AND BACK-UP

Provisions should be made for adequate software maintenance and back-up for system data files, application systems, operating systems

and new releases. Back-up disk and diskettes should be stored at a remote location in order to provide back-up security in case of fire or other major disaster.

7.3.4 SUPPLIES AND MATERIAL ORDERING

The system manager is responsible for ensuring that there are adequate stocks of equipment supplies and materials. Materials must be ordered with enough lead time to allow for processing and shipping.

All materials except those necessary for daily operation should be stored in a separate supply area. An inventory list should be made for these supplies allowing space for special supplies that might not be present routinely. Upon arrival, ordered material should be checked for damages.

7.4 OPERATIONS DOCUMENTS

Operations monitoring documents are the schedules, logs and other forms that facilitate day-to-day equipment operation and equipment requirements. They also provide a historical record that can be used in regular review and evaluation activities. When problems or questions develop, the documents provide a base for an accurate resolution of these matters.

The following documents may be developed and maintained where appropriate:

- Daily Schedule
- Operations/Production Log
- Hardware Maintenance Log (see Figure 7-1)
- Software Maintenance Log (see Figure 7-2)
- Disk and Diskette Labels

If any additional needs arise, the system manager may expand this list, as necessary. These documents should be as short and concise as possible and at the same time provide management with the required information.

SECTION 8

REVIEW AND EVALUATION

8.1 INTRODUCTION

The products of the feasibility study, including baseline data, requirements, system design model and cost assessment will serve as tools to measure the performance of the implemented automated office system during the review and evaluation period. Review and evaluations will be conducted periodically (e.g., at 1-,3-, and 5-year periods) for the implemented system. The results of the review and evaluation will be used to provide guidance in system enhancements.

8.2 PURPOSE AND SCOPE

The primary objective of the review is to compare differences between the expected and the actual performance level of the system. A second objective is to build a data base on the productivity improvements realized through office automation equipment utilization. The review and evaluation of a system should determine the following:

- If the system is still needed to satisfy the organization requirements;
- If the system is performing adequately or needs to be modified;
- If the costs involved with operating the system are justified by the benefits received;
- If the cost associated with the system justify its continued existence given the current fund limitation and overall priorities with the organization; and
- If adequate user documentation and system maintenance documentation exist.

The major components of the review and evaluation include:

- o Data Collection;
- o Comparison of the expected and actual system performance level;
- o Conclusions reached from these comparisons; and
- o Recommendations to management.

8.3 THE REVIEW AND EVALUATION

A plan for conducting system reviews and evaluations should be incorporated into the organization's established guidelines for system operations. This will provide the resources for on-going monitoring of the system and serve to provide a data base to facilitate review activities.

A schedule of periodic reviews should be planned to determine if the stated system requirements are being realized. To determine the effectiveness of the system, the review should occur after the system has been fully operational for a significant period of time (6-12 months). The following factors should be considered when determining the length of the period:

- o Size of the System
- o Complexity of the System
- o Number of Users of the System.

If the review is performed to soon after implementation, meaningful results will not be achieved because of inadequate system break-in time.

8.4 METHODOLOGY

Several tools may be utilized to collect the necessary data for evaluating the implemented system. They include the following:

- The Initial Feasibility Study;
- Monitoring Logs utilized during system operations:
  - Hardware/Software Maintenance Logs
  - Operation/Production Log (e.g., Multi-Purpose Log)
- Budget Documents; and
- Software/Hardware Inventory.

The information gathered from the above documents should provide the basis for comparing the system expected performance to the actual performance. Also, benefits can be identified which are actually realized from the implemented system. If this information is not readily available for the review, it must be collected. This, however, serves to extend and complicate the review period.

The Feasibility Study

The baseline data, requirements, system design model and cost assessments are re-examined to answer the following questions:

- Have the previously determined system requirements been achieved?
- Is the WP equipment helping to achieve the expected results?

The system requirements form the basis for comparing review and evaluation results with the initial study expectations. The actual benefits of the system are determined by the system's ability to achieve or surpass these requirements. When re-examining the study, any

modifications that may have occurred as a result of system implementation should be noted.

Monitoring Logs

In the system operations section (Section 7) several documents are listed to aid in monitoring the operation of the implemented system. The documents include the following:

- An Operations/Production Log which is a journal that records the daily operations, ongoing production activities and statistics, and the system manager's activities.
- Hardware and Software Maintenance Logs record failures, maintenance and servicing of the equipment and software. They are useful as sources to determine system reliability and vendor responsiveness to maintenance problems.

Budget Documentation

The budget documents should provide the necessary data to compare the expected system costs to the actual system costs. The documentation should include data regarding the following areas:

- Equipment costs;
- Cost of supplies related to the system (e.g., disks, print wheels, ribbons, diskettes, furnishings);
- Cost of room and building alterations resulting from implementation;
- Personnel costs; and
- Procurement procedures (e.g., approval cycle, equipment cost justifications).

Hardware/Software Inventory

The inventory should provide information to verify the location and costs of hardware and software and any modification due to system implementation.

Points of Consideration

If the system has been implemented differently from the system design model, it must be noted that all system requirements may not necessarily be achieved. When assessing these differences, include the actual use and performance of the equipment and software, the administrative procedures associated with the organization, the behavior of the staff affected by the implementation, the previously collected baseline data and the audit procedures. The intent is to determine what (if any) corrective actions are necessary to enable the system to meet its requirements.

8.5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions reached from the comparison of the data gathered from the sources listed in the previous section (8.4) form the basis of the review and evaluation report presented to organizational management. The report should include:

- A summary of the requirements;
- An analysis of the need for changes in the system or its documentation; and
- An analysis of the costs involved in the system. The costs analysis should include a table showing contracted costs, equipment and personnel costs for the previous and current fiscal year and a projection for the next fiscal year.

The conclusions provide organizational management with a full assessment of system status regarding productivity improvements and potential future enhancements to effect even greater productivity.

The review and evaluation report should include recommendations to management for proceeding with ongoing operations, for fine tuning the system to achieve the desired results or for total redesign of the system. Recommendations may include technological, organizational and procedural changes pertaining to the effective utilization of the system.

APPENDIX A

TYPING PRODUCTIVITY ANALYSIS

APPENDIX A

TYPING PRODUCTIVITY ANALYSIS

Typing productivity analysis translate the data collected from the typing logs and chronological files into projected annual typing workload and costs. Procedures for analysis are shown in Figures A-2 through A-7. The equipment allocation in Figure A-8 is based on the following assumptions:

- The machine usage rate is 1400 hrs/year or 5.6 hours/day.
- A typing rate of 128 hours per line (approximately 2½ pages per hour).

The procedures are used to analyze the data to acquire the following measures:

- The projected annual typing workload.
- The quantity of equipment and personnel required to produce the annual workload.
- The percent of usage of each machine (equipment in place at time of study).

For example, the perusal of chronological files indicate that the organization produces 164 pages per day. To obtain the information listed above the following calculations are performed:

(a) 164 pages per day x 220 work days = 36,080 pages annually.

(b) 36,080 pages x 54 lines (averages lines per page) = 1,948,320 lines annually.

(c) 1,948,320 lines divided by 128 lines per hour = 15,221 annual typing hours.

(d) 15,221 annual typing hours divided by 1400 hours (machine use rate per year; 5.6 hours per day) = 10.8 machines required to produce the projected annual typing workload.

(e) 15,221 annual typing hours divided by 1,540 hours (personnel productive hours) = 9.8 personnel required to produce the projected annual typing workload.

BASELINE DATA MEASUREMENT

BASELINE DATA	PERSONNEL P-PROFESSIONAL S-SUPPORT	WORD PROCESSING STUDY	OFFICE AUTOMATION STUDY	DATA INSTRUMENTS
1. Productivity				
o Typing Volume	S	X	X	Typing Activity Log Chronological Files
o Typing Category	S	X		Multi-Purpose Activity Log
o Key Products	P/S		X	Multi-Purpose Activity Log
2. Equipment Use	P/S	X		Multi-Purpose Activity Log
3. Costs				
Equipment	P/S	X	X	Purchase Orders
Personnel	P/S	X	X	Grade/Salary Listing
5. Key Product Preparation	P/S		X	Multi-Purpose Activity Log Section 4
Concurrence Data on the above items	P/S	X	X	Interview Questionnaire

Figure A-1

TYPING PRODUCTIVITY ANALYSIS

1. Typing Productivity Costs:

A x B = C No. of pages produced normally.

A = Estimated no. of pages per/day.

B = Annual working days (220 days).

C = No. of pages annually.

D + E ÷ C = F Keyboard productivity cost (annual page cost).

D = Annual salary plus 26% benefits.

E = Equipment cost* (yearly cost).

F = Annual cost to produce a page.

* Equipment cost:

- o Includes maintenance and supply costs.
- o If rented, the yearly cost is used.
- o If purchased this year or a previous year, the amortized cost is used by:
  - taking the original purchase price and dividing it by the "property life" of the equipment (12½ years for typewriters, 8 years for word processors); and
  - add the cost of maintenance and supplies to the amortized purchase price for yearly cost.

No. of Pages per/day	Annual working days	No. of pages annually	Annual salary plus benefits	Yearly equipment costs (WP)	Annual Cost to produce a page
84 (A)	220 (B)	18,537 (C)	$19,530 (D)	$10,000 (E)	$1.59 (F)

A x B = C D + E ÷ C = F

Figure A-2

WORKSTATIONS REQUIRED TO MEET TYPING PRODUCTION REQUIREMENTS

1. Original typing WPE requirements:

$\frac{A}{B} = C \qquad \frac{C}{X} = D$

A = Original lines produced annually. **

B = Rate for number of typed lines per hour of original typing (shown in Figure A-6).

C = Annual typing hours.

D = The number of workstations necessary to perform original keyboarding.

X = Machine usage rate of 1400 hrs per year. (5.6 hrs per/day)

2. Revision (retyping) WPE requirements:

$\frac{E}{F} = G \qquad \frac{G}{X} = H$

3. Total machines required D + H = M:

E = Number of lines revised (retyped).*

F = The hourly typing revision rate specified in Figure A-6.

G = The number of hours necessary to make corrections and play out document.

H = The number of workstations necessary for having WPE applications revised.

X = Machine usage rate of 1400 hrs per year. (5.6 hrs per/day)

M = Total machines required.

* Revised rate x no. of original line = no. of revised lines typed.

** Average page = 54 lines (8½ x 11).

See Figure A-5 for Example.

Figure A-3

PERSONNEL REQUIRED TO MEET TYPING PRODUCTION REQUIREMENT

1. Original typing:

$\frac{A}{B} = C \qquad \frac{C}{K} = E$

A = Original lines produced.

B = Rate for number of typed lines per hour of original typing (shown in Figure A-6).

C = Annual typing hours (ATH).

K = Annual personnel productive hours (1540 hrs).

E = Personnel required.

2. Revised typing:

$\frac{F}{G} = H \qquad \frac{H}{K} = L$

F = Number of revised lines.

G = Rate for number of typed lines per hour of revised typing (Figure A-6).

H = Annual typing hours.

K = Annual personnel productive hours (1540 hrs).

L = Personnel required.

See Figure A-5 for Example.

Figure A-4

EXAMPLE EQUIPMENT AND PERSONNEL REQUIREMENTS

	Original Typing	Revised Typing
Labor Required	$\frac{A}{B} = C \quad \frac{1,001,000}{128} = 7,820$	$\frac{F}{G} = H \quad \frac{1,321,320}{398} = 3,319$
	$\frac{C}{K} = E \quad \frac{7,820}{1,540} = 5.07$	$\frac{H}{K} = L \quad \frac{3,319}{1,540} = 2.15$
	Original	**Revised**
Equipment Required	$\frac{A}{B} = C \quad \frac{1,001,000}{128} = 7,820$	$\frac{E}{F} = G \quad \frac{1,321,320}{398} = 3,319$
	$\frac{C}{X} = D \quad \frac{7,820}{1,400} = 5.58$	$\frac{G}{X} = H \quad \frac{3,319}{1,400} = 2.37$
Total Machines Required	D + H = M (Round to nearest whole number)	5.58 + 2.37 = 7.95

Figure A-5

TYPING RATES (LINES PER HOUR, LPH)

Change Rate	Electric Typewriters		Word Processing Equipment		
	Conventional	Self-Correct	CATE I	CATE II	CATE III
4% or less	228	241	466	752	512
8%	229	241	457	726	506
12%	230	242	435	660	487
16%	231	242	422	621	481
20%	233	243	400	556	465
24%	234	243	387	517	456
28%	234	243	374	477	447
32%	236	244	352	412	433
36%	230	241	332	394	408
40%	227	239	321	384	392
44%	224	238	309	373	377
48%	219	235	285	352	347
52%	216	233	274	341	331
56%	213	231	258	327	311
60%	205	222	223	273	264
64%	200	217	202	241	236
68%	195	211	181	209	208
Original Typing	188	204	153	166	170

Figure A-6

EQUIPMENT USAGE RATE

Calculate for each type of machine:

A x B x C = D	Machine usage during data collection
E ÷ D = F	% of machine usage

A = No. of machines.

B = Total hours per day.

C = No. of days in data collection period.

D = Total hours of machine usage for data collection period.

E = Actual hours of machine usage (activity log).

F = % of machine usage.

Figure A-7

EQUIPMENT REQUIREMENTS (Based on Production)

Annual Typing Production Lines Projected	Standalone System CRT's	Standalone System Printers**	Estimated Costs*	Shared Distributive System*** CRT's	Shared Distributive System*** Printers	Shared Distributive System*** CPU(s)	Estimated Costs*	Annual Typing Production Projected Pages
179,200 - 358,399	1	1	$ 6,500					3,318 - 6,637
358,400 - 537,599	2	1	$ 11,272					6,638 - 9,955
537,600 - 716,799	3	1	$ 16,044					9,956 - 13,274
716,800 - 895,999	4	2	$ 22,544	4	2			13,275 - 16,592
896,000 - 1,075,199	5	2	$ 27,317	5	2			16,593 - 19,911
1,075,200 - 1,254,399	6	3	$ 33,816	6	2			19,912 - 23,229
1,254,400 - 1,433,599	7	3	$ 38,588	7	3			23,230 - 26,548
1,433,600 - 1,612,799	8	4	$ 45,088	8	3			26,549 - 29,867
1,612,800 - 1,791,999	9	4	$ 49,860	9	3			29,868 - 33,185
1,792,000 - 1,971,199	10	5	$ 56,360	10	4			33,186 - 36,504
1,971,200 - 2,150,399	11	5	$ 61,132	11	4			36,505 - 39,822
2,150,400 - 2,329,599	12	6	$ 67,632	12	4			39,823 - 43,141
2,329,600 - 2,508,799	13	6	$ 72,404	13	5			43,142 - 46,459
2,508,800 - 2,687,999	14	7	$ 78,904	14	5			46,460 - 49,778
2,688,000 - 2,867,199	15	7	$ 83,676	15	5			49,779 - 53,096
2,867,200 - 3,046,399	16	8	$ 90,176	16	6			53,097 - 56,415
3,046,400 - 3,225,599	17	8	$ 94,948	17	6			56,416 - 59,733
3,225,600 - 3,404,799	18	9	$101,448	18	6			59,734 - 63,052
3,404,800 - 3,583,999	19	9	$106,220	19	7			63,053 - 66,370
3,584,000 - 3,763,199	20	10	$112,720	20	7			66,371 - 69,689
3,763,200 - 3,942,399	21	10	$117,492	21	7			69,690 - 73,007
3,942,400 - 4,121,599	22	11	$123,992	22	8			73,008 - 76,326
4,121,600 - 4,300,799	23	11	$128,764	23	8			76,327 - 79,644
4,300,800 - 4,479,999	24	12	$135,264	24	8			79,645 - 82,963
4,480,000 - 4,659,199	25	12	$140,036	25	9			82,964 - 86,281

Figure A-8

* Hardware Only (Lexitron 1303, IV Workstation and VT 1004 Printer)
** Recommended Allocation
*** Depends on Vendor Configuration

APPENDIX B

KEY PRODUCT ANALYSIS

APPENDIX B

KEY PRODUCT ANALYSIS

Key Product Analysis is designed to analyze data regarding the level-of-effort (number of hours) and costs required to prepare key products. Procedures for key product analysis are shown in Figure B-1 and B-4. Sample reports of level-of-effort and cost for tasks performed by staff members are shown in Figures B-2, B-3, and B-5. The data is analyzed to produce the following measures:

- Total key product preparation effort (professional and support staff.)
- Total professional staff effort.
- Professional effort expended performing professional work.
- Professional effort expended performing support type work.
- Total support staff effort.

For example, a professional estimates that 25 hours of his time is spent on preparing a specific report (the "Key Product"). The report is prepared 10 times a year. The professional will spend 250 hours a year working on that one specific report (25 hours x 10 = 250 hrs). If the professional salary and benefits totals $56,000 annually the professional cost to prepare the report would be $6,812 a year.

(a) $56,700 ÷ 2080 working hours = $27.25 hourly rate.
(b) 250 hrs plus $27.25 = $6,812

This cost (for "Key Product" preparation) should be used in evaluating the potential impacts of proposed new system.

KEY PRODUCT ANALYSIS

I. Level of Effort:

A x B = C

a x B = D

C + D = E

A = Estimated hours expended on key product by professional staff.

a = Estimated hours expended on key product by support staff.

B = Annual volume of key product.

C = Annual level of effort by professional staff.

D = Annual level of effort by support staff.

E = Total level of effort.

II. Baseline Key Product Preparation Cost:

F ÷ G = H

C + H = K

S ÷ G = HS

D + H = L

L + K = M

F = Professional staff annual salary plus 26% benefits.

S = Support staff annual salary plus 26% benefits.

G = Annual paid working hours (2080 hrs).

H = Hourly rate for professional staff.

HS = Hourly rate for support staff.

K = Key product preparation cost for professional staff.

L = Key product preparation cost for support staff.

M = Total key product preparation cost.

Figure B-1

EXAMPLE: LEVEL OF EFFORT EXPENDED ON KEY PRODUCT

Key Product	Professional Hours Expended	Key Product Annual Volume	Professional Annual Level	Support-Staff Hours Expended	Support-Staff Annual Level of Effort	Total Level of Effort
Impact Report	25 HRS (A)	10 (B)	250 HRS (C)	15 HRS (a)	150 HRS (D)	400 HRS (E)
	A x B = C			a x B = D		D + C = E

Figure B-2

EXAMPLE: KEY PRODUCT PREPARATION COST

Annual Salary Plus Benefits Professional	Annual Paid Working Hours	Professional Level of Effort Expended (Annual)	Hourly Rate	Key Product Preparation Cost (Prof)	Support-Staff Annual Level of Effort	Support-Staff Annual Salary w/Benefits	Hourly Rate Support	Key Product Prep. Cost (support)	Total Key Product Prep. Costs
56,700	2,080	250 HRS	$27.25	$6812	150 HRS	$19,530	$9.38	$1407	$8219
(F)	(G)	(C)	(H)	(K)	(D)	(S)			
	F ÷ G = H	C + H = K				S ÷ G = HS	D + H = L		L + K = M

Figure B-3

PROFESSIONAL AND SUPPORT LEVEL TASK COSTS

A x B = C

D ÷ E = F

C x F = G

A = Estimated hours expended on task(s).

B = Annual paid working days (220 days).*

C = Annual level of effort expended on task.

D = Annual salary plus 26% benefits.

E = Annual paid working hours (2080 hrs).

F = Hourly rates.

G = Cost of effort expended on task.

* To calculate annual level of effort:

- o If data is collected for 10 days convert the 220 days to weeks (220 ÷ 10 = 22).
- o If data is collected for 5 days (220 ÷ 5 = 44).

Calculation example:

A x B = C	40 hrs x 22 wk = 880 hrs annually
D ÷ E = F	$56,700 ÷ 2080 hrs = $27.25 hourly rate
C x F = G	880 hrs x $27.25 hr rate = $23,980 annual cost of effort on task.

Figure B-4

ANNUAL PERSONNEL COSTS FOR PROFESSIONAL AND SUPPORT LEVEL TASKS *

Tasks	Professional Annual Level of Effort	Professional Annual Cost	Support Staff Annual Level of Effort	Support Staff Annual Cost	Total Personnel Cost
Planning	880 HRS	$23,980	-	-	$23,980
Photocopying	110 HRS	$ 2,997	550 HRS	$ 5,159	$ 8,156
Collecting Data	440 HRS	$11,990	-	-	$11,990
Typing	330 HRS	$ 8,992	990 HRS	$ 9,286	$18,278
Telephone	176 HRS	$ 4,796	1540 HRS	$14,445	$19,241

* Sample Report To Present To Management

Figure B-5

APPENDIX C

GUIDELINES FOR PREPARATION OF PROCUREMENT REQUESTS (PR'S)

APPENDIX C

GUIDELINES FOR PREPARING PROCUREMENT REQUEST 1900-8

The user organization must complete EPA form 1900-8 to lease or purchase under the two agency wide contracts for word processing equipment. The complete form must be forwarded to the EPA Word Processing Coordinator (EPA-WPC) for review and technical approval. The EPA-WPC will forward the form to the MIDSD Ordering Officer for approval and award. The optimum period of processing requests will be five working days in MIDSD and 2 weeks in Contracts Management Division. For a description of the procurement cycle see Figure C-1.

C.1 LEASE OR PURCHASE OF WP EQUIPMENT

A feasibility study must be prepared and submitted to MIDSD with the word processing equipment request. An outline for the feasibility study and the recommended steps to follow in its development are located in Section 3 of these guidelines. After this prerequisite has been met, the following procedure should be followed in completing form 1900-8. The user shall provide the information shown printed in italics on this form. A sample form of a Procurement Request is shown in Figure C-2.

C.1.1 PROVIDE IDENTIFYING INFORMATION

Items 1 and 2 are self-explanatory. Item 3a is the designated user organization's individual responsible for the equipment. Item 4a, "Delivery To" must include complete address: ordering organization's name, street address, room number, city, state and zip code. Items 5a, 5b, and 6 are left blank.

PROCUREMENT CYCLE FOR OFFICE AUTOMATION EQUIPMENT AND SERVICES

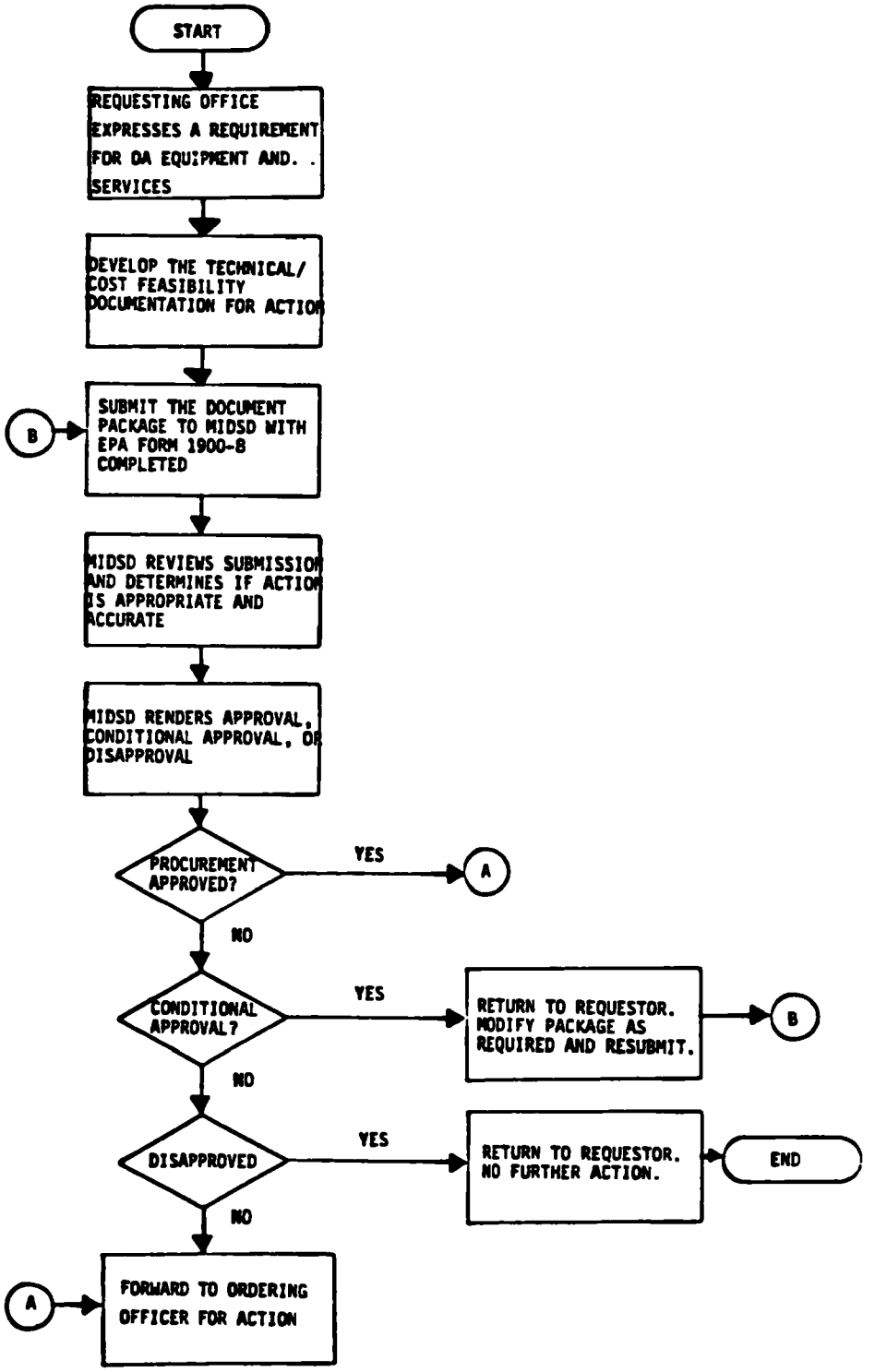

Figure C-1

This form is designed for an elite typewriter (12-pitch). SAMPLE USE ONLY

PROCUREMENT REQUEST/REQUISITION

(Please read instructions on reverse before completing the form.)

1. DATE: MM-DD-
2. DATE REQUIRED: MM-DD-YR
PAGE 1 OF NH

3a. ORIGINATOR (Name): John A. Doe
b. PROG ELEM:
4. DELIVER TO: Address to which delivery is to be made.
5a. PROJECT MANAGER (Name): Susan B. Smith
c. PHONE NO.: 55-1212
d. MAIL CODE: XX-333
e. DIVISION: AAAA
b. PHONE NO.: 555-3131
6. PROCUREMENT OFF: 99

PROCUREMENT OFFICE USE ONLY
☐ ORAL ORDER-ORDER NO.

PURCHASE AUTHORITY/CONTRACT NUMBER: 68-01-6615
DISCOUNT TERMS:

VENDOR NAME AND ADDRESS:
Raytheon Data Systems Company
1700 N. Moore St., Suite 1100
Arlington, VA 22209

PERSON TAKING ORDER/QUOTING:
FOB POINT:
DATE:
TELEPHONE NO.:
DELIVERY:
CONTRACTING/ODERING OFFICER:
TELEPHONE NO.:

8. FINANCIAL DATA
(a) APPROPRIATION

NOTE: ITEM 8(c) DOCUMENT TYPE – Contract = "C"
Purchase Order = "P" IGA = "A" Other (misc.) = "X"

FMO USE (b)	DT (c)	DOCUMENT CONTROL NO. (d)	ACCOUNT NO. (e)	OBJECT CLASS (f)	AMOUNT (g) DOLLARS	CTS
2 0 0	C				9999	99
2 0 0						
2 0 0						

9. SERVICING FINANCE OFFICE:
10. AMOUNT OF MONEY SHOWN IS COMMITTED AS:
☐ ORIGINAL ☐ DECREASE
☐ INCREASE
11. PLANNING I.D. NO.:

STOCK OR ITEM NO. (12)	DESCRIPTION (13)	QUANTITY (14)	UNIT OF ISSUE (15)	UNIT COST (16)	AMOUNT (17)
0003	Level III Workstation, VT-1303-III	3	1 EA	4772	14,316
0004	Level IV Workstation, VT-1303-IV	2	1 EA	4772	9,544
0005	Printer 45 CPS	2	1 EA	1728	3,456
	Justification is attached.				
	Certification: _____ must be division director or higher.				

18. SUGGESTED CONTRACTOR/VENDOR:
20. SIGNATURE OF ORIGINATOR: John A. Doe
DATE: MM-DD-YR
21. SIGNATURE OF PROP. MGMT. OFFICER/DESIGNEE:
DATE:

19. RECOMMENDED PROCUREMENT METHOD
☐ COMPETITIVE ☐ NONCOMPETITIVE (Justification attached)
22. ACCOUNTABLE PROPERTY
☐ INITIALS
23. NOT AVAILABLE FROM EXCESS
☐ INITIALS

24. APPROVALS

a. BRANCH/OFFICE: Jack Smith	DATE: MM-DD-YR	d. FINANCE	DATE
b. DIVISION/OFFICE: Joan Jones	DATE: MM-DD-YR	e. OTHER: EPA Word Processing Coordinator	DATE: MM-DD-YR
c. FUNDS LISTED ABOVE ARE AVAILABLE AND RESERVED: Sally Sullivan	DATE: MM-DD-YR	f. OTHER: EPA Ordering Officer	DATE

EPA Form 1900-8 (Rev. 12-80) 7-80 EDITION MAY BE USED, ALL OTHERS ARE OBSOLETE

PROCUREMENT

Figure C-2 (Page 1 of 2)

INSTRUCTIONS FOR COMPLETING EPA FORM 1900-8

GENERAL: Form is a five part carbon interleaved set and is designed to be completed with an elite typewriter *(12-pitch)*. The originating office should complete all unshaded areas that apply. After completing the form, retain the copy marked for "Originator" and send the balance through required channels. The copy marked "Finance" should go to your Servicing Finance Office.

ITEMS:

1 thru 5b Self-explanatory.

6 Enter the name of the procurement office to which this procurement request is being sent. *(WASH. - Headquarters Contracts Operations; RTP - Contracts Management Division - Research Triangle Park; CIN - Contracts Management Division - Cincinnati.)* If this is for a small purchase, show name of small purchase office.

7 For small purchases *(under $10,000)*, the Procurement Office will complete these blocks and return one copy of the request to the originator.

8 Self-explanatory. Failure to include the appropriation number, document type, document control number, account number, object class and dollar amount will result in the return of the request to the originator for completion. Special care should be taken to insure that all data placed in these blocks are accurate and appears legibly on all copies as this data will serve to record the commitment of funds as well as to eventually obligate the funds on the contract document. NOTE: Item 8(c) column 14 should be used to denote document type *(DT)* code where C=EPA prime contract, P=EPA purchase or delivery order, A=Intergovernmental Agreement *(IGA)*, and X=all other miscellaneous transactions.

9 Enter the appropriate Servicing Finance Office number designated by Financial Management Division for the accounting office which will record the commitment and obligation.

10 Self-explanatory.

11 Every procurement that was included in your Contract Plan has been assigned an identification number. That identification number shall be inserted in this block. If this procurement was not included in your plan, enclose a written justification for not previously planning this procurement. *(This block is not applicable to small purchases or interagency agreements.)*

ITEMS:

12 Self-explanatory.

13 The degree of detail required will vary with the complexity and estimated dollar value of the proposed procurement. Each request shall contain sufficient information on its face to process the request. If the proposed procurement is for nonpersonal work or services, provide a title which specifically describes the work or services to be procured and limit the title to sixty *(60)* positions including the spaces between each word of the title for computer input and attach a detailed statement of work. In other instances describe the articles requested and provide specification, quantity increments, delivery requirements, and special packaging or transportation requirements. *(Use EPA Form 1900-8A, Continuation Sheet, if additional space is required.)*

14 thru 17 Self-explanatory.

18 If more than one *(1)* source is suggested, attach a list of the contractors/vendors from whom the articles are available and provide the contractor/vendor's name, address, and point of contact for each source.

19 If noncompetitive procurement in excess of $10,000 is recommended, prepare and attach a justification setting forth the reasons why competition cannot be obtained in accordance with Chapter 3, Contracts Management Manual. Justifications for noncompetitive procurements not exceeding $10,000 may appear on the face of this form.

20 Self-explanatory.

21 thru 23 If required, to be completed by cognizant Property Officer.

24 Self-explanatory.

COMMITMENT CLERK: Verify the accuracy of all data in Item 8 and retain one copy. Remove the copy marked "Finance-Commitment" and forward it to the cognizant Servicing Finance Office. *(Only contracts and purchases over cutoff amount established by your finance office.)*

NOTE: For more detailed information and instructions regarding the overall content of procurement requests, see Chapter 1, Contracts Management Manual.

★ U. S GOVERNMENT PRINTING OFFICE. 1979-622-611

USE ONLY IF INFORMATION WILL NOT FIT ON P/R FORM.

PROCUREMENT REQUEST/REQUISITION CONTINUATION

STOCK OR ITEM NO. (13)	DESCRIPTION (14)	QUANTITY (15)	UNIT OF ISSUE (16)	UNIT COST (17)	AMOUNT (18)

Figure C-2 (Page 2 of 2)

C.1.2 PROVIDE EQUIPMENT DESCRIPTION AND COST DATA

Items 7, 8, 9, 10, 11, and 12 provide a detailed description of all items and services to be provided by the vendor. All items, whether standard or optional, must be identified, described, and costed. In item 8, at the top, indicate "New Installation". Include model number when indicated. Installation, delivery, and supply items are to be included in this section. For leases, indicate the start and stop date for the lease agreement. The maximum lease period is one year. Assistance can be obtained from the EPA Word Processing Coordinator or contractor personnel. Indicate individual and total costs. Do not provide any estimate for on-call (purchase) maintenance or emergency maintenance. This is handled separately as required.

C.1.3 PROVIDE CONTRACTOR DESIGNATION

In item 13, provide the WP equipment contractor's name, address and contract number. Refer to contract D-406 and/or D-407 for this information. See sample Procurement Request form.

C.1.4 OBTAIN ORGANIZATIONAL APPROVALS AND FUNDING

Item 15, is self-explanatory. Items 16 and 17 must be signed by the ordering organization's Property Officer if the WP equipment is to be purchased. Item 18(a) is signed by the branch Chief; 18(b) by the Director of the Division; and 18(c) by the Commitment Clerk. The Commitment Clerk must also provide the Financial Data requested in item 22 and the Appropriation Number in item 23.

C.1.5 FORWARD TO MIDSD

After completing item 23 the requisition form is to be forwarded to the MIDSD. MIDSD will forward it to the Ordering Officer for approval and award. The user organization will receive a copy of the official task order from the Ordering Officer.

C.2 LEASE RENEWAL OF CURRENTLY LEASED WP EQUIPMENT

The user organization must inform the EPA Word Processing Coordinator of its intention to renew the lease on the WP equipment. This must be accomplished at least 30 days before expiration of the current lease. This renewal is accomplished by completing EPA Form 1900-8.

C.2.1 PROVIDE IDENTIFYING INFORMATION

Items 1, 2, 3, 4, 5, and 6; repeat information contained on originating lease request.

C.2.2 PROVIDE WP EQUIPMENT DESCRIPTION AND COST DATA

Items 7, 8, 9, 10, 11, and 12; repeat equipment description and cost data contained on originating lease request. In addition, indicate in the "Description" column, item 8, the following: originating Task Order No., Contract No., period of lease renewal (start and stop dates — maximum period is one year), model and serial numbers of WP equipment, room location of equipment, and statement indicating "Renewal". Both the Contract No. and the Task Order No. appear in the upper right hand corner of the "Order for Supplies or Services" (SF Form 147), a copy of which is sent to the initiator of the originating lease request for his file and reference, once the order has been placed.

C.2.3 OBTAIN ORGANIZATIONAL APPROVALS AND FUNDING

Items 15, 16, 17, 18(a), 18(b), and 18(c); obtain signatures as per originating lease request. The Commitment Clerk must provide the Financial Data requested in item 22 and the Appropriation Number in item 23.

C.2.4 FORWARD TO MIDSD

Forward form to EPA Word Processing Coordinator, MIDSD, PM-218, 401 M Street, S.W., Washington, D.C. 20460 for final processing. The EPA-WPC will forward it to the Ordering Officer for approval and award. The requisitioning organization will receive a copy of the official task order from the Ordering Officer.

APPENDIX D

EQUIPMENT DESCRIPTIONS AND COSTS

- Standard Configuration Lexitron Word Processing Equipment
- Hardware and Maintenance Unit Prices
- Optional Features and Configuration Items

STANDARD CONFIGURATION LEXITRON WORD PROCESSING EQUIPMENT

o Standalone Workstations

Includes:

Double Density Disk
ASYNCH ASCII Communications
Word Processing Software
Math Pack
Alternate Character Set
Conversion of 1000 Pages
Manuals
Training for 2 operators for one half day each
Starter supplies of 10 diskettes, 3 print wheels and 10 print ribbons.

Description	Purchase	LTOP (24 Month)	Maintenance
VT1303-1V Dual Disk	$4772.00	231.38/month	86.00/month
VT1202-III Single Disk	4172.00	202.29/month	73.00/month

NOTE: There is a 90 day maintenance warranty for each station. Thereafter, a monthly maintenance charge for both purchase and LTOP.

o Printer For Standalone Workstations

Description	Purchase	LTOP (24 Month)	Maintenance
VT-1004, 45CPS, QUME	$1728.00	83.78/month	27.00/month

o Shared-Printer Configuration

Description	Purchase	LTOP (24 Month)	Maintenance
Two (2) VT-1303-IV Workstations Sharing A VT-1004, 45CPS Printer	$11,272.00	507.00/month	199.00/month

Training Allocation: 1 Primary operator and back-up operator for each workstation.

Text Conversion: One thousand (1,000) pages of text converted at no charge; Thirty (30) day minimum time to convert.

Figure D-1

HARDWARE AND MAINTENANCE UNIT PRICES

(Applicable for the period of system/item life months 1 through 88*)

Line Item	Model No.	Description	Outright Purchase Price	PPM Maintenance**	LTOP
1	VT 1202, III	Work Station 1 Disk Level 3	$4,172	$73	$202.29
2	VT 1303, IV	Work Station, 2 Disks Level 4	$4,772	$86	$231.38
3	VT 1004	Printer 45 CPS 45 CPS	$1,728	$27	$83.78
4	2 VT 1303, IV and 1 VT 1004 Printer	Shared Printer Workstation	$11,272	$99	$546.54

* For installations occuring in months 1 through 60
** Maintenance Costs are for both purchase and lease to purchase.

Figure D-2

OPTIONAL FEATURES AND SPECIAL CONFIGURATION

ITEMS AND FEATURES

Description	Purchase	LTOP	(1-88 Month) Monthly Maintenance
Widetrack Printer	$ 4,748	$230	$ 51
Twintrack Printer	$ 5,737	$278	$ 75
Dual Tray Sheetfeeder	$ 1,696	$ 82	$ 22
Print Multiplexer	$ 2,095	$102	$ 14
Mag Card Adaptor	$ 2,512	$122	$ 32
Optical Character Reader (Hendrix Typereader II)	$ 9,771	$474	$126
Acoustic Hood (For Standard VT-1004 Printer)	$ 360	N/A	N/A
Basic Software Program	$ 100	N/A	N/A
RMS Software Program	$ 200	N/A	N/A
Editor Attachment Kit 15 ft.	$ 102	$ 5	N/A
Editor Attachment Kit 25 ft.	$ 142	$ 7	N/A
Editor Attachment Kit 50 ft.	$ 186	$ 9	N/A

Installation charges determined upon installation site selection.

Figure D-3

APPENDIX E

WORD PROCESSING CONVERSION ACTION DECISION MATRIX

WP CONVERSION ACTION DECISION MATRIX

	CONVERT TO AGENCY CONTRACT		CONTINUE LEASE OR OWNERSHIP	LEASE TO PURCHASE CONVERSION	EXCHANGE SALE PROGRAM
	IMMEDIATE	PHASED			
LEXITRON					
o GSA Lease	R	N	—	—	—
o Owned	R (1)	N	—	—	—
INTELLIGENT TYPEWRITERS					
o GSA Lease	S	S	A	N	R
o Owned	S	S	A	N	R
NON-STANDARD STAND ALONE WP					
o GSA Lease	R	A	A	C	R
o Owned	R	A	A	—	R
NON-STANDARD SHARED LOGIC SYSTEM					
o GSA Lease	N	R	R	C	R
o Owned	N	R	R	—	R

Key: A = Acceptable; R = Recommend; C = Cost Analysis Required; S = Study Requirements; N = Not Acceptable

(1) Convert to Agency contract to obtain fixed rate maintenance.

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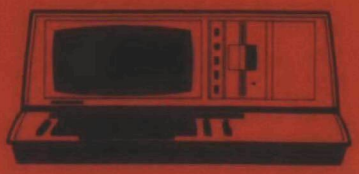

T 1202 Word Processor

A VT 1202 increases operator productivity almost immediately in offices where (1) typists and secretaries have a continuously heavy load of diverse typing assignments and (2) draft revision needs are similarly heavy and diverse. A VT 1202 also performs cost-effectively when operators must retrieve information from a previously prepared and stored data base, then insert the information into simple or complex forms such as insurance policies, purchase orders, or lease agreements or into standard paragraphs.

The VT 1202 can be used productively to prepare general correspondence (letters, memos, reports) or technical manuals containing statistical and mathematical data or large documents that are customized by mixing "standard" text (boilerplate) and variable text to yield a customized document.

Physically, the VT 1202 consists of two trim, attractively styled desk-top units: an operator's console and a printer unit. The operator's console includes the electronic keyboard, mini-floppy diskette drive, and display. The printer unit includes the printer and power supply.

Using the electronic keyboard, an operator performs all normal typing functions at rough-draft speeds in the usual way. Typed text appears automatically on the display, which shows a one-third page segment of the in-process full page. Using control keys and regular keys, the operator corrects and revises displayed text; produces it on the printer; and records it on diskette for possible recall, revision, assembly, and reprinting later.

STANDARD FEATURES

Features Common to VT 1202 (and 1201 and 1303)

- **One-Third Page Display.** Shows an exact, one-to-one image of one-third of the in-process full page.
- **Full-Page Preview.** Enables an operator to preview a reduced version of the full page and then change the format, as required, before printing the page.
- **Automatic Indexing.** Provides a document management system that automatically retains document integrity for the operator.
- **Text Editing.** Enables an operator to insert or delete characters, words, and lines; to break lines of text from one line to another (when inserting additional text); and to bring text forward from one line, page, etc.
- **Decimal Tab.** Enables an operator to set decimal tabs (the same way as text tabs) to automatically align decimal points.
- **Archive.** Allows an operator to revise and print text from an archived document without altering the original document.
- **Diskette Drive.** Uses 5¼-inch mini-floppy diskettes that have a storage capacity of more than 160,000 characters. **Display Advance.** Enables an operator to successively display each one-third page segment of already-keyed text.
- **Typethru.** Enables an operator to use a VT 1202 exactly as a typewriter by keying text and having it simultaneously shown on the display and printed on paper.
- **Displayable Pitch Selection.** Enables an operator to display typed text, with appropriate margins, in either 10-pitch or 12-pitch. Up to 85 characters per line can be displayed in 10-pitch; 102 characters, in 12-pitch.
- **Continuous Typing.** Enables an operator to continuously key text at draft-typing speeds without carriage-returning at the end of each line.
- **Stop Code.** Enables an operator to specify positions in text in which to stop the printer during printout.
- **Custom Margin.** Enables an operator to offset the printout of a page. Useful for addressing envelopes.
- **Automatic Centering.** Enables an operator to center text automatically, one line at a time, between left and right margins.

Features Common to VT 1202 (and VT 1303)

- **Automatic Pagination.** Moves text forward or backward from one page to another (without operator intervention) to accommodate revisions to text. Pages remain in the same sequence and format as originally typed.
- **Full-Page Select.** Enables an operator to select lines of text (up to a full page) and move that text to another location on the same page or to a different page of any document or diskette; also allows the operator to erase, delete, or print the selected text.
- **Block Select.** Allows an operator to select a column of text and move that text to another column on the same page or to another page of any document or diskette; also enables the operator to erase, delete, or print the selected text.
- **Form Tab.** Enables an operator to merely touch a key and move quickly to the exact position of the next blank to be filled in on a form.
- **Call Page.** Enables an operator to move directly from the current page to any page of any document.

— continued—

- **Superscript, Subscript, Overstrike.** Enables an operator to (1) type superscripts and subscripts automatically and (2) type one character over another to create special symbols (for example, Ø).
- **Reformat.** Enables an operator to automatically change both the left and right margins and line spacing on a page or throughout a document. The operator can print the reformatted document, store it on diskette, or both.
- **Nonprint.** Enables an operator to specify fields of displayed text that are to be skipped over during printing. This allows two-pass printing of a page that has a mix of type styles, languages, or colors—and the print wheel or ribbon need to be changed only once.
- **Horizontal Scroll.** Enables an operator to produce wide-page documents (up to 126 characters per line in either 10- or 12-pitch), such as financial reports, charts, etc.
- **Continuous Print.** Enables an operator to print an entire document unattended.
- **Text Assembly.** Enables an operator to prepare standard paragraphs in any order and then select certain paragraphs and assemble and print them (and insert variables) as one document.
- **Search and Replace.** Enables an operator to automatically search through a document for specific text or multiple text and (1) stop at each occurrence and decide whether to change or replace the text, (2) count each occurrence, or (3) replace each occurrence with specified text.
- **Form Letter.** Enables an operator to print single-page form letters from a prepared address list and automatically insert the date, address, salutation, and variable text within the body of the letter. Addresses can be selected automatically from the list, based on predefined qualifiers or ZIP codes
- **Monospace Justify.** Enables an operator to print text automatically with a right-justified (even) margin—by page or by document.
- **Document Copy.** Enables an operator to duplicate a complete document, or part of a document (up to a full page), at another location on the same diskette.
- **Document Append.** Enables an operator to combine various documents, or parts of a document (up to a full page at a time), with another to form a single document on the same diskette. All documents appended to another document remain on diskette as if they were archived.

OPTIONAL FEATURES

The following features are optional on a VT 1202.

- **Alternate Character Set.** Permits an operator to type and display 96 extra characters, in addition to the basic set, when performing scientific and multilingual typing.
- **Interact Communications.** Working through a data set and over telephone lines, an Interact-equipped VT 1202 can send or receive documents to or from another VT or Videotype system and communicate with a wide range of computers.
- **Tape Adapter.** Allows a tape drive to be externally attached to a VT 1202, thereby providing a dual-media system. Documents may be converted from tape to diskette, or vice versa.

SPECIFICATIONS

DISPLAY	
Display region	5 x 10 inches
Characters per line	126
Lines per page	66
Character generation	High-resolution dot matrix
KEYBOARD	
Contour	Dished and sloped, resembles IBM Selectric keyboard
Number of keys	79
Repeat keys	Space Bar, Backspace, Return, Period, Hyphen/Underline, Delete, Insert, Erase, Merge, Line Insert, Line Delete, Roll Up/Roll Down
STORAGE MEDIA	
Type	5¼-inch mini-floppy diskette
Recording method	Dual-density MFM
Recording format	
Sides per diskette	1
Tracks per side	35
Sectors per track	18 (soft-sectored)
Characters per sector	256
Minimum page size	1 sector
Text compression	Multiple blank and blank line
Storage capacity	
Character capacity	161,280 characters
Nominal page size	2,000 characters (compressed)
Nominal page capacity	80 pages
Number of diskette drives	1
PRINTER	
Type	Daisy-wheel printer
Maximum speed	55 characters per second (660 words per minute)
Type styles	Various 10- and 12-pitch type styles available
Line spacing	6 lines per inch
Ribbon	Multistrike, single strike, or fabric
PHYSICAL CHARACTERISTICS	
Operator's console	
Height	13 inches (33 centimeters)
Width	26 inches (66 centimeters)
Depth	26 4 inches (67 centimeters)
Weight	55 pounds (25 kilograms)
Printer unit	
Height	9 4 inches (23 8 centimeters)
Width	22 3 inches (56 7 centimeters)
Depth	22 1 inches (56 1 centimeters)
Weight	52 pounds (23 6 kilograms)
ENVIRONMENTAL REQUIREMENTS	
Operating temperature	50°F to 95°F (10°C to 35°C)
Storage temperature	40°F to 122°F (4°C to 50°C)
Relative humidity	20% to 80%, noncondensating
INPUT POWER	
Voltage	95 to 130 Volts AC, or 190 to 260 Volts AC
Current	3.2 Amps maximum at 115 Volts AC for each operator's console, 2 5 Amps maximum at 115 Volts AC for each printer unit
Frequency	48 to 62 Hz
Power dissipation	1,000 BTU per hour

All specifications subject to change without notice.

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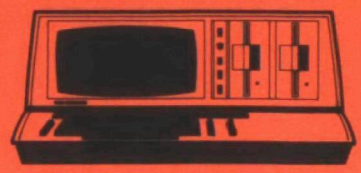

T 1303 Word Processor

A VT 1303 gives users broader overall capabilities than any VT 1100 or 1200 system. Its standard features alone make the VT 1303 one of the fastest, most efficient, most productive document-preparation devices yet developed . . . and its optional features further extend its versatility and economy.

A VT 1303 is ideally suited for any typing task—from general business letters, memos, and reports (including those with technical, mathematical, and statistical data) to large documents initially prepared by retrieving stored boilerplate paragraphs and integrating selected paragraphs with variable text to create a single document (contracts, loan and lease agreements, technical proposals, briefs, depositions, etc.). And because a VT 1303 has dual diskette drives, two operations can be performed concurrently, such as printing one document while editing another.

Physically, the VT 1303 consists of two trim, attractively styled desk-top units: an operator's console and a printer unit. The operator's console includes the electronic keyboard, two mini-floppy diskette drives, and display. The printer unit includes the printer and power supply.

Using the electronic keyboard, an operator performs all rmal typing functions at rough-draft speeds in the usual y. Typed text appears automatically on the display, which shows a one-third page segment of the in-process full page. Using control keys and regular keys, the operator corrects and revises displayed text; produces it on the printer; and records it on diskette for possible recall, revision, assembly, and reprinting later.

STANDARD FEATURES

Features Common to VT 1303 (and VT 1201 and 1202)

- **One-Third Page Display.** Shows an exact, one-to-one image of one-third of the in-process full page.
- **Full-Page Preview.** Enables an operator to preview a reduced version of the full page and then change the format, as required, before printing the page.
- **Automatic Indexing.** Provides a document management system that automatically retains document integrity for the operator.
- **Text Editing.** Enables an operator to insert or delete characters, words, and lines; to break lines of text from one line to another (when inserting additional text); and to bring text forward from one line, page, etc.
- **Decimal Tab.** Enables an operator to set decimal tabs (the same way as text tabs) to automatically align decimal points.
- **Archive.** Allows an operator to revise and print text from an archived document without altering the original document.
- **Diskette Drive.** Uses 5¼-inch mini-floppy diskettes that have a storage capacity of more than 160,000 characters.
- **Display Advance.** Enables an operator to successively display each one-third page segment of already-keyed text.
- **Typethru.** Enables an operator to use a VT 1303 exactly as a typewriter by keying text and having it simultaneously shown on the display and printed on paper.
- **Displayable Pitch Selection.** Enables an operator to display typed text, with appropriate margins, in either 10-pitch or 12-pitch. Up to 85 characters per line can be displayed in 10-pitch; 102 characters, in 12-pitch.
- **Continuous Typing.** Enables an operator to continuously key text at draft-typing speeds without carriage-returning at the end of each line.
- **Stop Code.** Enables an operator to specify positions in text in which to stop the printer during printout.
- **Custom Margin.** Enables an operator to offset the printout of a page. Useful for addressing envelopes.
- **Automatic Centering.** Enables an operator to center text automatically, one line at a time, between the left and right margins.

Features Common to VT 1303 (and VT 1202)

- **Automatic Pagination.** Moves text forward or backward from one page to another (without operator intervention) to accommodate revisions to text. Pages remain in the same sequence and format as originally typed.
- **Full-Page Select.** Enables an operator to select lines of text (up to a full page) and move that text to another location on the same page or to a different page of any document or diskette; also allows the operator to erase, delete, or print the selected text.
- **Block Select.** Allows an operator to select a column of text and move that text to another column on the same page or to another page of any document or diskette; also enables the operator to erase, delete, or print the selected text.
- **Form Tab.** Enables an operator to merely touch a key and move quickly to the exact position of the next blank to be filled in on a form.
- **Call Page.** Enables an operator to move directly from the current page to any page of any document.

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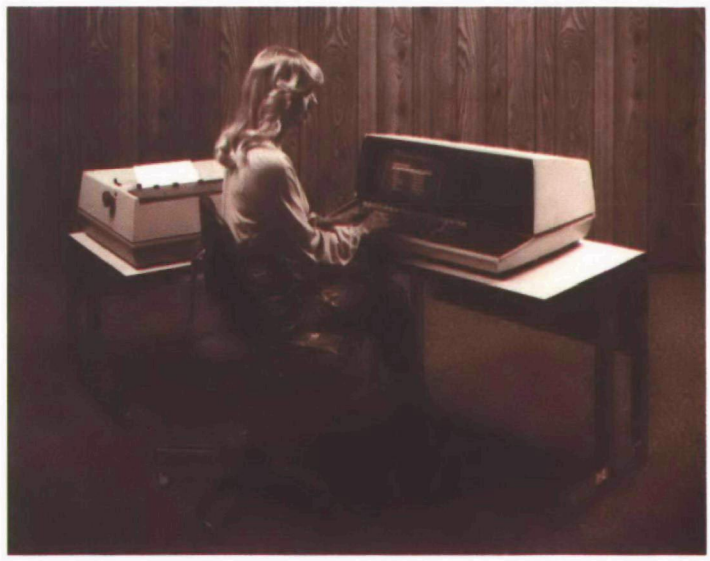

- **Superscript, Subscript, Overstrike.** Enables an operator to (1) type superscripts and subscripts automatically and (2) type one character over another to create special symbols (for example, Ø).
- **Reformat.** Enables an operator to automatically change both the left and right margins and line spacing on a page or throughout a document. The operator can print the reformatted document, store it on diskette, or both.
- **Nonprint.** Enables an operator to specify fields of displayed text that are to be skipped over during printing. This allows two-pass printing of a page that has a mix of type styles, languages, or colors—and the print wheel or ribbon need be changed only once.
- **Horizontal Scroll.** Enables an operator to produce wide-page documents (up to 126 characters per line in either 10- or 12-pitch), such as financial reports, charts, etc.
- **Search and Replace.** Enables an operator to automatically search through a document for specific text or multiple text and (1) stop at each occurrence and decide whether to change or replace the text, (2) count each occurrence, or (3) replace each occurrence with specified text.
- **Form Letter.** Enables an operator to print single-page form letters from a prepared address list and automatically insert the date, address, salutation, and variable text within the body of the letter. Addresses can be selected automatically from the list, based on predefined qualifiers or ZIP codes.
- **Monospace Justify.** Enables an operator to print text automatically with a right-justified (even) margin—by page or by document.

Features Common to VT 1303

- **Continuous Print.** Enables an operator to print one or more documents, unattended, from one diskette while simultaneously editing documents on the other diskette
- **Text Assembly.** Enables an operator to prepare standard paragraphs in any order and then select certain paragraphs and assemble and print them (and insert variables) as one document. Also, the assembled document may be recorded on diskette for future use.
- **Document Assembly.** Enables an operator to combine two or more documents from one diskette into a single document on a second diskette.
- **Document Copy.** Enables an operator to duplicate a complete document, or part of a document (up to a full page), at another location on the same diskette or another diskette.
- **Document Append.** Enables an operator to combine various documents, or parts of a document (up to a full page at a time), with another to form a single document on the same diskette or another diskette. All documents appended to another document remain on diskette as if they were archived.
- **Diskette Duplicate.** Enables an operator to duplicate one or more existing documents, up to an entire diskette, onto a second diskette.

All specifications subject to change without notice.

OPTIONAL FEATURES

The following features are optional on a VT 1303:

- **Alternate Character Set.** Permits an operator to type and display 96 extra characters, in addition to the basic set, when performing scientific and multilingual typing.
- **Interact Communications.** Working through a data set and over telephone lines, an Interact-equipped VT 1303 can send or receive documents to or from another VT or Videotype system and communicate with a wide range of computers.

SPECIFICATIONS

DISPLAY	
Display region	5 x 10 inches
Characters per line	126
Lines per page	66
Character generation	High-resolution dot matrix
KEYBOARD	
Contour	Dished and sloped, resembles IBM Selectric keyboard
Number of keys	79
Repeat keys	Space Bar, Backspace, Return, Period, Hyphen/Underline, Delete, Insert, Erase, Merge, Line Insert, Line Delete, Roll Up/Roll Down
STORAGE MEDIA	
Type	5¼-inch mini-floppy diskette
Recording method	Dual-density MFM
Recording format	
Sides per diskette	1
Tracks per side	35
Sectors per track	18 (soft-sectored)
Characters per sector	256
Minimum page size	1 sector
Text compression	Multiple blank and blank line
Storage capacity	
Character capacity	161,280 characters
Nominal page size	2,000 characters (compressed)
Nominal page capacity	80 pages
Number of diskette drives	2
PRINTER	
Type	Daisy-wheel printer
Maximum speed	55 characters per second (660 words per minute)
Type styles	Various 10- and 12-pitch type styles available
Line spacing	6 lines per inch
Ribbon	Multistrike, single strike, or fabric
PHYSICAL CHARACTERISTICS	
Operator's console	
Height	13 inches (33 centimeters)
Width	26 inches (66 centimeters)
Depth	26 4 inches (67 centimeters)
Weight	55 pounds (25 kilograms)
Printer unit	
Height	9 4 inches (23 8 centimeters)
Width	22 3 inches (56 7 centimeters)
Depth	22 1 inches (56 1 centimeters)
Weight	52 pounds (23 6 kilograms)
ENVIRONMENTAL REQUIREMENTS	
Operating temperature	50°F to 95°F (10°C to 35°C)
Storage temperature	40°F to 122°F (4°C to 50°C)
Relative humidity	20% to 80%, noncondensating
INPUT POWER	
Voltage	95 to 130 Volts AC, or 190 to 260 Volts AC
Current	3.2 Amps maximum at 115 Volts AC for each operator's console, 2.5 Amps maximum at 115 Volts AC for each printer unit
Frequency	48 to 62 Hz
Power dissipation	1,000 BTU per hour

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Word Processing Perspective

RAYTHEON DATA SYSTEMS

August 1981, No.7

Communications Capabilities for Lexitron VT Systems

Raytheon Offers Seven Routes to the New World

For years the efficient processing of words and data has been recognized as a business essential. But today, more than simply processing words and data, the information must also be communicated. Only when information essential to management decisions is communicated is it completely and efficiently utilized.

Raytheon Data Systems (RDS) now offers multiple communications options for VT systems, transforming standalone systems into multi-powered communicators of information. These options make the increased productivity of the automated office a promise realizable today.

The series of communications options permits users to interface with a wide range of data communicating devices. These include other RDS installations; on-line host computers; remote optical character readers; IBM-compatible and other word processing systems with similar coding structures; phototypesetters; time-sharing systems; "intelligent" copier/printer and popularly used network communications systems.

Software-controlled, menu-selectable, and available now

When communications capabilities are required, RDS has made it as simple as changing the standard text processing program for one holding the communications logic. VT systems equipped with appropriate communications firmware can easily be converted to communicating text processors by loading any of the options and selecting transmission criteria from a menu page. These options convert VT systems from standalone text processors to devices for communicating with virtually every sort of computer or terminal. These options open up entirely new possibilities for intra- and inter-organizational communications. Starting today, VT users can increase the productivity benefits of their systems. Internally, they can transmit documents quickly between VT systems. Externally, they now have the broadest access of any text processing system to the data resources needed today for effective management.

Between VT systems linked for electronic mail

The RDS asynchronous point-to-point communications option is used to send or receive text to/from other VT systems. Communications can be from the keyboard or from a text diskette/cassette in conversational, line send, or batch modes. Page parts, full pages or multiple documents are easily selected from the diskette/cassette index page. Communications rates are 300 bits per second (bps), allowing use of an inexpensive acoustical coupler, and 1200 and 2400 bps, the last allowing directly and locally linked VT systems to communicate without a modem. Transmissions may occur in half or full duplex mode. Text and page images are maintained between the two VT's.

With TTY-type terminal networks

With the RDS asynchronous ASCII option, all VT systems communicate with the broad range of equipment operating with this coding standard, including teletypewriter-type networks and most minicomputers and mainframes. Asynchronous ASCII is also used to communicate with commercial time-sharing and electronic mail networks. Every transmission criterion is quickly and easily established on a simple menu.

With IBM-compatible systems

The RDS asynchronous 2741 emulation option directly links VT systems to IBM-compatible systems for tasks such as the storage and retrieval of information from mainframe data bases. The option also allows communications with other word processor systems. A VT system operates as a remote conversational terminal or a batch terminal, and as a communicating text processor emulating a 2741 terminal.

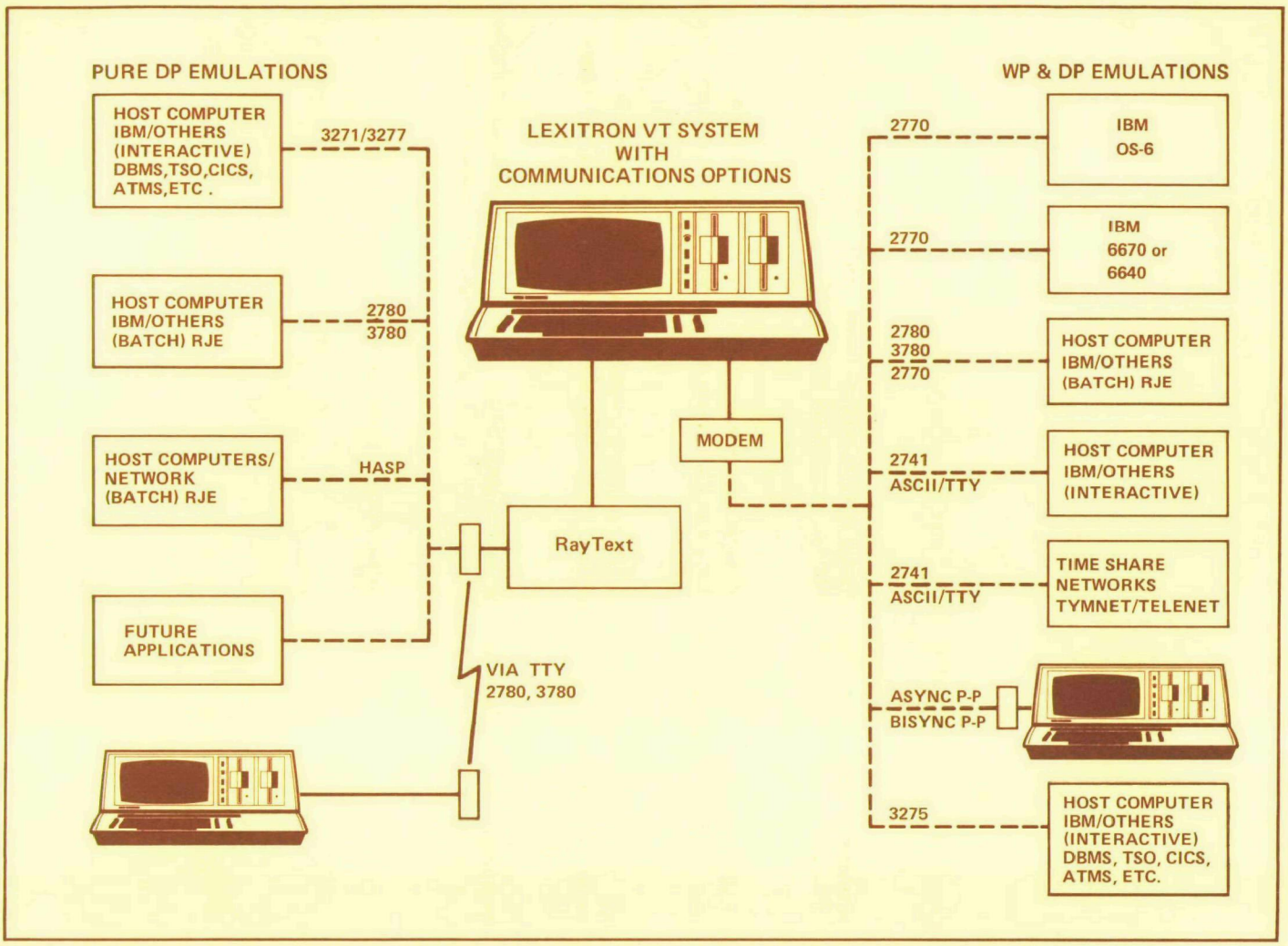
With IBM-compatible bisynch data processing terminals

IBM 2780 and 3780 communications terminals are used worldwide for remote job entry (RJE) to a central IBM or IBM-compatible mainframe computer. The 2780 and 3780 communications terminals are batch-oriented, rather than interactive, and were designed to rapidly enter data from the terminal into the mainframe. As more and more data processing functions are possible on text processing systems, the ability to emulate 2780 and 3780 terminals worldwide becomes vital.

With the RDS bisynchronous 2780 and 3780 emulation options, VT systems emulate IBM-compatible bisynchronous data processing terminals for batch, remote job entry, and inquiry/response tasks.

With OS-6 systems and high-speed printers

The RDS bisynchronous 2770 emulation option permits users to communicate text to IBM OS-6 office systems, thus providing access to the 6670 laser printer and the 6640 ink-jet printer for the large-scale, efficient output of the automated office. The 2770 protocol is better suited for text trans-



The world of communications requires many different capabilities. The automated office will produce its promised productivity gains only if all the resources it can generate can be communicated.

RDS now supplies seven of the most common communications capabilities: productivity gains can begin today.

mission than other protocols because it allows transmission of up to 512 characters in a string rather than being limited to 80 characters. Menu-selectable transmission rates are 2400 and 4800 bps, or the rate established by the modem.

Communications with host computer networks—Interactive bisynchronous protocol

With a 3277/3271 emulation option available on a RayText System, or 3275 (model 2) on the VT standalone unit, the VT becomes an interactive facility for data processing tasks such as data entry, inquiry response, on-line program development, data base inquiry and response, and many other management information system applications. The bisynchronous 327 emulation options can operate at speeds as high as 19.2K bits-per-second and can support dual host/network upline links.

Between RDS word processing systems

RDS systems may be linked to other VT systems using bisynchronous protocol transmission rates of up to 4800 bits-per-second. VT text processing systems can display many special symbols not contained in the ASCII set. With this option you transmit all displayable characters—including subscripts, superscripts, and symbols for trademark, registration, copyright and paragraph breaks, even the alternate character set. Especially needed in legal and government applications, this feature eliminates the need to transmit spaces where special symbols are used.

Summary

RDS, long established as an innovative creator of new systems and procedures, is the first with a text processing system capable of communicating with host computers and office systems, time-sharing and electronic mail systems and widely used terminal networks, without a "black box" or cumbersome coding procedures. A communications diskette or cassette is simply loaded into a VT system and communications can begin.

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Word Processing Perspective

RAYTHEON DATA SYSTEMS

August 1981, No.4

The VT Math Package: Flexibility and Ease of Use For Everyday Computations

Four-function Math Plus Percentages With On-screen Processing

Raytheon Data Systems' (RDS) VT Math Package adds flexible and easy-to-use mathematics capabilities to VT text processing systems. The software permits users of VT 1202 and 1303 systems to perform four-function, signed arithmetic for many standard business applications such as preparing financial statements, budgets, sales forecasts, statistical charts, invoices and inventory reports.

The math program offers the broadest flexibility in configuring and implementing multi-function information systems. It allows VT users to implement a logical, step-by-step evolution from strictly text processing functions to those that involve a mixture of text and number processing operations.

A comprehensive, verifiable program

A menu addition to the standard VT text processing program diskette, the VT Math Package provides users with a valuable tool in developing the broad range of communications that require mathematics—without inhibiting text editing functions.

You can type a report with charts and tables—and perform on-screen mathematics on the numbers—without having to change diskettes, enter code-driven subroutines, or re-key previously calculated results. You format charts and tables just as you would in text processing—only now the computations are performed on-screen.

The new software performs standard column and row operations in tabular and crossfooting applications, calculates percentages, and offers 10 accumulators for subtotals and intermediate results. And, a verify feature will check calculations. The program can automatically insert commas and decimal points into results. It recognizes and displays negative numbers with a minus sign or parentheses.

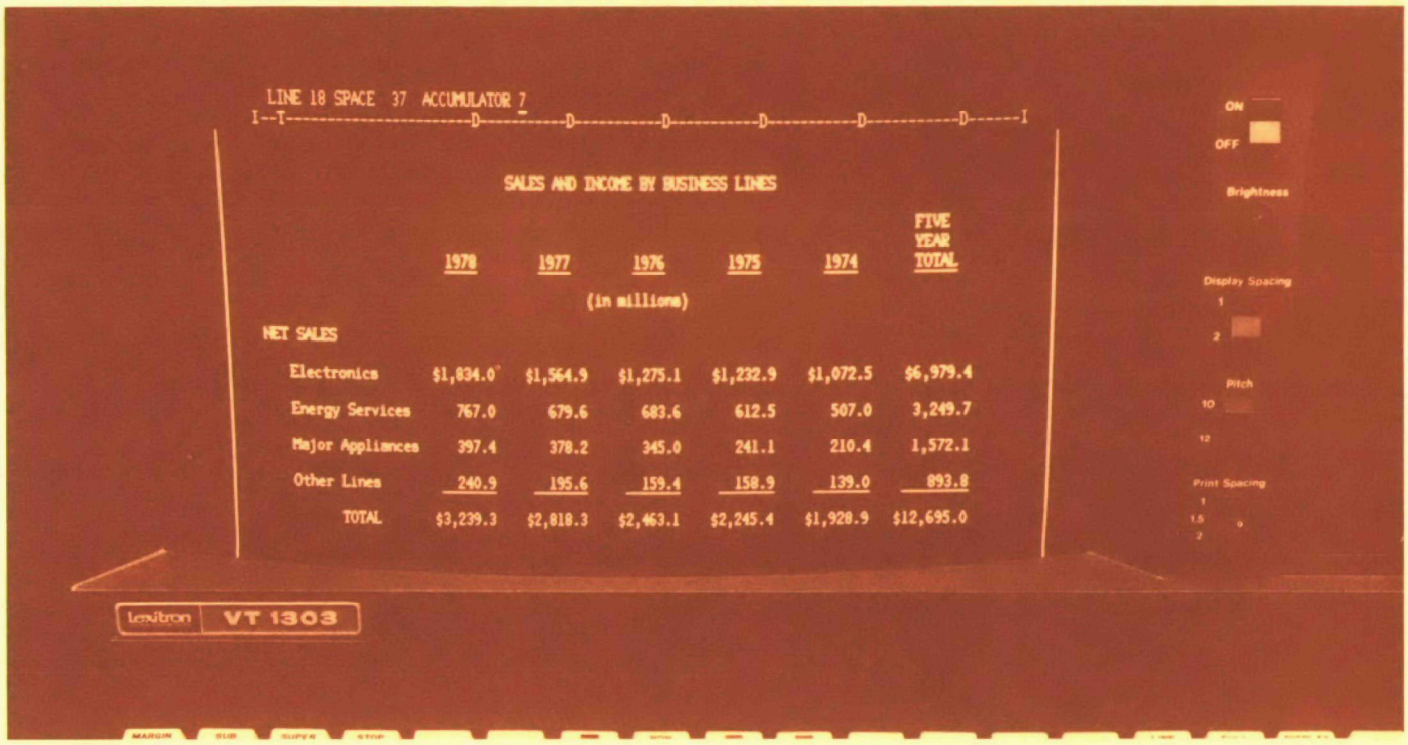
Managerial decisions aided by VT Math Package flexibility

In developing such vital reports as sales forecasts, you may use the VT Math Package as an on-screen calculator. The software is designed to make it easy to select and store subtotals and intermediate results. In preliminary calculations, for example, you can select and store the results of various groups of calculations, view them as desired, and decide which is the most pertinent to your specific reporting needs—and then you can finalize the calculations and the format of the results with simple text processing commands.

Tables and charts: complete formatting flexibility

Once a table or chart has been set up, you can easily move columns and rows of numbers. You use the same simple commands that move lines or columns in text processing. In only a few moments a table or chart can be completely reformatted for appearance.

Additional calculations can be specified to expand a table—to produce a new column in generating statistics, for example, where you might multiply or divide across rows, or to produce subtotals and totals down a column. Similarly, groups of numbers from a table may be easily extracted and moved. A partial row or



column can also be moved and recalculated.

The VT Math Package, operating with the wide page feature, allows you to type and print documents up to 126 characters wide or up to 252 printed characters on the WideTrack™ printer—extremely useful for applications with many vertical columns. In addition, the full page feature allows you to see how tables and charts—as well as text—appear on the full page, and to move them for appearance.

Calculation verification

Unlike many systems, the VT Math Package will verify results already appearing on the page before going on to the next entry. By stopping and prompting the operator to verify the data, the program guarantees that at least a visual check has been made with each entry.

You position the results

Unlike many systems which automatically position results, RDS' VT Math Package allows you great flexibility. Results first appear in the message area of the screen. They can then be transferred anywhere on the page—a useful feature in emphasizing subtotals or other significant intermediate results.

This feature has an additional benefit, in that subtotals can be easily grouped for additional calculations.

Numbers and text—together

The VT math program, unlike many others, lets you insert text between numbers to be calculated. This feature allows the easy inclusion of product or service descriptions in invoices, for example, or necessary textual information in other financial forms. It allows, if desired, one-pass keyboarding of reports containing text and numbers—you don't have to perform the calculations, write them down, then re-enter them, as in a strictly text processing mode.

Menu page selections

From the menu page you select the options you want for your computations. Menu selections include the number of decimal places (up to 14), leading zero suppression, and rounding.

Availability, price, delivery

The VT Math Package option is available for immediate shipment for a one-time license fee of $500.00 per customer. Additional Math Package diskettes are $100.00 each.

Summary

Many text processing users can use the arithmetic capabilities in preparing documents containing statistical tables, financial reports, invoices, and inventory lists. Today's users are recognizing that increased managerial prodictivity requires easy access to both data and text processing functions. New word processing product enhancements and options enable users to continue increasing their office productivity with powerful yet easy-to-use new VT tools.

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Word Processing Perspective

RAYTHEON DATA SYSTEMS

August 1981, No.3

RMS:

The Powerful, Easy-to-Use Records Management System

New Software Solves Old Records Keeping Problem

Raytheon Data Systems' (RDS) Records Management System combines powerful data processing capabilities with the ease of use benefits associated with VT text processing systems.

RMS provides managers with the information resources needed to make intelligent decisions while relieving a major administrative burden: the implementation, processing and maintenance of records management systems.

RMS: powerful, flexible, comprehensive and easy-to-use

With the introduction of RMS, Raytheon Data Systems provides current and future users of VT 1202 and 1303 text processing systems with a powerful management tool capable of processing records in an efficient data processing manner.

Records labeling, defining the characteristics of a record, determining the number of fields in each record, defining numeric formats, and specifying data entry checks—these tasks, once the specialized province of the DP programmer, are now done easily on a VT 1303 text processor. Once the RMS program has been loaded into the VT system, the user is led by menu selection or interactive prompts through these one-time activities.

RMS software allows users great flexibility in the creation and definition of files and records, in processing the data, and in formatting reports—and all on an interactive, English-based system which leads the user through every step. No programming knowledge, in the classical sense, is needed. Yet users can easily specify sophisticated processing or outputting routines such as multi-level sorts and searches; automatic creation of auxiliary files; automatic batch updating of critical day-to-day inventories; four-function arithmetic; and user-defined validation procedures.

Dispelling the mystique: RMS uses the VT keyboard

The mystique surrounding data processing has existed largely because of the special codes, terminologies, programmable function keys, and job instruction sequences of data processing programming, including many records information systems on text processing systems.

RMS dispels this mystique and uses most of the same keys for records processing functions as it does for text processing functions. Unlike other records programs on text processing systems which rely on a series of codes to create programs, RMS is based on keyboarding responses to English language prompts. What was once a DP task is now easily handled on an interactive basis on a VT system.

512-character records

An important feature of the RMS program is the capacity to support records of long length. RMS supports records of up to 512 characters, which is extraordinarily long for word processing systems and meets nearly every conceivable application.

This capacity provides the operator with great flexibility in creating and processing records. It allows voluminous information to be included in each record. Inherently it allows more fields per record, which allows the manager to develop a greater amount of more specific information. Important information does not have to be condensed nor omitted due to short record length limitations.

Powerful software

RMS' powerful software can sort up to ten levels and select up to twelve. These powerful functions are important with multilevel, user-defined tasks. Records such as personnel lists, customer lists, price/parts/stock lists, and internal distribution lists can be easily created, processed, and formatted.

One keystroke: multiple functions

To make these multilevel tasks even easier to perform, RMS software allows the "capture" of a frequently used string of commands. The risk of operator error in ordering multilevel tasks is thereby eliminated.

Math capabilities

The RMS program performs four-function arithmetic allowing varied, multilevel reports handling cross-footing and columnar calculations, and subtotals and totals.

Translation tables

RMS provides powerful translation tables—up to 19 tables, with up to 256 listings per table. These tables save record length and speed data entry. The translation tables are created in a manner similar to the creation of files and records.

RMS has a verification routine for these tables. Upon entry of the code, the RMS system retrieves the category from the table and flashes it on the screen for user verification. A simple command displays the appropriate table on a part of the screen. A lengthy table can be scrolled vertically until an appropriate listing is found. An index of translation tables can be called if needed.

AS OF: 3/13/80 MONTHLY SALES BY PRODUCT CATEGORY PAGE: 1

PR CA	ITEM ID	ITEM DESCR.	UOM	UNIT PRICE	ON HAND	SLS MTD QTY	SLS MTD $
10	20	SUPER HANDKERCHIEFS	EA	.500	220	50	25.00
10	70	ATHLETIC SOCKS	CS	18.000	46	84	1,512.00
10	120	TENNIS WRIST BANDS	EA	1.290	220	382	492.78
10	170	ALL-WEATHER GLOVES	EA	7.950	344	212	1,685.40
10	190	THERMO COOLERS	EA	6.950	449	339	2,356.05
10	210	SUNNY-DAY SUNGLASSES	EA	2.190	60	402	880.38
		PRODUCT CATEGORY TOTAL			1,339	1,469	6,951.61
12	30	EXTRA-LITE CIGAS	CS	29.000	70	28	812.00
12	40	FIRE-RITE MATCHES	CS	.100	177	180	18.00
12	80	MENTHOL-LITE CIGS	CS	44.000	38	64	2,816.00
12	130	LO-TAR CIGS	CS	46.000	644	49	2,254.00
12	180	CHERRY PIPE TOBACCO	DOZ	11.000	54	57	627.00
		PRODUCT CATEGORY TOTAL			983	378	6,527.00

Shown here is part of a printout of a typical RMS report that has been updated through customer invoices RMS has adjusted both the inventory and the sales quantity It has calculated from the unit price and the sales quantity the dollar revenues for each item, and subtotalled these revenues by product category Not shown is the grand total

Edit tables

RMS offers users a wide range of edit tables for the validation of data entry, such as range checking, exact match, non-zero, full-field, and leading zero suppression In addition, user-defined edit tables may easily be created

Unique record expansion

RMS permits the easy inclusion of additional fields into a record Unlike many systems, VT RMS users can easily expand the number of fields within a record, and thus the record length

Easily defined masks

Another feature of the RMS program is the standard and user-defined masks Standard masks are used to automatically insert slashes in a date, parentheses and dashes in a telephone number or other common uses User-defined masks include decimal points in fixed-field numbers (such as a grade point average), commas in financial data, or slashes in part numbers

Implementing the masks is again on an interactive basis, with the system leading the operator in choosing and placing the character for the automatic insertion

Easy updating

Constant record updating is time-consuming and error-prone without the powerful user-defined functions that RMS allows Routines can be defined to do many updating tasks automatically, again under the command of a single keystroke

Routine updating of the files is also made very easy by the RMS software RMS is programmed so that only the records to be changed need to be called A special screen display is used in updating so that the appropriate fields can be found quickly Once all the changes have been made, a single command initiates an unattended batch update mode, where a transaction file is used to update a master file

The troublesome directory made easy

"Global" types of updates can also be made with RMS If, for example, an entirely new phone system is installed, an operator can specify that, as each record is updated, the cursor automatically finds the correct field Manually compiling and updating a telephone directory is a time-consuming task With RMS a directory can be automatically produced by extracting the appropriate fields of data

RMS' unique and easy record expansion feature has great benefits in automatic updating tasks Using addition of mail stations as an example, once the field has been added, the file may be sorted with this as the key field in order to produce a list of personnel at each mail station

Two levels of data entry

The flexibility of the RMS program is demonstrated by its ability to run, on a limited basis, on a single diskette VT 1202 While the powerful records processing capabilities require the dual-diskette VT 1303, all VT 1202 systems can be used as data entry devices The RMS data disk can then be transferred to a VT 1303 for the processing

On a second level, the VT 1303 may serve as a data entry device to the RayText distributed resources system In this instance, an RMS file can be output to the larger system disk, where it is easily accessible to any other VT system linked in the network

Communications options complement RMS

A series of communications capabilities now allow RDS' word processing systems to communicate with other VT systems and also with a broad range of other communicating systems

With these communications options, the impact of RMS is not limited to internal records needs The user can send RMS information in WP format directly to another communicating system

Summary

The VT RMS program allows the easy definition of the shape and the processing of that information which affects the strategic thinking and decision making of managers RMS provides an entirely new level of records management and much easier access to that information

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Lexitron
CORPORATION

Dual Tray Sheet Feeder

Lexitron's intelligent Dual Tray Sheet Feeder can save you time and money.

The Dual Tray Sheet Feeder reduces paper handling. Paper feeds into the printer on command, all automatically.

Two paper trays give you the flexibility of true unattended printout.

The Dual Tray Sheet Feeder will increase the productivity of your office.

Lexitron Dual Tray Sheet Feeder

Lexitron's intelligent Dual Tray Sheet Feeder can save you time and money by reducing paper handling in your office. With this easy-to-install unit, word processing operators are freed from manually feeding single sheets of paper for each page of text to be printed. Paper feeding is automatic. Two input trays allow use of mixed stationery stocks Each tray holds 250 sheets of paper for extended periods of true unattended operation.

Features

- Microprocessor controlled
- Easy installation
- Audible and visible alarms for Paper Jam and Out of Paper conditions
- Three feeding modes: Automatic, Semi-Automatic, and Manual (for oversize sheets)
- Paper trays available in six popular sizes Two trays of your choice provided, additional trays may be ordered
- Combined 500-sheet capacity

Specifications

Dimensions

Height	8.0 in. (20 3 cm)
Width	15 5 in (39.3 cm)
Depth	15.0 in (35 3 cm)
Weight	15.0 lb (6 82 kg)

Tray Sizes

Vertical	8 5 x 11 0 in (21 5 x 27.9 cm)
	8 5 x 14 0 in (21 5 x 35 5 cm)
	11 0 x 8.5 in. (27.9 x 21 5 cm)
	DIN A4
	8.0 x 10.5 in. (20.3 x 26 6 cm)
	8 5 x 13.0 in. (21.5 x 33.0 cm)*
Horizontal	11 0 x 8 5 in (27 9 x 21.5 cm)

*Requires adapter

Paper Capacity and Weight

250 sheets per tray
16 to 24 lb. cut stock (7.2 to 10.9 kg)

Switches and Sensors

Reset	Misfeed
Paper Tray Empty	Paper Feed Upper Tray
Paper Alignment	Paper Feed Lower Tray

Audible and Visible Alarms

Upper Tray Empty	Power Failure
Lower Tray Empty	Paper Misfeed

Environmental Requirements

Operating:	
Temperature	40° to 105°F (4° to 40°C)
Relative humidity	40% to 80%, non-condensing
Storage:	
Temperature	0° to 125°F (0° to 52°C)
Relative humidity	0% to 90%, non-condensing

Input Power

Operating power supplied by system printer
+ 5 Vdc ±2%
+15 Vdc ±5%
−15 Vdc ±5%

Specifications subject to change without notice

WHERE MODERN WP BEGAN. WHERE MODERN WP IS GOING.

Lexitron CORPORATION
1840 DeHavilland Drive
Thousand Oaks, CA 91359
Phone (805) 499-5911

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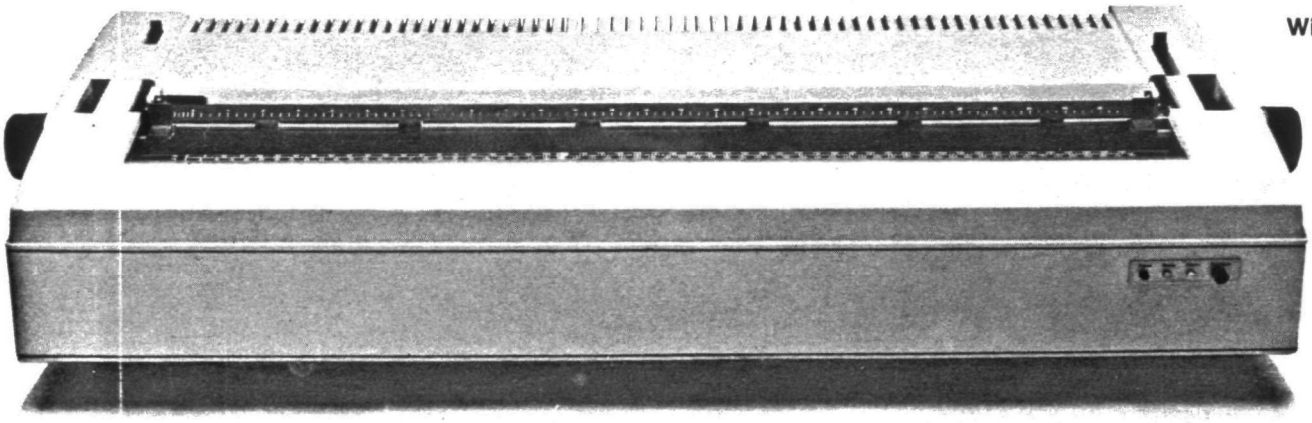


WideTrack

WideTrack™

If your organization is like most, you frequently need budget spread sheets, organizational charts, and other wide documents. The WideTrack Printer was designed especially for these applications.

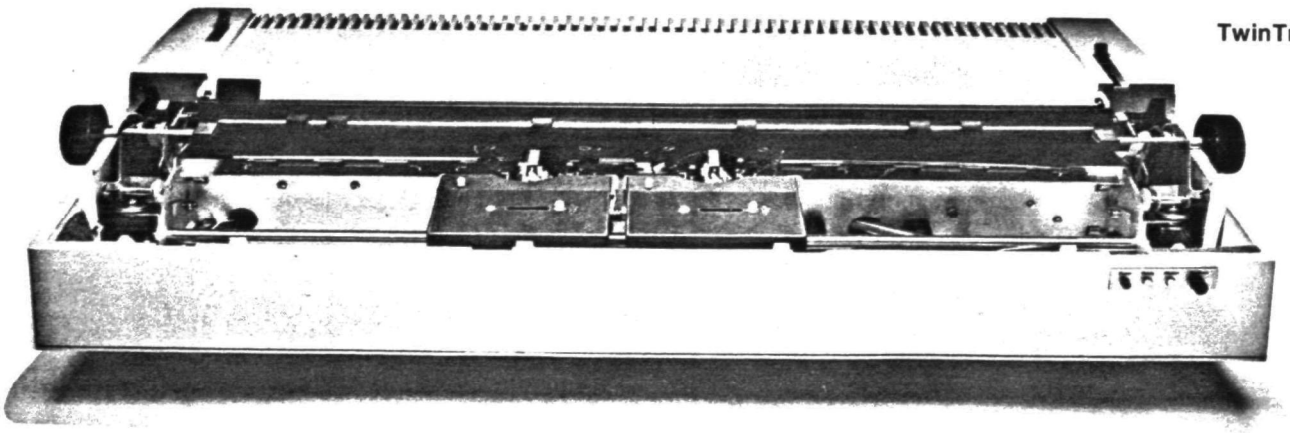
Depending on the VT hardware and software you select, this exceptionally versatile unit can print up to 316 characters in a single pass. Capable of accepting paper as wide as 28 inches (71.1 cm), it even allows you to load C size drafting faceplates without folding or creasing.

Lexitron's WideTrack Printer accepts all of the accessories, printwheels, and ribbons offered for the Standard Printer. Also, like the Standard Printer, it can be shared by two or more editors.

TwinTrack™

Imagine being able to print with two type styles and two ribbon colors in one pass!
The TwinTrack Printer allows operators to use two different printwheels simultaneously.
For example, place a normal type style on one printhead, italics on the second. The TwinTrack alternates between the normal and italic in one pass — automatically, using the English/English option. Depending on your applications, you can select either the Greek or English alternate character set, and preview the page on the VT display before printing it.

The TwinTrack Printer accepts all the ribbons, printwheels, and accessories offered for the Standard Printer. And it is as wide as the WideTrack, making those oversized jobs a breeze.



TwinTrack

EPA WORD-PROCESSING EQUIPMENT CONTRACT WITH RAYTHEON DATA SYSTEMS (LEXITRON)

PRESENTATION

- OVERVIEW OF CONTRACT
- STANDARD CONFIGURATION INCLUDING COSTS
- ORDERING PROCEDURES
- ACTION ITEMS
- MIDSD PLANS

[P100]

STANDARD LEASE AGREEMENT

[P101]

THE LESSEE AGREES TO PAY AS RENT FOR SAID LEASED PREMISES, THE TOTAL SUM OF $[1] DOLLARS IN [2] MONTHLY INSTALLMENTS OF $[3] DOLLARS, EACH INSTALLMENT PAYABLE IN ADVANCE ON THE FIRST DAY OF EACH AND EVERY CALENDAR MONTH DURING THE TERM HEREOF IN UNITED STATES LAWFUL MONEY, AT THE OFFICE OF THE BUILDING OR SUCH OTHER PLACE IN LOS ANGELES AS THE LESSOR MAY DESIGNATE, THE FIRST AND FINAL MONTHLY INSTALLMENTS OF RENT BEING DUE AND PAYABLE UPON THE ACCEPTANCE OF THIS LEASE.

[P102]

THE LESSEE AGREES NOT TO MORTGAGE, ASSIGN OR SUBLET THIS LEASE OR THE LEASED PREMISES OR ANY PART THEREOF WITHOUT THE WRITTEN CONSENT OF THE LESSOR, AND THE LESSEE FURTHER AGREES TO PAY $[4] PER MONTH ADDITIONAL RENT FOR EACH SUB-TENANT SO PERMITTED. ANY TRANSFER OR ASSIGNMENT OF THIS LEASE BY OPERATION OF LAW WITHOUT THE WRITTEN CONSENT OF THE LESSOR SHALL MAKE THIS LEASE VOIDABLE AT THE OPTION OF THE LESSOR.

AT LEAST [5] DAYS BEFORE THE TERMINATION OF THE LESSEE'S TENANCY THE LESSEE SHALL GIVE TO THE LESSOR A WRITTEN NOTICE OF THE DATE ON WHICH THE LESSEE INTENDS TO SURRENDER THE PREMISES; IF SUCH NOTICE IS NOT GIVEN, THE THE LESSEE SHALL BE LIABLE FOR THE RENT OF ONE ADDITIONAL MONTH. IF THE LESSEE HOLDS POSSESSION OF THE PREMISES AFTER THE TERM OF THIS LEASE SUCH LESSEE SHALL BECOME A TENANT FROM MONTH TO MONTH AT THE RENT AND UPON TERMS HEREIN SPECIFIED, AND SHALL CONTINUE TO BE SUCH TENANT UNTIL THE TENANCY SHALL BE TERMINATED BY THE LESSOR, OR UNTIL THE LESSEE SHALL HAVE GIVEN TO THE LESSOR A WRITTEN NOTICE OF AT LEASE ONE ONE MONTH OF INTENTION TO TERMINATE THE TENANCY; BUT NOTHING IN THIS PARAGRAPH SHALL BE CONSTRUED AS A CONSENT BY THE LESSOR TO THE OCCUPANCY OR POSSESSION OF SAID PREMISES BY THE LESSEE AFTER THE TERM HEREOF.

[P103]

ALL NOTICES TO BE GIVEN TO LESSEE SHALL BE GIVEN IN WRITING PERSONALLY OR BY DEPOSITING THE SAME IN THE UNITED STATES MAIL, POSTAGE PREPAID, AND ADDRESSED TO LESSEE AT SAID PREMISES, WHETHER OR NOT LESSEE HAS DEPARTED FROM, ABANDONED OR VACATED THE PREMISES. ALL NOTICES TO BE GIVEN TO LESSOR SHALL BE GIVEN IN WRITING PERSONALLY OR BY DEPOSITING THE SAME IN THE UNITED STATES MAIL, POSTAGE PREPAID, AND ADDRESSED TO THE LESSOR AT THE PLACE DESIGNATED BY LESSOR FOR THE PAYMENT OF RENT, OR AT SUCH OTHER PLACE OR PLACES AS MAY BE DESIGNATED FROM TIME TO TIME BY LESSOR. NO LESS THAN [5] DAYS TERMINATION NOTICE WILL BE ACCEPTED.

THE GETTYSBURG ADDRESS

FOURSCORE AND SEVEN YEARS AGO, OUR FATHERS BROUGHT FORTH ON THIS CONTINENT A NEW NATION, CONCEIVED IN LIBERTY, AND DEDICATED TO THE PROPOSITION THAT ALL MEN ARE CREATED EQUAL. NOW WE ARE ENGAGED IN A GREAT CIVIL WAR, TESTING WHETHER THAT NATION, OR ANY NATION SO CONCEIVED AND SO DEDICATED, CAN LONG ENDURE. WE ARE MET ON A GREAT BATTLEFIELD OF THAT WAR. WE HAVE COME TO DEDICATE A PORTION OF THAT FIELD AS A FINAL RESTING-PLACE FOR THOSE WHO HERE GAVE THEIR LIVES THAT THAT NATION MIGHT LIVE. IT IS ALTOGETHER FITTING AND PROPER THAT WE SHOULD DO THIS. BUT IN A LARGER SENSE WE CANNOT DEDICATE, WE CANNOT CONSECRATE, WE CANNOT HALLOW THIS GROUND. THE BRAVE MEN, LIVING AND DEAD, WHO STRUGGLED HERE, HAVE CONSECRATED IT FAR ABOVE OUR POOR POWER TO ADD OR DETRACT. THE WORLD WILL LITTLE NOTE, NOR LONG REMEMBER, WHAT WE SAY HERE, BUT IT CAN NEVER FORGET WHAT THEY DID HERE. IT IS FOR US, THE LIVING, RATHER TO BE DEDICATED HERE TO THE UNFINISHED WORK WHICH THEY WHO FOUGHT HERE HAVE THUS FAR SO NOBLY ADVANCED. IT IS RATHER FOR US TO BE HERE DEDICATED TO THE GREAT TASK REMAINING BEFORE US,--THAT FROM THESE HONORED DEAD WE TAKE INCREASED DEVOTION TO THAT CAUSE FOR WHICH THEY GAVE THE LAST FULL MEASURE OF DEVOTION,--THAT WE HERE HIGHLY RESOLVE THAT THESE DEAD SHALL NOT HAVE DIED IN VAIN--THAT THIS NATION, UNDER GOD, SHALL HAVE A NEW BIRTH OF FREEDOM,--AND THAT GOVERNMENT OF THE PEOPLE, BY THE PEOPLE, FOR THE PEOPLE, SHALL NOT PERISH FROM THE EARTH.

STANDARD LEASE AGREEMENT

THE LESSEE AGREES TO PAY AS RENT FOR SAID LEASED PREMISES, THE TOTAL SUM OF $3600.00 DOLLARS IN 12 MONTHLY INSTALLMENTS OF $300.00 DOLLARS, EACH INSTALLMENT PAYABLE IN ADVANCE ON THE FIRST DAY OF EACH AND EVERY CALENDAR MONTH DURING THE TERM HEREOF IN UNITED STATES LAWFUL MONEY, AT THE OFFICE OF THE BUILDING OR SUCH OTHER PLACE IN LOS ANGELES AS THE LESSOR MAY DESIGNATE, THE FIRST AND FINAL MONTHLY INSTALLMENTS OF RENT BEING DUE AND PAYABLE UPON THE ACCEPTANCE OF THIS LEASE.

THE LESSEE AGREES NOT TO MORTGAGE, ASSIGN OR SUBLET THIS LEASE OR THE LEASED PREMISES OR ANY PART THEREOF WITHOUT THE WRITTEN CONSENT OF THE LESSOR, AND THE LESSEE FURTHER AGREES TO PAY $50.00 PER MONTH ADDITIONAL RENT FOR EACH SUB-TENANT SO PERMITTED. ANY TRANSFER OR ASSIGNMENT OF THIS LEASE BY OPERATION OF LAW WITHOUT THE WRITTEN CONSENT OF THE LESSOR SHALL MAKE THIS LEASE VOIDABLE AT THE OPTION OF THE LESSOR.

AT LEAST 30 DAYS BEFORE THE TERMINATION OF THE LESSEE'S TENANCY THE LESSEE SHALL GIVE TO THE LESSOR A WRITTEN NOTICE OF THE DATE ON WHICH THE LESSEE INTENDS TO SURRENDER THE PREMISES; IF SUCH NOTICE IS NOT GIVEN, THE THE LESSEE SHALL BE LIABLE FOR THE RENT OF ONE ADDITIONAL MONTH. IF THE LESSEE HOLDS POSSESSION OF THE PREMISES AFTER THE TERM OF THIS LEASE SUCH LESSEE SHALL BECOME A TENANT FROM MONTH TO MONTH AT THE RENT AND UPON TERMS HEREIN SPECIFIED, AND SHALL CONTINUE TO BE SUCH TENANT UNTIL THE TENANCY SHALL BE TERMINATED BY THE LESSOR, OR UNTIL THE LESSEE SHALL HAVE GIVEN TO THE LESSOR A WRITTEN NOTICE OF AT LEASE ONE ONE MONTH OF INTENTION TO TERMINATE THE TENANCY; BUT NOTHING IN THIS PARAGRAPH SHALL BE CONSTRUED AS A CONSENT BY THE LESSOR TO THE OCCUPANCY OR POSSESSION OF SAID PREMISES BY THE LESSEE AFTER THE TERM HEREOF.

IF LESSOR, FOR ANY REASON, CANNOT DELIVER POSSESSION OF SAID PREMISES TO LESSEE AT THE COMMENCEMENT OF SAID TERM, THIS LEASE SHALL NOT BE VOID OR VOIDABLE, NOR SHALL LESSOR BE LIABLE TO LESSEE FOR ANY LOSS OR DAMAGE RESULTING THEREFROM; BUT THERE SHALL BE A PROPORTIONATE DEDUCTION OF RENT COVERING THE PERIOD BETWEEN THE COMMENCEMENT OF SAID TERM AND THE TIME WHEN LESSOR CAN DELIVER POSSESSION.

ALL NOTICES TO BE GIVEN TO LESSEE SHALL BE GIVEN IN WRITING PERSONALLY OR BY DEPOSITING THE SAME IN THE UNITED STATES MAIL, POSTAGE PREPAID, AND ADDRESSED TO LESSEE AT SAID PREMISES, WHETHER OR NOT LESSEE HAS DEPARTED FROM, ABANDONED OR VACATED THE PREMISES. ALL NOTICES TO BE GIVEN TO LESSOR SHALL BE GIVEN IN WRITING PERSONALLY OR BY DEPOSITING THE SAME IN THE UNITED STATES MAIL, POSTAGE PREPAID, AND ADDRESSED TO THE LESSOR AT THE PLACE DESIGNATED BY LESSOR FOR THE PAYMENT OF RENT, OR AT SUCH OTHER PLACE OR PLACES AS MAY BE DESIGNATED FROM TIME TO TIME BY LESSOR. NO LESS THAN 30 DAYS TERMINATION NOTICE WILL BE ACCEPTED.

[TITLE]

[L62]

SMITH'S LEASE AGREEMENT

PAGE [N1]

[L8]
[P100]
[P101]
[1] 3600.00
[2] 12
[3] 300.00
[4] 50.00
[5] 30
[R102]
[I]

IF LESSOR, FOR ANY REASON, CANNOT DELIVER POSSESSION OF SAID PREMISES TO LESSEE AT THE COMMENCEMENT OF SAID TERM, THIS LEASE SHALL NOT BE VOID OR VOIDABLE, NOR SHALL LESSOR BE LIABLE TO LESSEE FOR ANY LOSS OR DAMAGE RESULTING THEREFROM; BUT THERE SHALL BE A PROPORTIONATE DEDUCTION OF RENT COVERING THE PERIOD BETWEEN THE COMMENCEMENT OF SAID TERM AND THE TIME WHEN LESSOR CAN DELIVER POSSESSION.
[R103]
[END]

[A] KANSAS CITY;AL;1

GEORGE BRETT "GEORGE"
5389 ROYAL HIGHWAY
KANSAS CITY, MO 11111

GEORGE; GLEN HELLMAN

[A] CALIFORNIA;AL;1;3000;500;60;7

REGGIE JACKSON "REGGIE"
5385 ANGEL AVENUE
ANAHEIM, CA 66666

REGGIE; GEORGE KOZAR

[A] LOS ANGELES;NL;2;3000;400;60;7

STEVE GARVEY "STEVE"
3214 DODGER WAY
LOS ANGELES, CA 33333

STEVE; FRED STORM

[A] PITTSBURG;NL;1;3000;400;50;7

DAVE PARKER "DAVE"
5576 PIRATE COVE
PITTSBURG, PA 44444

DAVE; GEORGE KOZAR

[A] PHILADELPHIA;NL;2;3000;200;50;8

MIKE SCHMIDT "MIKE"
6641 PHILLIE STREET
PHILADELPHIA, PA 55555

MIKE; GEORGE KOZAR

[A] NEW YORK;AL;2;*;3000;100;50;7

BUCKY DENT "BUCKY"
4324 YANKEE COURT
NEW YORK, NY 22222

BUCKY; GLEN HELLMAN

[A] CALIFORNIA;AL;1;3000;500;70;7

ROD CAREW "ROD"
5387 ANGEL AVENUE
ANAHEIM, CA 66666

ROD; FRED STORM

[A] BOSTON;AL;2;2000;400;60;7

JIM RICE "JIM"
5728 RED SOX STREET
BOSTON, MA 77777

JIM; GLEN HELLMAN

[DATE]

[ADR]

DEAR [NAME]:

LEXITRON WAS FIRST WITH WORD PROCESSING CRT'S SYSTEMS IN THE WORLD AND REMAINS FIRST WITH THE INTRODUCTION OF THE MODEL VT 1303: WITH DUAL DISKETTE DRIVE, AND SOFT SECTURED LARGE CAPACITY DISKETTE STORAGE AS STANDARD FEATURES. IT BECOMES THE MOST TECHNICALLY ADVANCED TEXT PROCESSOR ON THE MARKET TODAY WITHOUT SACRIFICING THE OPERATIONAL SIMPLICITY OF EARLIER MODELS.

THANK YOU, [1], FOR INQUIRING ABOUT OUR COMPANY. IF I CAN BE OF ANY ASSISTANCE IN THE SELECTION OF ONE OF OUR PRODUCTS PLEASE CALL ME AT 522-6550.

SINCERELY,

LEXITRON CORPORATION

[2]
AREA MANAGER

SS/RMB

ESN	MODEL	BLDG #	RM #	OPERATOR	INSTALL DATE	LEASE/ PURCHASE
#2281	921	1	R437	N. RYAN	3/28/79	LEASE
#8890	1202	1	R738	F. HOWARD	3/28/79	PURCHASE
#7653	1202	1	R182	J. MORGAN	1/28/79	PURCHASE
#8849	942	2	R884	J. PALMER	2/28/79	LEASE
#2718	1202	1	R239	J. BENCH	3/28/79	LEASE
#8291	921	2	R323	J. THEISMAN	4/28/79	PURCHASE
#9022	1303	1	R254	J. UNITAS	2/28/79	LEASE
#2415	942	2	R128	D. PEARSON	2/28/79	PURCHASE
#7272	1202	1	R393	D. PASTORINI	2/28/79	LEASE
#1122	1303	1	R489	V. FERRAGAMO	1/28/79	PURCHASE
#5262	1202	2	R381	J. NAMATH	4/28/79	PURCHASE
#3272	921	2	R742	M. MOSELEY	3/28/79	PURCHASE
#9288	1202	1	R237	G. BRETT	2/28/79	LEASE
#1109	1303	2	R330	P. ROSE	1/28/79	PURCHASE

AUGUST 20, 1982

GEORGE BRETT
5389 ROYAL HIGHWAY
KANSAS CITY, MO 11111

DEAR GEORGE:

LEXITRON WAS FIRST WITH WORD PROCESSING CRT'S SYSTEMS IN THE WORLD AND REMAINS FIRST WITH THE INTRODUCTION OF THE MODEL VT 1303: WITH DUAL DISKETTE DRIVE, AND SOFT SECTURED LARGE CAPACITY DISKETTE STORAGE AS STANDARD FEATURES. IT BECOMES THE MOST TECHNICALLY ADVANCED TEXT PROCESSOR ON THE MARKET TODAY WITHOUT SACRIFICING THE OPERATIONAL SIMPLICITY OF EARLIER MODELS.

THANK YOU, GEORGE, FOR INQUIRING ABOUT OUR COMPANY. IF I C. 3E OF ANY ASSISTANCE IN THE SELECTION OF ONE OF OUR PRODUCTS PLEASE CALL ME AT 522-6550.

SINCERELY,

LEXITRON CORPORATION

GLEN HELLMAN
AREA MANAGER

SS/RMB

FIVE-YEAR BUDGET SUMMARY

DEPT.	1975	1976	1977	1978	1979	TOTAL
209	$ 296,089	$ 477,000	$ 567,000	$ 567,000	$ 689,000	2,596,089
499	270,707	314,000	465,000	475,000	587,000	2,111,707
123	1,214,892	1,519,000	1,789,000	1,987,000	2,987,000	9,496,892
208	300,849	383,000	455,000	555,000	678,000	2,371,849
593	61,759	75,000	100,000	100,000	234,000	570,759
552	325,634	300,000	200,000	200,000	200,000	1,225,634
772	121,082	120,000	100,000	100,000	160,000	601,082
842	0	134,000	80,000	85,000	90,000	389,000
526	52,784	50,000	50,000	50,000	65,000	267,784
977	0	0	15,000	30,000	56,000	101,000
	2,643,796	3,372,000	3,821,000	4,149,000	5,746,000	$19,731,796

MATH PACKAGE CAPABILITIES:

1) ADD, SUBTRACT, MULTIPLY AND DIVIDE COLUMNS AND ROWS

2) CALCULATE PERCENTAGES

3) STORE AND ACCUMULATE NUMBERS

ADDITIONAL TERMS AND CONDITIONS OF AGREEMENT BETWEEN

FIRMA
--------- HEREINAFTER REFERRED TO AS FRED ASTAIRE ----------

AND

THE INTER-AMERICAN DEVELOPMENT BANK,
AN INTERNATIONAL ORGANIZATION
10/30/50

ARTICLE 1 : RELATIONSHIP OF THE PARTIES

NOTHING CONTAINED IN THE ENTIRE ? BETWEEN FRED ASTAIRE AND THE BANK SHALL BE CONSTRUED AS THE ESTABLISHMENT OR CREATION OF A RELATIONSHIP OF MASTER AND SERVANT OR PRINCIPAL AND AGENT BETWEEN FRED ASTAIRE AND THE BANK, IT BEING AGREED THAT THE POSITION OF FRED ASTAIRE AND OF ANYONE ELSE PERFORMING ANY SERVICES UNDER SAID ? IS THAT OF AN INDEPENDENT CONTRACTOR.

ARTICLE 2 : TAXES

THE BANK IS EXEMPT FROM PAYMENT OF ALL SALES AND EXCISE TAXES AND SHALL PROVIDE FRED ASTAIRE WITH TAX EXEMPTION CERTIFICATES AS MAY BE REQUIRED FROM TIME TO TIME. FRED ASTAIRE SHALL CONSULT WITH THE BANK BEFORE PAYMENT OF ANY SALES AND EXCISE TAXES DEMANDED BY ANY AUTHORITY AND INCURRED IN THE PERFORMANCE OF SERVICES INCIDENT TO THE ENTIRE ? BETWEEN FRED ASTAIRE AND THE BANK. FRED ASTAIRE SHALL INFORM THE BANK IF ANY TAXING AUTHORITY REFUSES TO RECOGNIZE THE BANK'S PROOF OF ITS IMMUNITY FROM TAXATION AND FRED ASTAIRE SHALL TAKE SUCH STEPS AS ARE NECESSARY FOR PAYMENT OF THE TAXES UNDER PROTEST.

ARTICLE 3 : CONFIDENTIAL INFORMATION

FRED ASTAIRE AND ITS AGENTS ARE AWARE THAT IN DISCHARGING THEIR OBLIGATIONS PURSUANT TO SAID BANK, THEY MAY HAVE ACCESS TO PRIVILEGED AND CONFIDENTIAL INFORMATION OF THE BANK, A PUBLIC INTERNATIONAL ORGANIZATION. UNDER NO CIRCUMSTANCES SHALL FRED ASTAIRE, OR ITS AGENTS DISCLOSE TO ANY PERSON OR ORGANIZATION, IN ANY MANNER OR FORM, NOW OR AFTER THE EXPIRATION OF THE ?, SUCH INFORMATION OR ANY PART THEREOF.

HIERARCHY OF DATA

FILES - (PERSONNEL)

RECORDS - (EVERY PERSON)

FIELDS - (DESCRIPTIONS OF EVERY PERSON)

CHARACTERS - (512 LIMIT)

FILE: CONSISTS OF ONE OR MORE RECORDS

WITHIN ONE FILE, ALL RECORDS ARE THE SAME LENGTH

RECORD: A COLLECTION OF ALL THE INDIVIDUAL ITEMS OF INFORMATION ABOUT EACH DISTINCT GROUPING (SET) OF INFORMATION IN THE FILE

* AN INDIVIDUAL CUSTOMER IN A CUSTOMER FILE
* A PART IN AN INVENTORY FILE
* AN EMPLOYEE IN A PERSONNEL FILE

-- 16, 32, 128, 256, 512 BYTES IN LENGTH

-- COMPOSED OF SPECIFIC ITEMS OF INFORMATION CALLED FIELDS

--EACH RECORD CONTAINS THE SAME FIELDS OF INFORMATION

FIELD: SPECIFIC ITEM OF INFORMATION

SPECIFIED NUMBER OF CHARACTERS OF A SPECIFIED DATA TYPE

* ALPHANUMERIC (ALPHA AND/OR NUMERIC) 80 CHARACTERS MAX.
* NUMERIC ONLY - 11 CHARACTERS MAX.
* SIGNED NUMERIC (+ OR - VALUES) 11 CHARACTERS MAX.
* AUTO SEQUENCE (THE SEQUENCE IN WHICH THE RECORD IS INPUT IN THE SYSTEM)
* UNUSED

PRECISION MANUFACTURING

SPECIAL PROJECTS INVOICE SUMMARY

ACCOUNT # 95-3824

DATE	NAME	RATE	HOURS	DOLLARS	TOTAL	CHECK #
4/2/79	CRANE	$ 125	5.50	$ 687.50		
	KROLL	125	.50	62.50		
	CRUM	39	45.00	1,755.00		
	SMITH	30	91.00	2,730.00		
	RODMAN	24	128.00	3,072.00		
	FULLER	66	18.50	1,221.00		
	HANNAH	80	.50	40.00		
	LAND	150	.75	112.50		
	LUCAS	70	.30	21.00		
	OSTER	75	.40	30.00		
EXPENSES						29144
				$9,731.50		
5/5/79	CRANE	125	12.00	1,500.00		
	CRUM	39	18.00	702.00		
	SMITH	30	112.00	3,360.00		
	RODMAN	24	77.50	1,860.00		
	LAND	150	.50	75.00		
	LUCAS	70	5.10	357.00		
EXPENSES						
5/10/79	LAND (CREDIT FOR TIME ON 5/5/79 INVOICE)			7,854.00	357CR	30423
6/4/79	CRUM	39	45.00	1,755.00		
	SMITH	30	50.00	1,500.00		
	RODMAN	24	128.00	3,072.00		
	FULLER	66	18.50	1,221.00		
	LUCAS	70	9.50	665.00		31566
				8,213.00		
					$25,441.50	

SYSTEM DATE: 8/19/82 USER FILE "PERS " TRACK LABEL PRINT LOG PAGE 1

VOL: FILES2 OWN: RECORDS2 TSB: 35/18/256 CREATION DATE: 4/13/82

	FLD-#	FIELD-NAME.	TYPE	TT-#	LGTH	MASK	EDIT	LCTN
KEY	1	LAST NAME	A		20			1
	2	FIRST NAME	A		10			21
	3	MIDDLE INIT	A		1			31
	4	STREET	A		25			32
	5	CITY	A		20			57
	6	STATE	A		2			77
	7	ZIP CODE	N		5.0	6	NZ	79
	8	HOME PHONE	N		10.0	4	NZ	82
	9	EMERG NAME	A		20			87
	10	EMERG PHONE	N		10.0	4	NZ	107
	11	EMP. NO.	N		4.0	1	NZ	112
	12	PHONE EXT.	N		3.0	1		114
	13	DEPT.	A	5	20			116
	14	FUNCTION	A	6	25			117
	15	SALARY	S		6.0	0		118
	16	VACATION	S		2.0	1	30	122
	17	GENDER	A		1		33	124
	18	RACE	A	21	12			125
	19	HIRE DATE	N		6.0	2	DM	126

MASKS (DATA COMPRESSIONS)

USED FOR NUMERIC FIELDS: 16 MAXIMUM

0-6 MASKS COME WITH RMS

0	999,999,999.99 88,888,888.88	NUMERIC, EXTENDED WITH COMMAS LEADING ZEROS SUPPRESSED, DECIMAL POINT AS REQUIRED
1	11.99	NUMERIC, NO COMMAS, ZERO SUPPRESSED, DECIMAL POINT AS REQUIRED
2	12/31/80 1/01/80	DATES OF MM/DD/YY
3	2-002 11-111	DATES OF YY-DDD (JULIAN DATE)
4	703-522-6550	TELEPHONE NUMBERS
5	225-80-5455	SOCIAL SECURITY NUMBERS
6	22003 000023456 01011	ZIP CODES, ETC. NUMERIC, NO COMMA OR DECIMAL POINT, NO ZERO SUPPRESSED

7-15 AVAILABLE TO CREATE YOUR OWN CUSTOMIZED MASKS

EDIT CODES - CHECKING SYSTEM CONTROL

EDIT CODES ARE USED TO INSURE THAT VALID INFORMATION IS BEING INPUT WHEN DATA RECORDS ARE BEING ENTERED INTO THE FILE.

11 STANDARD EDIT CODES ARE PROVIDED FOR VERIFICATION OF FIELD ENTRIES:

Ø	NO EDITING REQUIRED
NB	FIELD MUST BE NON-BLANK
AO	FIELD MUST CONSIST OF ALPHA CHARACTERS ONLY
DD	DATE EDIT (DDMMYY)
DM	DATE EDIT (MMDDYY)
DY	DATE EDIT (YYMMDD)
FF	FULL FIELD (ALL CHARACTEP POSITIONS USED)
JD	JULIAN DATE EDIT (YYDD)
NO	FIELD MUST CONSIST OF NUMERIC CHARACTERS ONLY
NZ	FIELD MUST BE NON-ZERO
YN	YES OR NO ENTRIES ONLY
##	EDIT TABLE REFERENCE NUMBER (10-99) (WHEN FIELD CONTENT MUST BE VERIFIED IN USER DEFINED TABLE/RANGE)

TRANSLATION TABLES

USED TO EFFICIENTLY STORE REPETITIOUS INFORMATION ASSOCIATED WITH A USER DATA FILE.

NUMBERS ARE STORED INSTEAD OF THE ACTUAL TYPED TITLE OR NAME.

RMS IS NOT INSTALLED WITH ANY PRE-EXISTING TRANSLATION TABLES--THEY ARE USER DEFINED.

EXAMPLE:

AMERICAN LEAGUE BASEBALL TEAMS

01	BALTIMORE ORIOLES
02	BOSTON RED SOX
03	CALIFORNIA ANGELS
04	CHICAGO WHITE SOX
05	CLEVELAND INDIANS
06	DETROIT TIGERS
07	KANSAS CITY ROYALS
08	MILWAUKEE BREWERS
09	MINNESOTA TWINS
10	NEW YORK YANKEES
11	OAKLAND A'S
12	SEATTLE MARINERS
13	TEXAS RANGERS
14	TORONTO BLUE JAYS

TRANSLATION TABLES STORE NUMBERS. NUMBERS TAKE UP LESS STORAGE SPACE. TWO (2) NUMBERS TAKE UP ONE BYTE OF STORAGE SPACE.

HIRE DATE	NAME	DEPARTMENT	SALARY	INSURANCE VALUE
0/80	ANTHONY, SUSAN B.	ACCOUNTING	56,500	141,250.00
2/14/80	BOGART, HUMPHREY O.	ACCOUNTING	15,000	37,500.00
2/25/80	DE BERGERAC, CYRANO L.	ACCOUNTING	46,500	116,250.00
2/04/80	DICKENS, CHARLES L.	ACCOUNTING	50,000	125,000.00
2/03/80	MILLIKEN, ROBERT L.	ACCOUNTING	33,400	83,500.00
2/28/80	PAIGE, SATCHELL P.	ACCOUNTING	29,600	74,000.00
2/18/80	PERKINS, MARLON E.	ACCOUNTING	150,000	375,000.00
2/09/80	PETTY, RICHARD R.	ACCOUNTING	53,000	132,500.00
2/12/80	WALSH, JOE S.	ACCOUNTING	34,000	85,000.00
	DEPT. TOTAL			1,170,000.00
2/27/80	ANDERSON, LONI A.	ADMINISTRATION	25,000	62,500.00
2/14/80	GRETSKY, WAYNE B.	ADMINISTRATION	89,000	222,500.00
2/16/80	HEPBURN, KATHARINE W.	ADMINISTRATION	90,000	225,000.00
2/22/80	JACOBSEN, BABY DOLL J.	ADMINISTRATION	38,000	95,000.00
2/22/80	LIEBERMAN, NANCY A.	ADMINISTRATION	75,000	187,500.00
2/23/80	NELSON, OZZIE E.	ADMINISTRATION	150,000	375,000.00
2/12/80	RAMJET, ROGER A.	ADMINISTRATION	32,000	80,000.00
2/29/80	ROOSEVELT, ELEANOR N.	ADMINISTRATION	37,000	92,500.00
2/21/80	SELLECK, THOMAS R.	ADMINISTRATION	48,950	122,375.00
15/80	THATCHER, MARGARET J.	ADMINISTRATION	100,000	250,000.00
6/80	WALKER, HERSCHEL T.	ADMINISTRATION	26,700	66,750.00
	DEPT. TOTAL			1,779,125.00
2/14/80	BENNETT, TONY I.	ENGINEERING	45,781	114,452.50
2/15/80	BUNKER, ARCHIE W.	ENGINEERING	42,351	105,877.50
	DEPT. TOTAL			220,330.00
2/11/80	PERLMAN, ITZHAK N.	FIELD ENGINEERING	24,000	60,000.00
2/03/80	SHAKESPEARE, WILLIAM H.	FIELD ENGINEERING	19,000	47,500.00
2/07/80	WALTERS, BARBARA M.	FIELD ENGINEERING	30,500	76,250.00
	DEPT. TOTAL			183,750.00
2/23/80	KEATON, DIANE T.	MANUFACTURING	888,888	2,222,220.00
2/01/80	THRONEBERRY, MARV P.	MANUFACTURING	18,000	45,000.00
2/16/80	TUBMAN, HARRIETT L.	MANUFACTURING	40,000	100,000.00
	DEPT. TOTAL			2,367,220.00
14/80	BROCATO, ROXANE M.	MARKETING	550,000	1,375,000.00
14/80	BROWNING, ELIZABETH B.	MARKETING	450,000	1,125,000.00
2/28/80	CRANE, BOB A.	MARKETING	28,500	71,250.00
2/14/80	FISHER, CARRIE S.	MARKETING	25,000	62,500.00
2/23/80	GHANDI, INDIRA W.	MARKETING	45,900	114,750.00
2/02/80	JEFFERSON, GEORGE W.	MARKETING	36,000	90,000.00

NAME	DEPARTMENT	TEL. EXT.
ALBERTSON, JACK E.	PLANNING	232
ANDERSON, LONI A.	ADMINISTRATION	276
ANTHONY, SUSAN B.	ACCOUNTING	432
ANTHONY, EARL E.	PLANNING	567
ANTONY, MARK P.	RESEARCH & DEVELOP.	847
BALBOA, ROCKY R.	PERSONNEL	342
BEETHOVEN, LUDWIG V.	PERSONNEL	229
BENNETT, TONY I.	ENGINEERING	797
BOGART, HUMPHREY O.	ACCOUNTING	702
BOMBECK, ERMA D.	PERSONNEL	118
BROCATO, ROXANE M.	MARKETING	236
BROWNING, ELIZABETH B.	MARKETING	564
BUNKER, ARCHIE W.	ENGINEERING	341
CAMPBELL, ARCH D.	MGMT. INFO. SYSTEMS	344
CLEAVER, BEAVER J.	PLANNING	113
CONNORS, JIMMY W.	MARKETING	782
CRANE, BOB A.	MARKETING	833
CROCKER, BETTY M.	ADMINISTRATION	123
CRONKITE, WALTER N.	MARKETING	639
CURIE, MARIE E.	MARKETING	977
DARE, VIRGINIA B.	MGMT. INFO. SYSTEMS	901
DE BERGERAC, CYRANO L.	ACCOUNTING	293
DICKENS, CHARLES L.	ACCOUNTING	573
DONOHUE, TROY W.	MANUFACTURING	328
EARHARDT, AMELIA J.	ACCOUNTING	818
EARP, WYATT L.	PERSONNEL	342
EVANS, DALE C.	MGMT. INFO. SYSTEMS	237
FIELD, SALLY C.	RESEARCH & DEVELOP.	234
FISHER, CARRIE S.	MARKETING	239
FONZARELLI, ARTHUR E.	MGMT. INFO. SYSTEMS	678
GHANDI, INDIRA W.	MARKETING	789
GILDER, BOB T.	RESEARCH & DEVELOP.	610
GRETSKY, WAYNE B.	ADMINISTRATION	670
HARRIS, RICHARD B.	ACCOUNTING	523
HEPBURN, KATHARINE W.	ADMINISTRATION	793
HUNT, WALTER E.	PLANNING	232
JABBAR, KAREEM A.	ADMINISTRATION	927
JACOBSEN, BABY DOLL J.	ADMINISTRATION	110
JAGGER, MICK A.	MGMT. INFO. SYSTEMS	207
JEFFERSON, GEORGE W.	MARKETING	308
KAPLAN, GABRIEL R.	PERSONNEL	346
KEATON, DIANE T.	MANUFACTURING	363
LASORDA, TOM F.	ACCOUNTING	324
LEE, ERIN M.	MARKETING	670
LIEBERMAN, NANCY A.	ADMINISTRATION	234
MEAD, MARGARET R.	PERSONNEL	490
MILLIKEN, ROBERT L.	ACCOUNTING	122
MOORE, SHARON A.	MGMT. INFO. SYSTEMS	222
MORE, THOMAS A.	MGMT. INFO. SYSTEMS	311
MORTON, CHET W.	MARKETING	847
MOSELEY, MARK N.	PLANNING	664
NAVRATILOVA, MARTINA B.	MGMT. INFO. SYSTEMS	212
NELSON, OZZIE E.	ADMINISTRATION	234
NEWTON JOHN, OLIVIA A.	MARKETING	625
O'HARA, SCARLETT E.	FIELD ENGINEERING	88

SORTING CRITERIA

RE-SEQUENCING RECORDS IN A USER DATA FILE

* RE-SEQUENCE OF SPECIFIC RECORDS (SELECT CRITERIA)
* RE-SEQUENCE OF ALL RECORDS
* CREATION OF AN OUTPUT FILE CONTAINING ALL RE-SEQUENCED RECORDS OR NO NEW FILE CREATED
* NO AFFECT ON THE MASTER FILE

10 LEVELS OF SORT (SIMULTANEOUS)

ASCENDING (A-Z; 1-100) OR DESCENDING (Z-A; 100-1)

EXAMPLE:

TWO LEVELS OF SORT

ASCENDING: DEPARTMENT
DESCENDING: SALARY

WITHIN EACH DEPARTMENT, LIST ALL EMPLOYEES FROM THE HIGHEST SALARY TO THE LOWEST

DRAFT

ADMINISTRATIVE AUTOMATED OFFICE SYSTEMS FEASIBILITY STUDY, IMPLEMENTATION AND OPERATIONAL GUIDELINES

August 18, 1982

DRAFT

I acknowledge receipt of the **Administrative Automated Office Systems Feasibility Study, Implementation and Operational Guidelines.**

Name: _____

Address: _____

_____

_____

Point of Contact (if other than yourself):

_____

Please send to:

Robert M. Morgan
EPA Word Processing Coordinator
Management Information and Data Systems Division
PM 218
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460