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CENTRAL BIBLIOGRAPHIC SYSTEM
TERMINAL REQUIREMENTS STUDY

TASK I REPORT
TERMINAL REQUIREMENTS

HOBBS ASSOCIATES, INC.
CORONA DEL MAR, CALIF.

THIS REPORT PREPARED BY
COMPUTER COMMAND & CONTROL COMPANY
WASHINGTON, D. C.

SUBMITTED TO
INFORMATION SYSTEMS OFFICE
LIBRARY OF CONGRESS
WASHINGTON, D. C. 20540

NOVEMBER 1969



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PART I

1. INTRODUCTION.

1.1 BACKGROUND.

1.1.1 GENERAL.

The Library of Congress Master Plan for automation of its Central Bibliographic System (CBS) includes a task for the development of system specifications for the proposed automated system. Previous work accomplished includes a survey of the present manual system, a systems requirements analysis and a functional description of a recommended system. This report is partially responsive to the sub-task of preparation of terminal performance specifications for the system.

1.1.2 THE UNITED AIRCRAFT STUDY.

The Hamilton Standard System Center of the United Aircraft Corporation under Library of Congress Contract LC 702 has produced a series of reports which were made available as part of the supporting documentation to the contractor for this study. These reports have been utilized extensively for this report. Basic information from Appendices E and F of the Task II report, traffic flow volumes and flow volume derivations from Volume III, Part I of the Task III report and data set descriptions from Volume III, Part II were utilized without verification.

1.1.3 SCOPE OF TERMINAL STUDY.

1.1.3.1 PRESENT CONTRACT WORK.

The Library of Congress has undertaken two special studies to provide the Library with specifications for its computer system based upon the work completed during previous tasks of the CBS study. The first of these studies, which will include design parameters, file organization schema and systems, and specifications for the automated CBS will be accomplished by Interactive Sciences Corporation of Braintree, Massachusetts.

The second study will be carried out by Hobbs Associates of Corona Del Mar, California, assisted by Computer Command and Control Company of Washington, D. C. The objectives of the second study, Task 1 of which is reported on herein, is to conduct a state-of-the-art survey in computer related terminals as they would be used in the CBS in the Library of Congress and evaluate them with respect to performance specifications which are also to be developed.

1.1.3.2 CONTRACT REQUIREMENTS.

The study will involve the following tasks and sub-tasks as stipulated in the contract.

TASK 1. Performance Specifications

- a. From the functional requirements (See Section 1 of the ATTACHMENT to RFP 950 incorporated herein and made a part hereof by reference) and supporting documentation supplied by the Library to the Contractor, a set of quantitative performance specifications shall be prepared.

TASK 2. State-of-the-Art Survey

- a. Conduct a survey of the state-of-the-art in terminals as it relates to the performance specifications.
- b. This survey shall not be restricted to any single supplier of terminals.
- c. This survey shall project developments through 1972 divided into three (3) time periods, as follows:
 - (1) with current capabilities
 - (2) available by mid-1970
 - (3) available by mid-1972.

TASK 3. Analyses

- a. The state-of-the-art as determined by the survey

shall be evaluated with respect to the performance specifications. In making this evaluation:

- (1) Claims of terminal suppliers which appear doubtful in the judgment of the Contractor, will be so indicated.
 - (2) Interdependence among performance factors will be taken into account.
- b. As a result of this evaluation, performance specifications which cannot be met either with current capabilities or those under development shall be identified; for these, the following information shall be given.
- (1) potential technologies.
 - (2) development status.
 - (3) firms most likely to be eventual suppliers.
 - (4) development costs and times.
 - (5) development risks from the standpoint of the Library.
- c. Cost and trade-off studies of alternative terminal configurations shall be made (See Section III of the ATTACHMENT to RFP 950).

1.1.3.3 TASK 1 REQUIREMENTS AND INTERNAL PLAN.

Task 1, the establishment of functional requirements and performance specifications was assigned to Computer Command and Control Company for primary responsibility with assistance and review by Hobbs Associates. The Task 1 effort has been divided into the following sub-tasks:

1-1 Requirements Analysis

- Analysis of existing documentation.

- Discussions with Library of Congress Personnel.

1-2 Preparation of Performance Specifications

- Review of UAC statistics.
- Development of functional requirements for terminal categories/subcategories.
- Determination of 1980 traffic loads and number of terminals.
- Derivation of terminal modules from category functional requirements.
- Development of matrix of terminal modules vs categories.
- Determination of number of modules required of each type.
- Establishment of performance specifications for each terminal module.

1.2 SUMMARY OF LIST OF CATEGORIES AND MODULES.

1.2.1 LIST OF TERMINAL CATEGORIES/SUBCATEGORIES.

The following is a list of terminal categories/subcategories* in this study:

- PIN Assignment.
- Material Procurement.
- Material Status Recording.
- Accessioning.
- Cataloging.
 1. Preliminary cataloging.
 2. Descriptive cataloging.

* See Section 2.3.1 for definition of a "category."

- 3. Subject cataloging, classification and shelf-listing.
- 4. Reviewing.
- Stack Control.
 - 1. Drawing material.
 - 2. Reshelving material.
 - 3. Inventorying material.
- Reference.
- Reading Room Control.
- Material Request.
- Loan Control.
 - 1. Charging.
 - 2. Discharging.
- Invoice Clearing

1.2.2 MODULES.

The following is a list of terminal modules¹ utilized in this study together with character sets² considered:

- 1. Full printer - standard Roman character set
- 2. Full printer - extended Roman character set
- 3. Full printer - combined sets (extended Roman and selected Non-Roman)
- 4. Full printer - combined sets (extended Roman and selected set for Oriental language or special symbols)
- 5. Full printer - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)

¹See Section 2.5.1 for definition of a module.

²Character sets are defined in Appendix A.

6. Machine readable media generator - standard Roman character set
7. Machine readable media generator - extended Roman character set
8. Machine readable media generator - combined sets (extended Roman and selected Non-Roman)
9. Machine readable media generator - combined sets (extended Roman and selected set for Oriental language or special symbols)
10. Machine readable media generator - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
11. Marking device - numeric character set
12. Machine readable unit document generator - standard Roman character set
13. PIN labeler - standard Roman character set
14. Full visual display - extended Roman character set
15. Full visual display - combined sets (extended Roman and selected Non-Roman)
16. Full visual display - combined sets (extended Roman and selected set for Oriental language or special symbols)
17. Full visual display - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
18. Keyboard - standard Roman character set
19. Keyboard - extended Roman character set
20. Keyboard - combined sets (extended Roman and selected Non-Roman)

21. Entry device - Oriental language character set
22. Entry device - special symbols
23. Preprogrammed data entry device - numeric character set
24. Machine readable unit document reader - standard Roman character set
25. PIN reader - standard Roman character set
26. Badge reader - numeric character set
27. ID Code generator - numeric character set
28. Time/date code generator - numeric character set
29. Calculating unit - numeric character set

2. METHOD OF APPROACH.

2.1 REVIEW OF UAC REPORT AND OTHER DOCUMENTATION.

The primary source of background information for this report was the documentation furnished the contractor by the Library of Congress. This consisted of applicable portions of the United Aircraft report plus many Library internal documents, reports and descriptive material. In addition, cognizant personnel attended the orientation briefing for Task IV and terminal study contractors given by Library of Congress personnel on 10-11 July 1969. The information and handouts furnished during this briefing were of great assistance in clarifying and updating the documentation previously furnished. All documentation furnished was thoroughly reviewed and together with the information furnished during personal interviews with the Library of Congress personnel forms the basis for this report.

2.2 DISCUSSIONS WITH THE LIBRARY OF CONGRESS PERSONNEL.

Throughout the study effort presented herein continuous contact was maintained with the ISO of the Library of Congress and advice from its personnel was solicited. In addition, special meetings were arranged with other Library personnel to assist in the answers to specific problems encountered during the progress of the study. Examples of these are a meeting with the Head of the Space Management Office of the Library of Congress to determine environmental data and meetings with library information system specialists to observe and discuss functions carried out in the cataloging department.

2.3 DETERMINATION OF FUNCTIONAL REQUIREMENTS FOR TERMINAL CATEGORIES/SUBCATEGORIES.

2.3.1 TERMINAL CATEGORIES.

The list of terminal categories was obtained by study of all available documentation, discussion with Library of Congress personnel and subsequent analysis of the problem. For

purposes of this study a terminal category is defined as a terminal module or group of modules at which a worker carries out a specific function in the system. It may also be referred to as a terminal station. In developing the categories, the sole consideration was its functional desirability in the system and not whether the state-of-the-art could produce the modules needed in any specific time frame.

2.3.2 DETERMINATION OF FUNCTIONAL REQUIREMENTS.

The functional requirements of the selected categories were determined from documentation furnished by the Library of Congress and discussions with Library personnel. These are presented in Section 3 of this study in outline form and furnish information such as user profile, operations profile including tasks to be performed and representative inputs and outputs. Descriptions of these forms are detailed in Section 3.2. Documentation used was Volume III, Parts 1 and 2 of the UAC report, "Automation of the Order Division Design Report", August 20, 1969, ISO memo "UAC Data Set Input/Output Mapping and Definitions", 25 August, 1969, ISO "SYSTEM FORMAT", 26 August 1969 and other information furnished by Library personnel.

2.4 DETERMINATION OF MAXIMUM (1980) TRAFFIC LOADS AND QUANTITATIVE FACTORS UTILIZING UAC DEVELOPED ALGORITHMS.

In order to examine maximum traffic loadings which might be imposed upon the terminal subsystem, the full CBS traffic pattern projected to 1980 was used rather than the 1972 data that was developed and listed in Tables VIII and IX, page 70-72 of the Task III Report, Volume II of United Aircraft Study. Further analysis of Tables VI, page A-14 of Task III, Volume IV indicated that the 1980 data was compiled from across-the-board percentage increases of 1972 data rather than on complete analysis of the load algorithms as had been done for 1972. The projection was accomplished by analyzing the 1972 UAC data to determine how the information of Table VIII mentioned above had been obtained. This

required the use of Parts I and II of Volume III of the Task III report and Volume II (Appendices E and F) of the Task II report. A byproduct of this study were the verified and corrected figures for 1972 system loads and numbers of terminals which are included in this report.

Based upon the algorithms utilized for the 1972 data, an analysis of the entire system 1980 loads and numbers of terminals was conducted. There were instances where incomplete documentation required best estimation techniques but, in general, these were in functions which had little effect on final load data. When best estimation techniques were required, data from Appendix "E" of Volume II, Task II Report and/or ratio factors indicated in Table IV, Page A-14, of Task III Report Volume IV were utilized.

One factor which prevents the use of this data in its present form is that the final functional analysis of the system in Section 3 provides a group of terminal categories and modules which are expanded and in more detail than the terminal functions and devices listed in both the 1972 and 1980 UAC summaries. This information was therefore used only as a base for the final quantitative determinations which appear in Section 6 of this report.

2.5 DERIVATION OF MODULES FROM CATEGORY/SUBCATEGORY
FUNCTIONAL DESCRIPTION AND ESTABLISHMENT OF MATRIX
OF COMBINATIONS OF MODULES FOR EACH CATEGORY.

2.5.1 DEFINITION.

For purposes of this study a terminal module may be defined as a device such as a keyboard or CRT that performs a specific function in a given terminal category. The use of modular type categories are advantageous in this system because they allow for evolutionary development of the automated system.

2.5.2 DERIVATION OF MODULES.

The terminal modules were developed with the terminal category functional characteristics as a base. These characteristics were examined in the context of input device-output device factors. A series of matrices were mapped showing various classes of input and output devices. The following factors were considered:

Input Devices - Factors

1. Number of fields per message
2. Length of fields per message
3. Frequency of occurrence of messages
4. Character sets represented in messages

Output Devices - Factors

1. Number of fields per message
2. Length of fields per message
3. Forms of presentation of messages
4. Character sets represented in messages

All of the character sets are defined in Appendix A.

A listing of similar functions was then developed that could be satisfied by the same or corresponding modules utilizing the information from the class matrices described above. This resulted in a list of modules which were utilized for the purposes of this study.

2.5.3 ESTABLISHMENT OF MATRIX OF COMBINATIONS OF CATEGORIES AND MODULES.

A matrix was prepared delineating which modules would be required to carry out the functions of the various categories. Further analysis was required to make a quantitative breakdown of the functions and sub-functions in order to determine the

total numbers of each type of module required for the system. UAC 1980 data was used as a base for this investigation, but the differences in functions between the UAC report and this report required some arbitrary decisions that were based upon discussion with Library personnel.

2.6 PREPARATION OF DESCRIPTIVE AND QUANTITATIVE PERFORMANCE SPECIFICATIONS OF TERMINAL MODULES.

The elements of functional requirements of the terminal categories were used as the basis for the descriptive and quantitative performance specifications. A performance specification was prepared for each module recommended. A form was developed which is utilized for all modules. These completed forms are the body of Section 7 of this report.

3. DESCRIPTION AND FUNCTIONAL REQUIREMENTS OF TERMINAL CATEGORIES.

3.1 DERIVATION OF TERMINAL CATEGORIES/SUBCATEGORIES.

A review of the UAC report, study of other documentation furnished by the ISO and discussions with Library of Congress personnel resulted in the following list of categories/subcategories to be utilized in the automated CBS of the Library of Congress.

- A. PIN Assignment
- B. Material Procurement
- C. Material Status Recording
- D. Accessioning
- E. Cataloging
 - 1. Preliminary cataloging
 - 2. Descriptive cataloging
 - 3. Subject cataloging, classification and shelf-listing
 - 4. Reviewing
- F. Stack Control
 - 1. Drawing material
 - 2. Reshelving material
 - 3. Inventorying material
- G. Reference
- H. Reading Room Control
- I. Material Request
- J. Loan Control
 - 1. Charging
 - 2. Discharging
- K. Invoice Clearing

3.2 FORMAT FOR FUNCTIONAL REQUIREMENTS OF TERMINAL CATEGORIES.

The functional requirements for the categories listed in Paragraph 3.1 above were developed in **three sections** as follows:

- I. General
- II. User Profile
- III. Operations Profile

Descriptions of formats used and explanations where required are included in the following paragraphs.

3.2.1 GENERAL.

The general section includes a prose description of each category with sufficient information to identify its general location and function in the Central Bibliographic System of the Library of Congress.

3.2.2 USER PROFILE.

The user profile is presented in the following standard format (paragraph designations refer to the equivalent paragraph designations in Form II. See Figure 1.)

Heading - category from Paragraph 3.1

- subcategory from Paragraph 3.1

- reference number from Paragraph 3.1

- a. Organizational identification - these are coded from Appendix C, the "Library of Congress Location Codes and Organizational Department Codes"
- b. Present location (future planned location) - these are the present and future planned physical locations of the organizational offices in the Library of Congress. The future planned locations are based on construction of the new James Madison Building. This information was coded from Appendix C.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category:	Reference No. _____
Subcategory:	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS

Figure 1
3-3

- c. Job classification - this is title and position description number of personnel expected to perform at the various categories.
- d. User constraints - any terminal user constraints which could affect terminal design are listed.

3.2.3 OPERATIONS PROFILE.

The operations profile is described with three standard formats:

- a. TASKS TO BE PERFORMED (Form IIIa)
- b. INPUTS - (Form IIIb)
- c. OUTPUTS - (Form IIIc)

The contents of these forms are described in detail below.

3.2.3.1 OPERATIONS PROFILE - TASKS TO BE PERFORMED.

This form consists of the following items (paragraph designations refer to the equivalent paragraph designations in Form IIIa. See Figure 2.)

- Heading - category from Paragraph 3.1
 - subcategory from Paragraph 3.1
 - reference number from Paragraph 3.1

1. Function - the operations to be performed at a terminal are described in terms of a standard list of primitive functions. (See below.) Some terminals have two or more distinct set of operations and these are described in separate function sequences. The order in which the functions are listed does not necessarily imply a prescribed order for the operations. The following primitive functions are used:

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category:	Reference No. _____
Subcategory:	

1. Functions:
2. Modes of operation: [Check one or more in each column]
On-line _____ Single user _____ Attended and Unattended _____
Off-line _____ Multiple users _____ Attended only _____
3. Type(s) of inputs:
4. Type(s) of outputs:
5. Remarks:

PRIMITIVE FUNCTIONS

- a. Generate: automatic insertion of data into a message being transmitted from a terminal.
- b. Issue: data output from the system in a human or machine readable form. The connotation of its use in this report is that of data output in permanent form.
- c. Transmit: dispatching of data from one terminal to another system component.
- d. Consult: inputting, processing, searching and displaying of data when existence of a record is not certain.
- e. Create: inputting of data which is variable in content.
- f. Record: inputting of data which is precoded in a standard format.
- g. Recall: inputting, processing, searching and displaying of data when existence of a record is certain.
- h. Revise: updating an existing display or record.
- i. Calculate: performing arithmetic operations on data and displaying results prior to transmission.

2. Modes of operation

- a. On-line, off-line or both -
On-line indicates terminal is physically connected to the central computer. Off-line indicates terminal is not physically connected to the central computer.
- b. Single user of terminal or multiple users -
Single or multiple users indicates the normal daily use pattern of a terminal user. For example, a terminal shared by a number of persons throughout the day is designated as having multiple users.

c. Terminal attended and unattended or attended only -

Indicates whether or not a user is always present when the terminal is operating. For example, a terminal that issues printed messages automatically, upon signal from the central computer, would be operating in an unattended mode.

3. Types of inputs - Inputs at the terminal required to carry out the functions described in Subparagraph 1 are described in terms of the ISO System Format "Schedules of Inputs" (See Appendix D).
4. Types of outputs - Outputs from the terminal required to carry out the functions described in Subparagraph 1 are described in terms of the ISO System Format "Schedules of Outputs" (See Appendix D).
5. Remarks - Explanatory and amplifying information to further clarify other data given in this form is included here.

3.2.3.2 OPERATIONS PROFILE - INPUTS.

This is a listing of representative characteristics for the inputs listed in Form IIIa. The characteristics are derived from the UAC and Order Division Design Documents (see item 5 below). They are representative only because in deriving the lists of terminal categories/subcategories and expanding the functional requirements from the UAC report it was not possible to identify inputs directly in all cases.

In some instances, a UAC data set or Order Division message has been used which, although representative of the data being inputted has a different meaning or purpose than the original context. This applies, as well, to the outputs of an Operation Profile. (See, for example, outputs c and d for Category E-3 and output d under Category E-1).

This form consists of the following items (paragraph designations refer to the equivalent paragraph designations in Form IIIb, see Figure 3).

Heading - category from Form IIIa
- subcategory from Form IIIa
- reference number from Form IIIa
- input number from Form IIIa
- Types of input from Form IIIa - these are listed one to a form except where they can be represented by the same sets of data referred to in Item 5.

1. Number of characters - average (See Item 2)
2. Number of data elements - average
These are the average of the numbers of characters and data elements in the referenced UAC and Order Division data sets (Item 5, below).
3. Format - Information on fixed or variable number of data elements and length of data elements was obtained by analysis of the referenced UAC and Order Division data sets.
4. Character sets - Information on required character sets was obtained by examining the data elements in the referenced data sets and the list of functions to be performed from Form IIIa. For example, if a function was "Recalls base catalog record," it was readily apparent that such a record might be in any of the character sets defined in Appendix A.
5. References - These are references from the UAC report, Task III, Volume III, Part II (identified by data set description number such as B1-N) and Order Division messages from "Automation of the Order Division Design Report," ISO, Library of Congress, August 20, 1969 (identified by message number such as O.D. 16).

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category:	Sheet a. Reference No. _____
Subcategory:	Input No. _____
Type(s): [Refer to Sheet a.]	

1. Number of characters (average):	_____
2. Number of data elements (average):	_____
3. Format: [Check one in each column]	
Fixed number of data elements	_____
Variable number of data elements	_____
	Length of data elements:
	All fixed _____
	Some fixed _____
	None fixed _____
4. Character sets: [Check one or more]	
Standard Roman	_____
Extended Roman	_____
Non-Roman	_____
Oriental	_____
Special	_____
5. References: [Source(s) for above]	
6. Remarks:	

Figure 3
3-9

6. Remarks - Explanatory and amplifying information to further clarify other data appearing in this form are included here.

3.2.3.3 OPERATIONS PROFILE - OUPUTS.

This is a listing of representative characteristics for the outputs listed in Form IIIa. The characteristics are derived from the UAC and Order Division Design Documents (see item 7 below). They are representative for the same reasons as explained in Paragraph 3.2.3.2 for inputs. This form consists of the following items (paragraph designations refer to the equivalent paragraph designations in Form IIIc, see Figure 4).

Heading - category from Form IIIa
- subcategory from Form IIIa
- reference number from Form IIIa
- Types of output from Form IIIa - these are listed one to a form except where they can be represented by the sets of data referred to in Item 7.

1. Number of characters - average (see Item 2)
2. Number of data elements - average
These are the averages of the numbers of characters and data elements in the referenced UAC and Order Division data sets (Item 7, below).
3. Format - Information on fixed or variable number of data elements and length of data elements was obtained by analysis of the referenced UAC and Order Division data sets.
4. Character sets - Information on required character sets was obtained by examining the data elements in the referenced data sets and the list of functions to be performed from Form IIIa.
5. Forms of output - This information was determined from analysis of function to be performed and appropriate data set references. The output

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category:	Sheet a. Reference No. _____
Subcategory:	Output No. _____
Type(s): [Refer to Sheet a.]	

1. Number of characters (average):	_____
2. Number of data elements (average):	_____
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements _____	All fixed _____
Variable number of data elements _____	Some fixed _____
	None fixed _____
4. Character sets: [Check one or more]	
Standard Roman _____	Non-Roman _____
Extended Roman _____	Oriental _____
Special _____	
5. Form(s) of output: [Check one or more]	
Machine readable _____	Human readable _____
	Permanent _____
	Transient _____
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.) _____	Overnight (24 hours) _____
Rapid (during the day) _____	Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]	
8. Remarks:	

Figure 4
3-11

can be machine readable, human readable or both. If human readable, it can be permanent (hard copy), transient (soft copy) or both.

6. Reaction time - This was divided into four categories:

- Immediate (3-5 seconds)
- Rapid (during the day)
- Overnight (24 hours)
- Time available (more than 24 hours)

This represents the elapsed time between the completion of an input and the beginning of the terminal's corresponding output.

7. References - These are references from the UAC report, Task III, Volume III, Part II and the "Automation of the Order Division Design Report" as described in Paragraph 3.2.3.2.

8. Remarks - These are explanatory and amplifying information to further clarify other data appearing in this form.

3.3 LIST OF CATEGORIES

I. GENERAL DESCRIPTION.

CATEGORY A - PIN ASSIGNMENT.

The concept of a machine readable label containing a Piece Identification Number (PIN) is new in the Library of Congress. As a result, its methods of implementation are not clearly defined at this time and must be developed in later phases of this study depending on the present and projected state-of-the-art. Conceptually, the PIN will be a small, unobtrusive label permanently attached to the outside cover of an item as soon as possible after it is accessioned. The label contains information which uniquely identifies the item. The PIN label must be both human readable and machine readable. It will be highly desirable that the PIN label additionally carry the Library of Congress call number which will require PIN assignment terminals at completion of the shelflisting operation in addition to after accessioning. The process of adding a call number to a PIN label can be accomplished either by employment of a "temporary" label which is replaced after shelflisting by a "permanent" one or a label to which call number data can be added in some relatively simple manner after it is attached to an item. When the label is read at any terminal station, the PIN information is recorded, decoded and used to carry out identification, processing and retrieval functions.

The operational requirements necessary to effect a PIN Assignment category are: generating next available PIN to be assigned, linking PIN to machine readable record, creating label with coded PIN, attaching label to item, and verifying that proper record is linked to item.

There are several feasible methods for satisfying the above requirements. One such method is as follows. The operation is divided into two sequences. Sequence 1 carries out

the function of assigning a PIN and associating the PIN with a piece of bibliographic material and its record. Sequence 2 controls the generation of the PIN label and its attachment to its pre-designated item. In sequence 1, a machine record of the item may already be in existence. If so, the record is recalled and the generated PIN is associated with the record. If a machine readable record does not previously exist, one is created at an Accessioning terminal (Category D).

As a result of the assignment and linkage of the PIN, it will then be possible to generate the PIN label. This could be done by issuing a card at completion of sequence 1 which contains the assigned PIN in machine readable form. The card is then placed with the item and sent to the PIN labeling operation itself (sequence 2). Here the card is fed into a terminal which reads the appropriate information from the card and dispenses (and attaches) the label. The attachment could be performed manually or automatically. The labeled item would then be sent to a verification terminal, which may or may not be a part of the PIN Assignment terminal category.

The entire operation (Sequence 1 and 2) also could be carried out on-line.

A special consideration which must be recognized is that there should be a method available to automatically duplicate PIN labels. Paperback and softbound materials which must be bound after cataloging, will require duplicating PIN labels. Also, loss or damage would require PIN label duplication.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: PIN Assignment	Reference No. <u> A </u>
Subcategory:	

a. ORGANIZATIONAL IDENTIFICATION	b PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CON- STRAINTS
E060	L251(L351)	Not Applicable(New Job)	None Known
E072	L231(L351)	"	"
E111	L291(L361)	"	"
E111	L231(L361)	"	"
E180	L211(L311)	Labeler	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: PIN Assignment	Reference No. <u> A </u>
Subcategory:	

1. Functions: Sequence 1: a. Recalls base catalog records
b. Issues PIN message
c. Generates status data
d. Transmits status data
Sequence 2: a. Records PIN data
b. Issues PIN label

2. Modes of operation: [Check one or more in each column]
On-line x Single user Attended and Unattended
Off-line x Multiple users x Attended only x

3. Type(s) of inputs:
Sequence 1: a. Material checkin data
Sequence 2: a. Process control message

4. Type(s) of outputs:
Sequence 1: a. Process control message
Sequence 2: a. PIN label

5. Remarks:
 1. Sequence 1 carries out the function of assigning a PIN and associating the PIN with a piece of bibliographic material and its record. Sequence 2 controls the physical attachment of a PIN to its designated piece of material.
 2. Sequences 1 and 2 will probably be carried out by different personnel at different locations.

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: PIN Assignment	Sheet a. Reference No. <u>A</u>
Subcategory:	Input No. <u>1a</u>
Type(s): [Refer to Sheet a.] a. Material checkin data	

1. Number of characters (average):	<u>142</u>	
2. Number of data elements (average):	<u>12</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	Length of data elements:
Variable number of data elements	<u>X</u>	All fixed <u> </u>
		Some fixed <u> X </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	
Extended Roman	<u> X </u>	
Non-Roman	<u> X </u>	
Oriental	<u> X </u>	
Special	<u> X </u>	
5. References: [Source(s) for above]		
B1-N		
B1-O		
6. Remarks:		
Sequence 1		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: PIN Assignment	Sheet a. Reference No. <u>A</u>
Subcategory:	Input No. <u>2a</u>
Type(s): [Refer to Sheet a.]	
a. Process control message	

1. Number of characters (average):	<u>57</u>	
2. Number of data elements (average):	<u>3</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	<u> </u>	All fixed <u>X</u>
		Some fixed <u> </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above]		
O.D.3		
6. Remarks:		
Sequence 2		

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: PIN Assignment	Sheet a. Reference No. <u> A </u>
Subcategory:	Output No. <u> 1a </u>
Type(s): [Refer to Sheet a.]	
a. Process control message	

1. Number of characters (average):	<u> 57 </u>
2. Number of data elements (average):	<u> 3 </u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements	All fixed <u> X </u>
Variable number of data elements	Some fixed <u> </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman <u> X </u>	Non-Roman <u> </u>
Extended Roman <u> </u>	Oriental <u> </u>
Special <u> </u>	
5. Form(s) of output: [Check one or more]	
Machine readable <u> X </u>	Human readable <u> X </u>
	Permanent <u> X </u>
	Transient <u> </u>
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.) <u> X </u>	Overnight (24 hours) <u> </u>
Rapid (during the day) <u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]	
O.D.3	
8. Remarks:	
Sequence 1	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: PIN Assignment

Sheet a. Reference No. A

Subcategory:

Output No. 2a

Type(s): [Refer to Sheet a.]

a. PIN label

1. Number of characters (average): 29
2. Number of data elements (average): 3
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed _____
Variable number of data elements X Some fixed X
None fixed _____
4. Character sets: [Check one or more]
Standard Roman X Non-Roman _____
Extended Roman _____ Oriental _____
Special _____
5. Form(s) of output: [Check one or more]
Machine readable X Human readable X
Permanent X
Transient _____
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
F2-11 (See also D2-B)
8. Remarks:
 1. Sequence 2
 2. Character set may be numerals only or alphanumeric

3.3.2

FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY B: MATERIAL PROCUREMENT

Recommended acquisitions for the Library of Congress come from many sources. Some of these are dealers, Library of Congress overseas offices, exchange partners, and Library personnel. These various proposed acquisitions are then reviewed and the decision is made as to whether to acquire the titles or not. If the decision is to acquire the title, an acquisition source is selected. This source is normally purchase, exchange and gift, or other source such as copyright. The final acquisition function is the preparation of the appropriate purchase or exchange and gift message with appropriate follow up.

In carrying out the above basic functions, the Order Division personnel and exchange and gift specialists must first be able to consult the catalog and other records to furnish sufficient information upon which to base the review decision. They must then again consult the system to select the best acquisition source. After this decision, the system can issue on demand the appropriate purchase or exchange and gift message. At the same time, a machine readable procurement record will be established in the system to assist link up of item and its record in the accessioning process.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Material Procurement Subcategory:	Reference No. <u> B </u>
--	--------------------------------

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E060	L251(L351)	Order Librarian (GS-1410-7-8135) Sr. Bibliographer/Searcher (GS-1410-6-5348)	None Known "
E072	L231(L351)	Exchange Specialist (GS-1410-9-7990, 2, 4,6)	"
E072	L231(L351)	Gift Accessioner (GS-1411-6-8464)	"

III. Operations Profile

a. Tasks to be Performed

Category: Material Procurement

Reference No. B

Subcategory:

1. Functions:
1. Consults catalog and other records
 2. Records user ID data
 3. Creates procurement record
 4. Recalls procurement record
 5. Revises procurement record
 6. Transmits procurement data
 7. Issues procurement message
 8. Issues procurement feedback message

2. Modes of operation: [Check one or more in each column]

On-line X Single user Attended and Unattended

Off-line X Multiple users X Attended only X

3. Type(s) of inputs:

- a. Purchase requisition data
- b. Exchange request data
- c. Bibliographic/auxiliary search data

4. Type(s) of outputs:

- a. Purchase order action notices
- b. Exchange action notices
- c. Purchase orders
- d. Exchange request slips
- e. Bibliographic/auxiliary data

5. Remarks:

This category should, as an option, be able to operate in off-line mode.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Material Procurement	Sheet a. Reference No. <u>B</u>
Subcategory:	Input No. <u>a,b</u>
Type(s): [Refer to Sheet a.]	
a. Purchase requisition data	
b. Exchange request data	

1. Number of characters (average):	<u>168</u>	
2. Number of data elements (average):	<u>24</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	Length of data elements:
Variable number of data elements	<u> X </u>	All fixed <u> </u>
		Some fixed <u> </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	
Extended Roman	<u> X </u>	
Non-Roman	<u> X </u>	
Oriental	<u> X </u>	
Special	<u> X </u>	
5. References: [Source(s) for above]		
O.D.1,2		
B1-E, F, I, J, K		
C4-D		
6. Remarks:		
None		

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Material Procurement	Sheet a. Reference No. <u>B</u>
Subcategory:	Input No. <u>C</u>
Type(s): [Refer to Sheet a.] c. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>23</u>	
2. Number of data elements (average):	<u>4</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	Length of data elements:
Variable number of data elements	<u>X</u>	All fixed <u> </u>
		Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above] C1-F, C2-B, C3-C		
6. Remarks:		
None		

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Procurement	Sheet a. Reference No. <u> B </u>
Subcategory:	Output No. <u> a, b </u>

Type(s): [Refer to Sheet a.]

a. Purchase order action notices

b. Exchange action notices

1. Number of characters (average):	<u> 222 </u>	
2. Number of data elements (average):	<u> 12 </u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed
Variable number of data elements	<u> X </u>	Some fixed <u> X </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u> X </u>
Extended Roman	<u> X </u>	Oriental <u> X </u>
	<u> Special </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u> X </u>
		Permanent <u> X </u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u> </u>	Overnight (24 hours) <u> X </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
		C2-E
8. Remarks:		
		None

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Procurement	Sheet a. Reference No. <u> B </u>
Subcategory:	Output No. <u> c, d </u>
Type(s): [Refer to Sheet a.]	
c. Purchase orders	
d. Exchange request slips	

1. Number of characters (average):	<u> 283 </u>	
2. Number of data elements (average):	<u> 22 </u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed
Variable number of data elements	<u> X </u>	Some fixed <u> X </u>
6. None fixed		<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u> X </u>
Extended Roman	<u> X </u>	Oriental <u> X </u>
Special	<u> x </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u> X </u>
		Permanent <u> X </u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u> </u>	Overnight (24 hours) <u> X </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
C5-B, C O.D.9, 10		
8. Remarks:		
O.D.9 and 10 treated as one message for averaging.		

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: <u>Material Procurement</u>	Sheet a. Reference No. <u>B</u>
Subcategory:	Output No. <u>e</u>
Type(s): [Refer to Sheet a.] e. Bibliographic/auxiliary data	

1. Number of characters (average):	<u>139</u>
2. Number of data elements (average):	<u>19</u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements	All fixed _____
Variable number of data elements	Some fixed <u>X</u>
None fixed _____	_____
4. Character sets: [Check one or more]	
Standard Roman _____	Non-Roman <u>X</u>
Extended Roman <u>X</u>	Oriental <u>X</u>
Special <u>X</u>	_____
5. Form(s) of output: [Check one or more]	
Machine readable _____	Human readable <u>X</u>
_____	Permanent _____
_____	Transient <u>X</u>
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.) <u>X</u>	Overnight (24 hours) _____
Rapid (during the day) _____	Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]	
C1-F, C2-A, C3-B	
8. Remarks:	
None	

I. GENERAL DESCRIPTIONCATEGORY C: MATERIAL STATUS RECORDING

After an item has been selected for the Library's collection, it is subjected to a great deal of processing in which it moves back and forth among many different locations. Although, theoretically the movement of a peice is from work station to work station, i.e., preliminary cataloger, to descriptive cataloger, to subject cataloger, etc., backlogs of work may require that a book be rerouted or held up in temporary storage for a short period of time. In order to provide for a finer control over the movement of materials, material status recording terminals are provided. For example, an item leaving a descriptive cataloger's desk, on its way to subject cataloging would be passed through a material status recording where its status and position would be automatically recorded. This type of terminal also would be used in other Library locations where it would be a part of such categories as Charging, Discharging, Reading Room Control and Stack Control. The basic function of this category is to record, generate and input into the system identification, status and transaction data. It will also issue, on demand routing and "priority" slips.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Material Status Recording	Reference No. <u> C </u>
Subcategory:	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E060	L251(L351)	Order Control Clerk (GS-301-4-5351)	None Known	
E060	L251(L351)	Acquisition Assistant (GS-1410-5-5358)	"	
E072	L231(L351)	Not Applicable(New Job)	"	
E110	L231(L361)	"	"	
E120	L241(L361)	"	"	
E130	L231(L361)	"	"	
E140	L231(L361)	"	"	
F080	L111	"	"	
F100	L111(L322)	"	"	
F110	L222	"	"	
F140	L252	"	"	
F170	L262	"	"	
F180	L192	"	"	
F180	L292	"	"	
F180	L392	"	"	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Material Status Recording Reference No. C

Subcategory:

1. Functions:
- 1. Records PIN
 - 2. Creates transaction data
 - 3. Generates status data
 - 4. Transmits PIN, transaction and status data
 - 5. Issues on demand material control message

2. Modes of operation: [Check one or more in each column]

On-line	<u> x </u>	Single user	<u> </u>	Attended and Unattended	<u> </u>
Off-line	<u> </u>	Multiple users	<u> x </u>	Attended only	<u> x </u>

3. Type(s) of inputs:

- a. Status and location data

4. Type(s) of outputs:

- a. Material control message - Type I
- b. Material control message - Type II
- c. Binding orders

5. Remarks:

Type I is simple type of routing message, Type II is more comprehensive.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Material Status Recording	Sheet a. Reference No. <u>C</u>
Subcategory:	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Status and location data	

1. Number of characters (average):	<u>16</u>	
2. Number of data elements (average):	<u>3</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	
Variable number of data elements	_____	
	Length of data elements:	
	All fixed	<u>X</u>
	Some fixed	_____
	None fixed	_____
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	_____	
Non-Roman	_____	
Oriental	_____	
Special	_____	
5. References: [Source(s) for above]		
O.D.29		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Status Recording Sheet a. Reference No. C

Subcategory: Output No. a

Type(s): [Refer to Sheet a.]

a. Material control message - Type I

1. Number of characters (average): 29

2. Number of data elements (average): 4

3. Format: [Check one in each column]:

Fixed number of data elements

Variable number of data elements X

Length of data elements:

All fixed

Some fixed X

None fixed

4. Character sets: [Check one or more]

Standard Roman X Non-Roman

Extended Roman Oriental

Special

5. Form(s) of output: [Check one or more]

Machine readable

Human readable X

Permanent X

Transient

6. Reaction time: [Check one of the following]

Immediate (3-5 sec.) X

Overnight (24 hours)

Rapid (during the day)

Time avail. (>24 hrs.)

7. References: [Source(s) for above]

D4-C

8. Remarks:

Simple type of routing slip only.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Status Recording Sheet a. Reference No. c

Subcategory: Output No. b

Type(s): [Refer to Sheet a.]
 b. Material control message - Type II

1. Number of characters (average): 153
2. Number of data elements (average): 7
3. Format: [Check one in each column]: Length of data elements:
- | | | | |
|----------------------------------|----------------------|------------|----------------------|
| Fixed number of data elements | <u> </u> | All fixed | <u> </u> |
| Variable number of data elements | <u> X </u> | Some fixed | <u> X </u> |
| | | None fixed | <u> </u> |
4. Character sets: [Check one or more]
- | | | | |
|----------------|----------------------|-----------|-------------------|
| Standard Roman | <u> </u> | Non-Roman | <u> </u> |
| Extended Roman | <u> X </u> | Oriental | <u> </u> |
| Special | <u> </u> | | |
5. Form(s) of output: [Check one or more]
- | | | | |
|------------------|-------------------|----------------|----------------------|
| Machine readable | <u> </u> | Human readable | <u> X </u> |
| | | Permanent | <u> X </u> |
| | | Transient | <u> </u> |
6. Reaction time: [Check one of the following]
- | | | | |
|------------------------|----------------------|------------------------|-------------------|
| Immediate (3-5 sec.) | <u> X </u> | Overnight (24 hours) | <u> </u> |
| Rapid (during the day) | <u> </u> | Time avail. (>24 hrs.) | <u> </u> |
7. References: [Source(s) for above]
E2-K, E6-H, F2-F
8. Remarks:
Type II message more comprehensive than Type I.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Status Recording	Sheet a. Reference No. <u>C</u>
Subcategory:	Output No. <u>c</u>
Type(s): [Refer to Sheet a.]	
c. Binding orders	

1. Number of characters (average):	<u>231</u>	
2. Number of data elements (average):	<u>13</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u>X</u>	All fixed
Variable number of data elements	<u> </u>	Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u> </u>
Extended Roman	<u>X</u>	Oriental <u> </u>
Special	<u> </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
F1-H		
8. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALSI. GENERAL DESCRIPTIONCATEGORY D: ACCESSIONING

After a bibliographic item arrives at the Library of Congress, it is subject to a series of accessioning operations prior to its being sent to the next required operation which could be cataloging or shelflisting. This includes sorting and screening, tagging, checking-in, and establishment of an initial priority and routing for an item. To carry out these functions, accessioners in Order Division and Exchange and Gift Division must have the capability of recalling and consulting base or completed catalog records. He can carry out the recall function (after the PIN label has been attached) by recording the PIN number with a PIN reader. If the item does not have a PIN label attached it will be necessary to recall the record using other information. After consulting the files, the user can then revise the record as required with newly acquired data. At any stage of his work, the user may issue hard copy intermediate or final results of his accessioning work for permanent reference.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Accessioning	Reference No. <u> D </u>
Subcategory:	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E060	L251(L351)	Acquisition Specialist (GS-1410-9-8139)	None Known
E072	L231(L351)	Exchange Accessioner (GS-1411-5-5550,1,2,3)	"
E072	L231(L351)	Gift Accessioner (GS-1411-6-8464)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Accessioning

Reference No. D

Subcategory:

1. Functions:
 1. Recalls base or completed catalog records
 2. Records PIN
 3. Records user ID data
 4. Creates transaction data
 5. Consults catalog and other records
 6. Revises base or completed catalog records with accession data
 7. Transmits revised base or completed catalog records and transmission data
 8. Issues intermediate or final results of accessioning work
2. Modes of operation: [Check one or more in each column]
On-line X Single user X Attended and Unattended _____
Off-line X Multiple users X Attended only X
3. Type(s) of inputs:
 - a. Material check-in data
 - b. Bibliographic and Auxiliary Search data
4. Type(s) of outputs:
 - a. Exchange settlement messages
 - b. Cataloging routing slips
 - c. Cataloging worksheets
 - d. Bibliographic/Auxiliary data
5. Remarks:

This category should, as an option, be able to operate in off-line mode.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Accessioning	Sheet a. Reference No. <u>D</u>
Subcategory:	Input No. <u>a</u>
Type(s): [Refer to Sheet a.] a. Material check-in data	

1. Number of characters (average):	<u>142</u>
2. Number of data elements (average):	<u>12</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> X </u>
Oriental	<u> X </u>
Special	<u> X </u>
5. References: [Source(s) for above]	
B1-N, B1-0	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Accessioning	Sheet a. Reference No. <u>D</u>
Subcategory:	Input No. <u>b</u>
Type(s): [Refer to Sheet a.] b. Bibliographic and Auxiliary Search data	

1. Number of characters (average):	<u>42</u> -
2. Number of data elements (average):	<u>5</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
B2-F, D3-E, O.D. 30-31, D4-B	
6. Remarks:	
None	

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Accessioning	Sheet a. Reference No. <u> D </u>
Subcategory:	Output No. <u> a </u>
Type(s): [Refer to Sheet a.]	
a. Exchange settlement messages	

1. Number of characters (average):	<u> 266 </u>	
2. Number of data elements (average):	<u> 23 </u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u> </u>
Variable number of data elements	<u> X </u>	Some fixed <u> X </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u> X </u>
Extended Roman	<u> X </u>	Oriental <u> X </u>
Special	<u> X </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u> X </u>
		Permanent <u> </u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u> </u>	Overnight (24 hours) <u> X </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
8. Remarks:	C5-B	
	See D3-G	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Accessioning	Sheet a. Reference No. <u>D</u>
Subcategory:	Output No. <u>b</u>
Type(s): [Refer to Sheet a.] b. Cataloging routing slips	

1. Number of characters (average):	<u>29</u>	
2. Number of data elements (average):	<u>4</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u>X</u>
Variable number of data elements	<u>X</u>	Some fixed <u> </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	Non-Roman <u> </u>
Extended Roman	<u> </u>	Oriental <u> </u>
Special	<u> </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
8. Remarks:		
	D4-C	
	D4-H elements could be added to make slip more comprehensive.	

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Accessioning	Sheet a. Reference No. <u> D </u>
Subcategory:	Output No. <u> c </u>
Type(s): [Refer to Sheet a.]	
c. Cataloging worksheets	

1. Number of characters (average):	<u> 150 </u>	
2. Number of data elements (average):	<u> 16 </u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> X </u>	All fixed <u> </u>
Variable number of data elements	<u> </u>	Some fixed <u> X </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u> X </u>
Extended Roman	<u> X </u>	Oriental <u> X </u>
	Special	<u> X </u>
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u> X </u>
		Permanent <u> X </u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u> X </u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
O.D.-13		
8. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Accessioning Sheet a. Reference No. D
Subcategory: Output No. d

Type(s): [Refer to Sheet a.]
d. Bibliographica/Auxiliary data

1. Number of characters (average): 141
2. Number of data elements (average): 14
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed _____
Some fixed X
Variable number of data elements X None fixed _____
4. Character sets: [Check one or more]
Standard Roman _____ Non-Roman X
Extended Roman X Oriental X
Special X
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent _____
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
B1-S, B2-E, D3-D, O.D.-32
8. Remarks:
None

3.3.5 FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY E-1: PRELIMINARY CATALOGING

The purpose of cataloging is to establish with great accuracy, completeness and authoritativeness the bibliographic record of an item and relate it to other works in the collection. After an item has been completely accessioned, it is ready to begin a multi step cataloging process. The first step is Preliminary Cataloging. The normal progression after this is Descriptive Cataloging followed by Subject Cataloging, Classification and Shelflisting. Reviewing may occur at any stage in the cataloging process.

The Preliminary Cataloging Section is assigned the initial preparation of catalog entries for monographs for the purpose of providing basic control over materials received in the Library. This includes assignment of priorities, interpretation and formatting of the bibliographic data, and establishing a preliminary (main) entry for the item. To carry out these functions in an automated system, the capability to recall the base or preliminary catalog record of an item will be required. This will be done with the PIN Reader which records the PIN and effects retrieval of the records from the central store. The terminal user will then revise the base catalog records with preliminary descriptive cataloging data. In order to do this, he may have to consult other catalog authority files and the central catalog. Upon completion of his work, the preliminary cataloger will transmit his preliminary cataloging data together with transaction data such as his identification, to the central system.

At any stage of the operation, the cataloger/searcher will be able to obtain hard copy forms of his cataloging work for reference away from the terminal.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Cataloging	Reference No. <u> E1 </u>
Subcategory: 1. Preliminary Cataloging	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E111	L291(L361)	Preliminary Cataloger (GS-1410-7-6641)	None Known
E111	L291(L361)	Preliminary Cataloger (GS-1411-6-6966)	"
E111	L231(L361)	Preliminary Cataloger (GS-1410-7-6641)	"
E111	L231(L361)	Preliminary Cataloger (GS-1411-6-6966)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Cataloging

Reference No. E1

Subcategory: 1. Preliminary Cataloging

1. Functions:
 1. Recalls base catalog records
 2. Records PIN
 3. Records user ID data
 4. Creates transaction data
 5. Consults catalog authority files and catalog
 6. Revises base catalog records with preliminary descriptive catalog data
 7. Transmits preliminary catalog data, transaction data
 8. Issues intermediate or final results of cataloging work
2. Modes of operation: [Check one or more in each column]
On-line X Single user _____ Attended and Unattended _____
Off-line _____ Multiple users X Attended only X
3. Type(s) of inputs:
 - a. Preliminary cataloging data
 - b. Bibliographic/auxiliary search data
4. Type(s) of outputs:
 - a. Preliminary bibliographic data records
 - b. Completed bibliographic data records
 - c. Name authority records
 - d. Series treatment authority records
5. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E1</u>
Subcategory: 1. Preliminary Cataloging	Input No. <u>a</u>
Type(s): [Refer to Sheet a.] a. Preliminary cataloging data	

1. Number of characters (average):	<u>72</u>
2. Number of data elements (average):	<u>24</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> </u> <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> X </u>
Oriental	<u> X </u>
Special	<u> X </u>
5. References: [Source(s) for above]	
E2-F, E2-G	
6. Remarks:	
E2-F and E2-G treated as one message for averaging	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E1</u>
Subcategory: 1. Preliminary Cataloging	Input No. <u>b</u>
Type(s): [Refer to Sheet a.] b. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>69</u>	
2. Number of data elements (average):	<u>22</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	
Variable number of data elements	<u> X </u>	
	Length of data elements:	
	All fixed	<u> </u>
	Some fixed	<u> X </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	
Extended Roman	<u> X </u>	
Non-Roman	<u> X </u>	
Oriental	<u> X </u>	
Special	<u> X </u>	
5. References: [Source(s) for above]		
E2-F		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging Sheet a. Reference No. E1
Subcategory: 1. Preliminary cataloging Output No. a, b

Type(s): [Refer to Sheet a.]
a. Preliminary bibliographic data records
b. Completed bibliographic data records

1. Number of characters (average): 301
2. Number of data elements (average): 14
3. Format: [Check one in each column]:
- | | | |
|----------------------------------|-------------------|------------------------------|
| Fixed number of data elements | <u> </u> | Length of data elements: |
| Variable number of data elements | <u>X</u> | All fixed <u> </u> |
| | | Some fixed <u>X</u> |
| | | None fixed <u> </u> |
4. Character sets: [Check one or more]
- | | | | |
|----------------|-------------------|-----------|----------|
| Standard Roman | <u> </u> | Non-Roman | <u>X</u> |
| Extended Roman | <u>X</u> | Oriental | <u>X</u> |
| Special | <u>X</u> | | |
5. Form(s) of output: [Check one or more]
- | | | | |
|------------------|-------------------|----------------|----------|
| Machine readable | <u> </u> | Human readable | <u>X</u> |
| | | Permanent | <u>X</u> |
| | | Transient | <u>X</u> |
6. Reaction time: [Check one of the following]
- | | | | |
|------------------------|-------------------|------------------------|-------------------|
| Immediate (3-5 sec.) | <u>X</u> | Overnight (24 hours) | <u> </u> |
| Rapid (during the day) | <u> </u> | Time avail. (>24 hrs.) | <u> </u> |
7. References: [Source(s) for above]
E2-F
8. Remarks:
None

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E1</u>
Subcategory: 1. Preliminary Cataloging	Output No. <u>c</u>
Type(s): [Refer to Sheet a.] c. Name authority records	

1. Number of characters (average):	<u>293</u>	
2. Number of data elements (average):	<u>4</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u>X</u>	All fixed
Variable number of data elements	<u> </u>	Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u>X</u>
Extended Roman	<u>X</u>	Oriental <u>X</u>
Special	<u>x</u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u>X</u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above] E3-G		
8. Remarks: None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging Sheet a. Reference No. E1

Subcategory: 1. Preliminary Cataloging Output No. d

Type(s): [Refer to Sheet a.]

d. Series treatment authority records

1. Number of characters (average): 8
2. Number of data elements (average): 3
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed X
Some fixed _____
Variable number of data elements X None fixed _____
4. Character sets: [Check one or more]
Standard Roman X Non-Roman _____
Extended Roman _____ Oriental _____
Special _____
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent X
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
E2-G
8. Remarks:
E2-G indicated in UAC as an input but utilized here as an output.

FUNCTIONAL REQUIREMENTS - TERMINALSI. GENERAL DESCRIPTIONCATEGORY E-2: DESCRIPTIVE CATALOGING

The next step in the cataloging process after Preliminary Cataloging is Descriptive Cataloging. This includes the determination of choice and form of the entry, and organizing and recording the significant elements of bibliographic description. To carry out these functions the user must have the capability to recall the preliminary cataloging record which was developed during the Preliminary Cataloging process. This can be done, with item in hand, by use of the PIN Reader and an appropriate key to call up the corresponding record. The cataloger will then have to consult various catalog authority files and the central catalog. Based on the preliminary cataloging file, information developed during the consulting process and the experience of the cataloger, it will usually be necessary to revise the preliminary descriptive catalog records. The cataloger can then record the final form of the descriptive record together with appropriate transaction data, into the central system. At any desired stage of the operation, the terminal user can issue in hard copy form either intermediate or final results of his cataloging work.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Cataloging	Reference No. <u> E2 </u>
Subcategory: 2. Descriptive Cataloging	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E110	L231(L361)	Descriptive Cataloger (GS-1410-11-533)	None Known	
E110	L231(L361)	Descriptive Cataloger (GS-1410-9-534)	"	
E120	L241(L361)	Cataloger (GS-1410-11-8548)	"	
E120	L241(L361)	Cataloger (GS-1410-9-8549)	"	
E120	L241(L361)	Cataloger (GS-1410-7-8550)	"	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Cataloging

Reference No. E2

Subcategory: 2. Descriptive Cataloging

1. Functions:
 1. Recalls preliminary cataloging record
 2. Records PIN
 3. Records user ID data
 4. Creates transaction data
 5. Consults catalog authority files and catalog
 6. Revises preliminary descriptive catalog records with final descriptive catalog data
 7. Transmits final descriptive catalog data, transaction data
 8. Issues intermediate or final results of cataloging work
2. Modes of operation: [Check one or more in each column]
On-line X Single user Attended and Unattended
Off-line Multiple users X Attended only X
3. Type(s) of inputs:
 - a. Descriptive cataloging data
 - b. Bibliographic/auxiliary search data
4. Type(s) of outputs:
 - a. Preliminary bibliographic data records
 - b. Completed bibliographic data records
 - c. Name authority records
 - d. Series treatment authority records
5. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E2</u>
Subcategory: 2. Descriptive Cataloging	Input No. <u>a,b</u>
Type(s): [Refer to Sheet a.]	
a. Descriptive catalog data	
b. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>199</u>	
2. Number of data elements (average):	<u>22</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	
Variable number of data elements	<u> X </u>	
	Length of data elements:	
	All fixed	<u> </u>
	Some fixed	<u> X </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	
Extended Roman	<u> X </u>	
Non-Roman	<u> X </u>	
Oriental	<u> X </u>	
Special	<u> X </u>	
5. References: [Source(s) for above]		
E3-C		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging Sheet a. Reference No. E2
Subcategory: 2. Descriptive Cataloging Output No. a, b

Type(s): [Refer to Sheet a.]

- a. Preliminary bibliographic data records
- b. Completed bibliographic data records

1. Number of characters (average): 316
2. Number of data elements (average): 23
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed _____
Some fixed X
Variable number of data elements X None fixed _____
4. Character sets: [Check one or more]
Standard Roman _____ Non-Roman X
Extended Roman X Oriental X
Special X
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent X
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
8. Remarks: ^{E3-D}
None

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E2</u>
Subcategory: 2. Descriptive Cataloging	Output No. <u>c</u>
Type(s): [Refer to Sheet a.]	
c. Name authority records	

1. Number of characters (average):	<u>293</u>
2. Number of data elements (average):	<u>4</u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements	<u>x</u> All fixed
Variable number of data elements	Some fixed <u>x</u>
	None fixed
4. Character sets: [Check one or more]	
Standard Roman	<u> </u> Non-Roman <u>X</u>
Extended Roman	<u>X</u> Oriental <u>X</u>
Special	<u>x</u>
5. Form(s) of output: [Check one or more]	
Machine readable	<u> </u> Human readable <u>X</u>
	Permanent <u>X</u>
	Transient <u>X</u>
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.)	<u>X</u> Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u> Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]	
E3-G	
8. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging Sheet a. Reference No. E2
Subcategory: 2. Descriptive Cataloging Output No. d

Type(s): [Refer to Sheet a.]
d. Series treatment authority records

1. Number of characters (average): 3
2. Number of data elements (average): 8
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed X
Some fixed _____
Variable number of data elements X None fixed _____
4. Character sets: [Check one or more]
Standard Roman X Non-Roman _____
Extended Roman _____ Oriental _____
Special _____
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent X
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
8. Remarks:
E2-G
E2-G indicated in UAC as an input but utilized here as an output.

FUNCTIONAL REQUIREMENTS - TERMINALSI. GENERAL DESCRIPTIONCATEGORY E-3: SUBJECT CATALOGING,
CLASSIFICATION AND SHEFLISTING

Following the Descriptive Cataloging process, the next step in the cataloging of an item in the Library of Congress is subject cataloging, classification and shelflisting. These are included together because of the similar functions which they perform. This entails application of the Library of Congress subject heading list, the Library of Congress classification schedules and the Dewey Decimal Classification Schedule to items. It also includes establishing an appropriate book or author number for an item in order to uniquely locate it in the shelflist which is the Library's classified inventory of all works in its classified collection. To carry out these functions the terminal user must have the capability to first recall the descriptive catalog record as finally established and placed in the central system. This can be done by use of the PIN Reader as in previous cataloging processes. The cataloger and shelflister then consults the various catalog authority files and the central catalog in order to develop appropriate subject, classification, book and author numbers. This information is used to update the descriptive catalog record and transmit to the central system a final provisional catalog record together with any applicable transaction data. Hard copy output can be issued at any time of intermediate or final results of this work.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Cataloging	Reference No. <u> E3 </u>
Subcategory: 3. Subject Cataloging, Classification and Shelflisting	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E131	L231(L361)	Subject Cataloger (GS-1410-12-7331)		None Known
E131	L231(L361)	Subject Cataloger (GS-1410-11-7332)		"
E131	L231(L361)	Subject Cataloger (GS-1410-9-7333)		"
E133	L231(L361)	Shelflister (GS-1411-7-7343)		"
E133	L231(L361)	Shelflister (GS-1411-6-7344)		"
E132	L231(L361)	Assistant Editor of Publications (GS-1410-11-7329)		"
E132	L231(L361)	Editor of Classification Schedules (GS-1410-12-7327)		"
E140	L231(L361)	Decimal Classification Specialist (GS-1410-12-7655)		"
E140	L231(L361)	Decimal Classification Specialist (GS-1410-11-7657)		"
E140	L231(L361)	Decimal Classification Specialist (GS-1410-9-7656)		"

III. Operations Profile

a. Tasks to be Performed

Category: Cataloging

Reference No. E3

Subcategory:

3. Subject Cataloging, Classification and Shelflisting

1. Functions:
1. Recalls final descriptive catalog records
 2. Records PIN
 3. Records user ID data
 4. Creates transaction data
 5. Consults catalog authority files and catalog
 6. Revises final descriptive catalog records with subject, classification, book and author number data
 7. Transmits final provisional catalog record, transaction data
 8. Issues intermediate and final results of cataloging work

2. Modes of operation: [Check one or more in each column]

On-line	<u> X </u>	Single user	<u> </u>	Attended and Unattended	<u> </u>
Off-line	<u> </u>	Multiple users	<u> X </u>	Attended only	<u> </u>
					<u> X </u>

3. Type(s) of inputs:

- a. Nondescriptive catalog data
- b. Bibliographic / auxiliary search data

4. Type(s) of outputs:

- a. Preliminary bibliographic data records
- b. Completed bibliographic data records
- c. Subject heading authority records
- d. L. C. Classification schedules
- e. Dewey Decimal classification schedules
- f. L. C. Holdings schedules

5. Remarks: Schedules

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E3</u>
Subcategory: 3. Subject Cataloging, Classification and Shelflisting	Input No. <u>a</u>
Type(s): [Refer to Sheet a.] a. Nondescriptive catalog data	

1. Number of characters (average):	<u>70</u>
2. Number of data elements (average):	<u>4</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> </u> <u>X</u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u> <u>X</u>
Extended Roman	<u> </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
E4-D	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E3</u>
Subcategory: 3. Subject Cataloging, Classification and Shelflisting	Input No. <u>b</u>
Type(s): [Refer to Sheet a.] b. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>199</u>
2. Number of data elements (average):	<u>22</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> X </u>
Oriental	<u> X </u>
Special	<u> X </u>
5. References: [Source(s) for above]	
	E3-C
6. Remarks:	
	None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging Sheet a. Reference No. E3

Subcategory: Output No. a
3. Subject Cataloging, Classification and Shelisting

Type(s): [Refer to Sheet a.]
a. Preliminary bibliographic data record

1. Number of characters (average): 209
2. Number of data elements (average): 19
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed _____
Some fixed X
Variable number of data elements X None fixed _____
4. Character sets: [Check one or more]
Standard Roman _____ Non-Roman X
Extended Roman X Oriental X
Special X
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent X
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
E4-E
8. Remarks:
None

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E3</u>
Subcategory: 3. Subject Cataloging, Classification and Shelflisting	Output No. <u>b</u>
Type(s): [Refer to Sheet a.]	
b. Completed bibliographic data records	

1. Number of characters (average):	<u>316</u>
2. Number of data elements (average):	<u>15</u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements	All fixed _____
Variable number of data elements	Some fixed <u>X</u>
_____	None fixed _____
4. Character sets: [Check one or more]	Standard Roman _____ Non-Roman <u>X</u>
Extended Roman <u>X</u>	Oriental <u>X</u>
Special <u>X</u>	_____
5. Form(s) of output: [Check one or more]	Machine readable _____ Human readable <u>X</u>
_____	Permanent <u>X</u>
_____	Transient <u>X</u>
6. Reaction time: [Check one of the following]	Immediate (3-5 sec.) <u>X</u> Overnight (24 hours) _____
Rapid (during the day) _____	Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]	E3-D
8. Remarks:	None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging

Sheet a. Reference No. E3

Subcategory:

Output No. c, d

3. Subject Cataloging, Classification and Shelflisting

Type(s): [Refer to Sheet a.]

c. Subject heading authority records

d. L. C. Classification schedules

1. Number of characters (average): 118

2. Number of data elements (average): 6

3. Format: [Check one in each column]:

Fixed number of data elements

Variable number of data elements X

Length of data elements:

All fixed

Some fixed X

None fixed

4. Character sets: [Check one or more]

Standard Roman Non-Roman X

Extended Roman X Oriental X

Special X

5. Form(s) of output: [Check one or more]

Machine readable

Human readable X

Permanent X

Transient X

6. Reaction time: [Check one of the following]

Immediate (3-5 sec.) X

Overnight (24 hours)

Rapid (during the day)

Time avail. (>24 hrs.)

7. References: [Source(s) for above]

8. Remarks:
E4-J

None

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E3</u>
Subcategory:	Output No. <u>e</u>
3. Subject Cataloging, Classification and Shelflisting	
Type(s): [Refer to Sheet a.]	
e. Dewey Decimal classification schedules	

1. Number of characters (average):	<u>295</u>	
2. Number of data elements (average):	<u>21</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u> </u>
Variable number of data elements	<u>X</u>	Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman <u> </u>	Non-Roman <u>X</u>	
Extended Roman <u>X</u>	Oriental <u>X</u>	
Special <u>X</u>		
5. Form(s) of output: [Check one or more]		
Machine readable <u> </u>	Human readable <u>X</u>	
	Permanent <u>X</u>	
	Transient <u>X</u>	
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.) <u>X</u>	Overnight (24 hours) <u> </u>	
Rapid (during the day) <u> </u>	Time avail. (>24 hrs.) <u> </u>	
7. References: [Source(s) for above]		
E5-E		
8. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging

Sheet a. Reference No. E3

Subcategory:

Output No. f

3. Subject Cataloging, Classification and Shelflisting

Type(s): [Refer to Sheet a.]

f. L. C. Holdings schedules

1. Number of characters (average): 158

2. Number of data elements (average): 3

3. Format: [Check one in each column]:

Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	<u> </u>	All fixed <u> </u>
		Some fixed <u>X</u>
		None fixed <u> </u>

4. Character sets: [Check one or more]

Standard Roman	<u> </u>	Non-Roman	<u>X</u>
Extended Roman	<u>X</u>	Oriental	<u>X</u>
Special	<u>x</u>		

5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u>X</u>
		Transient	<u>X</u>

6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u>x</u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.)	<u> </u>

7. References: [Source(s) for above]

E4-A

8. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALSI. GENERAL DESCRIPTIONCATEGORY E-4: REVIEWING

Certain members of the Library of Congress cataloging staff such as Principle Catalogers, Heads of the Preliminary Cataloging and Descriptive Cataloging Sections, Deputy Principle Cataloger, Senior Shelflister and Senior Subject Cataloger have responsibility for reviewing cataloging work and authorizing changes in the official files. Reviewing may take place at any stage in the cataloging process. These reviewers must have the capability to recall final provisional catalog and other applicable records and to consult all catalog authority files and the central catalog. Based on their review and revision, if necessary, of provisional catalog records, a verification is transmitted to the central system. For reviewing records of books in hand, the PIN Reader can be utilized as at other cataloger stations. Also, as in other stations, hard copy can be issued at any time of intermediate or final results of the reviewing work.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Cataloging	Reference No. <u> E4 </u>
Subcategory: 4. Reviewing	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E111	L291(L361)	Head - Preliminary Cataloging Section (GS-1410-12-6752)		None Known
E111	L231(L361)	Reviser (GS-1411-9-368)		"
E110	L231(L361)	Principal Cataloger (GS-1410-14-4205)		"
E110	L231 (L361)	Asst. to the Principal Cataloger (GS-1410-13-563)		"
E110	L231(L361)	Section Head & Descriptive Cataloging Specialist (GS-1410-13-5625)		"
E110	L231(L361)	Supervisory Librarian (GS-1410-12-532)		"
E120	L241(L361)	Supervisor, Non-Cyrillic Unit (GS-1410-12-58)		"
E120	L241(L361)	Supervisor, Cyrillic Unit (GS-1410-12-57)		"
E131	L231(L361)	Principal Cataloger (GS-1410-14-6810)		"
E131	L231(L361)	Deputy Principal Cataloger (GS-1410-13-8937)		"
E133	L231(L361)	Reviewer (GS-1411-9-351)		"
E133	L231(L361)	Senior Shelflister (GS-1411-8-7342)		"

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Cataloging	Reference No. <u> E4 </u>
Subcategory: 4. Reviewing (Continued)	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
E132	L231(L361)	Editor of Subject Headings (GS-1410-12-7328)	None Known
E131	L231(L361)	Senior Subject Cataloger (GS-1410-13-7330)	"
E140	L231(L361)	Assistant Editor/Decimal Classification (GS-1410-13-7632)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Cataloging

Reference No. E4

Subcategory: 4. Reviewing

1. Functions:
1. Recalls final provisional catalog records
 2. Records PIN
 3. Records user ID data
 4. Creates transaction data
 5. Consults catalog authority files and catalog
 6. Revises final provisional catalog records
 7. Transmits verification data for final catalog record, transaction data
 8. Issues intermediate or final results of catalog work

2. Modes of operation: [Check one or more in each column]

On-line X Single user _____ Attended and Unattended _____

Off-line _____ Multiple users X Attended only _____ X

3. Type(s) of inputs:

- a. Preliminary cataloging data
- b. Descriptive cataloging data
- c. Nondescriptive cataloging data
- d. Bibliographic/auxiliary search data

4. Type(s) of outputs:

- a. Preliminary bibliographic data records
- b. Completed bibliographic data records
- c. Auxiliary data records
- d. Material control messages - Type II

5. Remarks:

Type II are comprehensive material control messages.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E4</u>
Subcategory: 4. Reviewing	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Preliminary cataloging data	

1. Number of characters (average):	<u>72</u>
2. Number of data elements (average):	<u>24</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> X </u>
Oriental	<u> X </u>
Special	<u> X </u>
5. References: [Source(s) for above]	
E2-F, E2-G	
6. Remarks:	
E2-F and E2-G treated as one message for averaging.	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging

Sheet a. Reference No. E4

Subcategory: 4. Reviewing

Input No. b,d

Type(s): [Refer to Sheet a.]

b. Descriptive cataloging data

d. Bibliographic/auxiliary search data

1. Number of characters (average): 199

2. Number of data elements (average): 22

3. Format: [Check one in each column]

Fixed number of data elements

Variable number of data elements X

Length of data elements:

All fixed

Some fixed X

None fixed

4. Character sets: [Check one or more]

Standard Roman

Extended Roman X

Non-Roman X

Oriental X

Special X

5. References: [Source(s) for above]

E3-C

6. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E4</u>
Subcategory: 4. Reviewing	Input No. <u>c</u>
Type(s): [Refer to Sheet a.]	
c. Nondescriptive cataloging data	

1. Number of characters (average):	<u>70</u>	
2. Number of data elements (average):	<u>4</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	
Variable number of data elements	<u> X </u>	
	Length of data elements:	
	All fixed	<u> </u>
	Some fixed	<u> X </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> X </u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above]		
E4-D		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging

Sheet a. Reference No. E4

Subcategory: 4. Reviewing

Output No. a

Type(s): [Refer to Sheet a.]

a. Preliminary bibliographic data records

1. Number of characters (average): 209

2. Number of data elements (average): 19

3. Format: [Check one in each column]:

Fixed number of data elements _____
Variable number of data elements X

Length of data elements:
All fixed _____
Some fixed X
None fixed _____

4. Character sets: [Check one or more]

Standard Roman _____ Non-Roman X
Extended Roman X Oriental X
Special X

5. Form(s) of output: [Check one or more]

Machine readable _____ Human readable X
Permanent X
Transient X

6. Reaction time: [Check one of the following]

Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____

7. References: [Source(s) for above]

E4-E

8. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging , Sheet a. Reference No. E4
Subcategory: 4. Reviewing Output No. b

Type(s): [Refer to Sheet a.]

b. Completed bibliographic data records

1. Number of characters (average): 316
2. Number of data elements (average): 15
3. Format: [Check one in each column]:
Fixed number of data elements _____ Length of data elements:
All fixed _____
Some fixed x
Variable number of data elements x None fixed _____
4. Character sets: [Check one or more]
Standard Roman _____ Non-Roman X
Extended Roman X Oriental X
Special X
5. Form(s) of output: [Check one or more]
Machine readable _____ Human readable X
Permanent X
Transient X
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
8. Remarks: E3-D
None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E4</u>
Subcategory: 4. Reviewing	Output No. <u>C</u>
Type(s): [Refer to Sheet a.]	
c. Auxiliary data records	

1. Number of characters (average):	<u>207</u>
2. Number of data elements (average):	<u>14</u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements	All fixed _____
Variable number of data elements	Some fixed <u>X</u>
	None fixed _____
4. Character sets: [Check one or more]	
Standard Roman _____	Non-Roman <u>X</u>
Extended Roman <u>X</u>	Oriental <u>X</u>
Special <u>X</u>	
5. Form(s) of output: [Check one or more]	
Machine readable _____	Human readable <u>X</u>
	Permanent <u>X</u>
	Transient <u>X</u>
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.) <u>X</u>	Overnight (24 hours) _____
Rapid (during the day) _____	Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]	
8. Remarks: <u>E4-J, E5-E</u>	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Cataloging	Sheet a. Reference No. <u>E4</u>
Subcategory: 4. Reviewing	Output No. <u>d</u>

Type(s): [Refer to Sheet a.]

d. Material control messages - Type II

1. Number of characters (average): 147
2. Number of data elements (average): 6
3. Format: [Check one in each column]:

		Length of data elements:	
Fixed number of data elements	<u>X</u>	All fixed	<u> </u>
		Some fixed	<u>X</u>
Variable number of data elements	<u> </u>	None fixed	<u> </u>
4. Character sets: [Check one or more]

Standard Roman	<u> </u>	Non-Roman	<u> </u>
Extended Roman	<u>X</u>	Oriental	<u> </u>
Special	<u> </u>		
5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u>X</u>
		Transient	<u> </u>
6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.)	<u> </u>
7. References: [Source(s) for above]
E6-H
8. Remarks:
Type II are comprehensive material control messages.

I. GENERAL DESCRIPTIONCATEGORY F-1: DRAWING MATERIAL

Drawing Material is a subcategory of stack control. This operation takes place in the stacks in two sequences. In the first sequence the deck attendant will receive a drawing request message from one of the various user locations. He will then locate the item requested and begin the second sequence which is the material control function. The stack attendant will record the PIN and transmit it to the central system together with appropriate transaction, status and user/attendant data. The item requested is then forwarded to the appropriate user location. These same category stations could also be used by stack pass holders, (L. C. and Non-L. C. staff) who have access to the stacks to withdraw material from the stacks. After selecting material they wish to charge out, they can follow the same procedures as the deck attendant in the second sequence in transmitting the material control data to the central system together with their user ID.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Stack Control	Reference No. <u>F1</u>
Subcategory: 1. Drawing Material	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F180	L192	Deck Attendant (GS-1411-3-6744)	Does not necessarily possess foreign language skills. " " " " " " "
F180	L292	Deck Attendant (GS-1411-3-6744)	
F180	L392	Deck Attendant (GS-1411-3-6744)	
F100	L192(L392)	Searcher/Deck Attendant (GS-1411-5-189)	
F160	L192(L392)	Deck Attendant (GS-1411-3-8243)	
G020	L192	Stack Pass Holder (LC & Non-LC Staff)	
G020	L292	Stack Pass Holder (LC & Non-LC Staff)	
G020	L392	Stack Pass Holder (LC & Non-LC Staff)	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Stack Control

Reference No. F1

Subcategory:

1. Drawing Material

1. Functions: Sequence 1. a. Issues drawing request message
Sequence 2. a. Records PIN
b. Creates transaction data
c. Generates status data
d. Records user/attendant data
e. Transmits PIN, status, user/attendant/transaction data
2. Modes of operation: [Check one or more in each column]
On-line X Single user _____ Attended and Unattended X
Off-line _____ Multiple users X Attended only _____
3. Type(s) of inputs: Sequence 1. None
Sequence 2. a. Status and location data
4. Type(s) of outputs: Sequence 1. Material control message
Sequence 2. None
5. Remarks: 1. Sequence 1 is the output of the drawing request message at the deck attendant's station. Sequence 2 is the input from the deck attendant/stack pass holder when he records an item leaving the stacks

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Stack Control	Sheet a. Reference No. <u>F1</u>
Subcategory: 1. Drawing Material	Input No. <u>2a</u>
Type(s): [Refer to Sheet a.] 2.a. Status and location data	

1. Number of characters (average):	<u>20</u>	
2. Number of data elements (average):	<u>2</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	
Variable number of data elements	_____	
	Length of data elements:	
	All fixed	<u>X</u>
	Some fixed	_____
	None fixed	_____
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	_____	
Non-Roman	_____	
Oriental	_____	
Special	_____	
5. References: [Source(s) for above]		
J1-A		
6. Remarks: None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Stack Control

Sheet a. Reference No. F1

Subcategory: 1. Drawing Material

Output No. 1a

Type(s): [Refer to Sheet a.]

1.a. Material control message

1. Number of characters (average): 144
2. Number of data elements (average): 5
3. Format: [Check one in each column]:

Fixed number of data elements	<u>X</u>	Length of data elements:
		All fixed
Variable number of data elements	<u> </u>	Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]

Standard Roman	<u> </u>	Non-Roman	<u> </u>
Extended Roman	<u>X</u>	Oriental	<u> </u>
Special	<u> </u>		
5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u>X</u>
		Transient	<u> </u>
6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.)	<u> </u>
7. References: [Source(s) for above]
8. Remarks: H2-D
None

3.3.10

FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY F-2: RESHELVING MATERIAL

The reshelving process consists of those functions which are necessary to return items to the stacks and maintain proper material control. The items will be returned to the stacks from the various user locations or by the stack pass holders. The deck attendant will then record and transmit the PINs together with transaction and status data to the ~~central~~ system. The items can then be physically returned to their appropriate stack locations.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Stack Control	Reference No. <u> F2 </u>
Subcategory: 2. Reshelving Material	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F180	L192	Deck Attendant (GS-1411-3-6744)	Does not necessarily possess foreign language skills
F180	L292	Deck Attendant (GS-1411-3-6744)	
F180	L392	Deck Attendant (GS-1411-3-6744)	
F100	L192(L392)	Searcher/Deck Attendant (GS-1411-5-189)	"
F160	L192(L392)	Deck Attendant (GS-1411-3-8243)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Stack Control

Reference No. E2

Subcategory: 2. Reshelving Material

1. Functions:
1. Records PIN
 2. Create transaction data
 3. Generates status data
 4. Transmits PIN, status, and transaction data

2. Modes of operation: [Check one or more in each column]

On-line x Single user Attended and Unattended

Off-line X Multiple users x Attended only X

3. Type(s) of inputs:

a. Status location data

4. Type(s) of outputs:

None

5. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Stack Control	Sheet a. Reference No. <u>F2</u>
Subcategory: 2. Reshelving Material	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Status location data	

1. Number of characters (average):	<u>18</u>	
2. Number of data elements (average):	<u>2</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	
Variable number of data elements	<u> </u>	
	Length of data elements:	
	All fixed	<u>X</u>
	Some fixed	<u> </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above]		
J1-B		
6. Remarks:		
None		

3.3.11

FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY F-3: INVENTORYING CONTROL

The inventorying of the stacks of the Library of Congress, under the PIN concept (See Category A), is envisaged as the recording and data capture of the PINs of the stack contents by the deck attendant. The PIN would be recorded and transmitted, together with transaction and status data, to some form of machine readable media. This data could then be used to update the central system at an appropriate time. The inventorying process would be greatly simplified if a portable PIN recorder were available.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Stack Control Subcategory: 3. Inventorying Material	Reference No. <u>F3</u>
--	-------------------------

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F180	L192	Deck Attendant (GS-1411-3-6744) Maintenance Assistant (GS-1411-4-8296)	Does not necessarily possess foreign language skills
F180	L292	Deck Attendant (GS-1411-3-6744) Maintenance Assistant (GS-1411-4-8296)	"
F180	L392	Deck Attendant (GS-1411-3-6744) Maintenance Assistant (GS-1411-4-8296)	"
F100	L192(L392)	Searcher/Deck Attendant (GS-1411-5-189)	"
F160	L192(L392)	Deck Attendant (GS-1411-3-8243)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Stack Control

Reference No. F3

Subcategory: 3. Inventorying Material

1. Functions:
1. Records PIN
 2. Creates transaction data
 3. Generates status data
 4. Transmits PIN, status and transaction data
 5. Issues delayed material control message

2. Modes of operation: [Check one or more in each column]

On-line _____ Single user _____ Attended and Unattended _____

Off-line X Multiple users X Attended only X

3. Type(s) of inputs:

- a. Status and location data

4. Type(s) of outputs:

- a. Material control message

5. Remarks:

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Stack Control	Sheet a. Reference No. <u>F3</u>
Subcategory: 3. Inventorying Material	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Status and location data	

1. Number of characters (average):	<u>18</u>
2. Number of data elements (average):	<u>2</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u>X</u>
Variable number of data elements	<u> </u>
	Length of data elements:
	All fixed <u>X</u>
	Some fixed <u> </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u>X</u>
Extended Roman	<u> </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
J1-B	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Stack Control, Sheet a. Reference No. F3
Subcategory: 3. Inventorying Material Output No. a

Type(s): [Refer to Sheet a.]

a. Material control message

1. Number of characters (average): 18
2. Number of data elements (average): 2
3. Format: [Check one in each column]:
Fixed number of data elements X Length of data elements:
All fixed X
Some fixed _____
Variable number of data elements _____ None fixed _____
4. Character sets: [Check one or more]
Standard Roman X Non-Roman _____
Extended Roman _____ Oriental _____
Special _____
5. Form(s) of output: [Check one or more]
Machine readable X Human readable _____
Permanent _____
Transient _____
6. Reaction time: [Check one of the following]
Immediate (3-5 sec.) X Overnight (24 hours) _____
Rapid (during the day) _____ Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]
8. Remarks: J1-B
None

FUNCTIONAL REQUIREMENTS - TERMINALSI. GENERAL DESCRIPTIONCATEGORY G: REFERENCE

Reference terminals are to be used by reference librarians and other L. C. staff such as, Legislative Reference, Law Library, Copyright Office and Card Division personnel for the purpose of carrying out the reference function by automatically interrogating the Central Bibliographic Files.

In carrying out the search function, the reference librarian will have the capability to consult and recall records from the catalog and from other files and obtain a permanent record of these searches. The items resulting from this reference search can then be requested, if desired, and a message is output from the system indicating the status of the requested material.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Reference	Reference No. <u> G </u>
Subcategory:	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
D000	L131(L331)	Senior Specialist (GS)		None Known
		Senior Specialist (GS)		" "
D000	L261(L331)	Senior Specialist (GS)		" "
		Senior Specialist (GS)		" "
F051	L121	Reference Librarian (GS-1410-7-6916)		" "
		Bibliographer (GS-1410-9-6533)		" "
		Senior Bibliographer (GS-1410-11-6295)		" "
F051	L261	Reference Librarian (GS-1410-7-6916)		" "
		Bibliographer (GS-1410-9-6533)		" "
		Senior Bibliographer (GS-1410-11-6295)		" "
F052	L122	Reference Librarian (GS-1410-9-4964)		" "
		Reference Librarian (GS-1410-9-6474)		" "
		Senior Reference Librarian (GS-1410-11-6475)		" "
F052	L262	Reference Librarian (GS-1410-9-4964)		" "
		Reference Librarian (GS-1410-9-6474)		" "

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Reference (Continued)

Reference No. 6

Subcategory:

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F052	L262	Senior Reference Librarian (GS-1410-11-6475)	None Known
F080	L111	Loan Reference Specialist (GS-1410-11-543)	" "
F080	L111	Loan Reference Assistant (GS-1410-9-544)	" "
F080	L111	Loan Reference Assistant (GS-1410-7-545)	" "
F160	L112(L322)	Reference Librarian (GS-1410-11-8234)	" "
F160	L112(L322)	Reference Librarian (GS-1410-9-8235)	" "
G010	L122	Privileged Reader	" "
G010	L262	Privileged Reader	" "
A030	L211	Senior Searcher (GS-1410-8-5539)	" "
E160	L411(L311)	Searcher (GS-1411-5-4137)	" "

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Reference	Reference No. <u> G </u>
Subcategory:	

1. Functions:

1. Record user ID data
2. Consults/recalls records from catalog and other files
3. Issues results of reference work
4. Records request data
5. Transmits request data
6. Issues request feedback message

2. Modes of operation: [Check one or more in each column]

On-line	<u> X </u>	Single user	<u> </u>	Attended and Unattended	<u> </u>
Off-line	<u> </u>	Multiple users	<u> X </u>	Attended only	<u> X </u>

3. Type(s) of inputs:

- a. Bibliographic/auxiliary search data
- b. Circulation requests

4. Type(s) of outputs:

- a. Preliminary bibliographic data records
- b. Completed bibliographic data records
- c. Auxiliary data records
- d. Material control messages

5. Remarks:

None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Reference	Sheet a. Reference No. <u>G</u>
Subcategory:	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>77</u>
2. Number of data elements (average):	<u>5</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
H1-F	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Reference	Sheet a. Reference No. <u>G</u>
Subcategory:	Input No. <u>b</u>
Type(s): [Refer to Sheet a.] b. Circulation requests	

1. Number of characters (average):	<u>20</u>
2. Number of data elements (average):	<u>2</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u>X</u>
Variable number of data elements	_____
Length of data elements:	
All fixed	<u>X</u>
Some fixed	_____
None fixed	_____
4. Character sets: [Check one or more]	
Standard Roman	<u>X</u>
Extended Roman	_____
Non-Roman	_____
Oriental	_____
Special	_____
5. References: [Source(s) for above]	
H1-M	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Reference	Sheet a. Reference No. <u>G</u>
Subcategory:	Output No. <u>a, b, c</u>
Type(s): [Refer to Sheet a.]	
a. Preliminary bibliographic data records	
b. Completed bibliographic data records	
c. Auxiliary data records	

1. Number of characters (average):	<u>367</u>
2. Number of data elements (average):	<u>13</u>
3. Format: [Check one in each column]:	Length of data elements:
Fixed number of data elements _____	All fixed _____
Variable number of data elements <u>X</u>	Some fixed <u>X</u>
	None fixed _____
4. Character sets: [Check one or more]	
Standard Roman _____	Non-Roman <u>X</u>
Extended Roman <u>X</u>	Oriental <u>X</u>
Special <u>X</u>	
5. Form(s) of output: [Check one or more]	
Machine readable _____	Human readable <u>X</u>
	Permanent <u>X</u>
	Transient <u>X</u>
6. Reaction time: [Check one of the following]	
Immediate (3-5 sec.) <u>X</u>	Overnight (24 hours) _____
Rapid (during the day) _____	Time avail. (>24 hrs.) _____
7. References: [Source(s) for above]	
8. Remarks: H1-G	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Reference Sheet a. Reference No. G
Subcategory: Output No. d

Type(s): [Refer to Sheet a.]

d. Material control message

1. Number of characters (average): 14
2. Number of data elements (average): 2
3. Format: [Check one in each column]:

		Length of data elements:	
Fixed number of data elements	<u>X</u>	All fixed	<u>X</u>
		Some fixed	<u> </u>
Variable number of data elements	<u> </u>	None fixed	<u> </u>
4. Character sets: [Check one or more]

Standard Roman	<u>X</u>	Non-Roman	<u> </u>
Extended Roman	<u> </u>	Oriental	<u> </u>
Special	<u> </u>		
5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u> </u>
		Transient	<u>X</u>
6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.)	<u> </u>
7. References: [Source(s) for above]
III-N
8. Remarks:
None

I. GENERAL DESCRIPTIONCATEGORY H: READING ROOM CONTROL

The reading room attendant aids readers in inquiring about the status of various materials, initiates requests for special searches, and supervises the distribution of pieces to the readers after they come from the stacks, and after being returned by readers. This effort divides logically into two sequences, a reference and user request function and a material control function. The first of these sequences of operations is quite similar to the function performed by the reference category. In carrying out the search function the reading room attendant will have the capability to recall and consult records from the central catalog and other files and retain results of these searches. Requests for items often result from these searches.

The second sequence of operations is a material control function where books are routed to appropriate locations. In order to provide for a finer control over the movement of materials, the status and intended destination of materials are recorded as they are discharged from the Issue Desk.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Reading Room Control	Reference No. <u>H</u>
Subcategory:	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F180	L122	Issue Deck Attendant (GS-1411-5-7057)	None known
F180	L122	Special Searcher (GS-1410-7-7939)	" "
F180	L262	Issue Deck Attendant (GS-1411-5-7057)	" "
F180	L262	Special Searcher (GS-1410-7-7939)	" "
F180	L261	Supervisor-Study Facilities (GS-1411-6-6287)	" "
F180	L261	Asst. Supervisor-Study Facilities (GS-1411-5-6288)	" "
F180	L261	Study Facilities Assistant (GS-1411-3-7115)	" "

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Reading Room Control

Reference No. H

Subcategory:

1. Functions:
- Sequence 1: a. Consults/recalls records from catalog and other files
b. Issues results of searches
c. ~~Records request data~~
d. Transmits request data
e. Issues request feedback message
- Sequence 2. a. Records PIN
b. Creates transaction data
c. Generates status data
d. Records user/attendant data
e. Transmits PIN, status, user/attendant, transaction data
2. Modes of operation: [Check one or more in each column]
- | | | | | | |
|----------|---------------|----------------|---------------|-------------------------|---------------|
| On-line | <u> X </u> | Single user | <u> </u> | Attended and Unattended | <u> X </u> |
| Off-line | <u> </u> | Multiple users | <u> X </u> | Attended only | <u> </u> |
3. Type(s) of inputs:
- Sequence 1. a. Bibliographic/auxiliary search data
b. Circulation requests
- Sequence 2. a. Status and location data
4. Type(s) of outputs:
- Sequence 1. a. Preliminary bibliographic data records
b. Completed bibliographic data records
c. Auxiliary data records
d. Material control messages
- Sequence 2. a. Material control messages.
5. Remarks:
- Sequence 1 is similar to the reference and user request function. (Category G)
Sequence 2 is similar to the material control function. (Category C)
 - Both sequences will probably be carried out by similar personnel at the same terminal station.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Reading Room Control	Sheet a. Reference No. <u>H</u>
Subcategory:	Input No. <u>1a</u>
Type(s): [Refer to Sheet a.]	
1a. Bibliographic/auxiliary search data	

1. Number of characters (average):	<u>77</u>
2. Number of data elements (average):	<u>5</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u> </u>
Variable number of data elements	<u> X </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> </u> <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> </u>
Extended Roman	<u> X </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
H1-F	
6. Remarks:	
None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Reading Room Control	Sheet a. Reference No. <u>H</u>
Subcategory:	Input No. <u>1b</u>
Type(s): [Refer to Sheet a.]	
1b. Circulation requests	

1. Number of characters (average):	<u>20</u>
2. Number of data elements (average):	<u>2</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u>X</u>
Variable number of data elements	<u> </u>
	Length of data elements:
	All fixed <u>X</u>
	Some fixed <u> </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u>X</u>
Extended Roman	<u> </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
H1-M	
6. Remarks: None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Reading Room Control	Sheet a. Reference No. <u>H</u>
Subcategory:	Input No. <u>2a</u>
Type(s): [Refer to Sheet a.]	
2a. Status and location data	

1. Number of characters (average):	<u>18</u>	
2. Number of data elements (average):	<u>2</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	_____	All fixed <u>X</u>
		Some fixed _____
		None fixed _____
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	_____	
Non-Roman	_____	
Oriental	_____	
Special	_____	
5. References: [Source(s) for above]		
	J1-B	
6. Remarks: None		

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Reading Room Control	Sheet a. Reference No. <u>H</u>
Subcategory:	Output No. <u>a, b, c</u>
Type(s): [Refer to Sheet a.]	
1a. Preliminary bibliographic data records 1b. Completed bibliographic data records 1c. Auxiliary data records	

1. Number of characters (average):	<u>367</u>	
2. Number of data elements (average):	<u>13</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u> </u>
Variable number of data elements	<u>X</u>	Some fixed <u>X</u>
None fixed		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u>X</u>
Extended Roman	<u>X</u>	Oriental <u>X</u>
Special	<u>X</u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u>X</u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
H1-G		
8. Remarks: None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Reading Room Control

Sheet a. Reference No. H

Subcategory:

Output No. 1d

Type(s): [Refer to Sheet a.]

Sequence 1: d. - Material Control Messages

1. Number of characters (average): 14
2. Number of data elements (average): 2
3. Format: [Check one in each column]:

Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	<u> </u>	All fixed <u>X</u>
		Some fixed <u> </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]

Standard Roman	<u>X</u>	Non-Roman	<u> </u>
Extended Roman	<u> </u>	Oriental	<u> </u>
Special	<u> </u>		
5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u> </u>
		Transient	<u>X</u>
6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.)	<u> </u>
7. References: [Source(s) for above]
8. Remarks: H1-N
None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Reading Room Control	Sheet a. Reference No. <u>H</u>
Subcategory:	Output No. <u>2a</u>
Type(s): [Refer to Sheet a.]	
Sequence 2:a. Material Control Messages	

1. Number of characters (average):	<u>33</u>	
2. Number of data elements (average):	<u>7</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u> </u>
Variable number of data elements	<u>X</u>	Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> </u>	Non-Roman <u>X</u>
Extended Roman	<u>X</u>	Oriental <u>X</u>
Special	<u>X</u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
8. Remarks: J1-G		
None		

3.3.14 FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY I: MATERIAL REQUEST

In the automated Library of Congress, heavy borrowers as well as general readers would have a machine readable badge containing an assigned identification code. These codes would be assigned in advance and stored together with a user's name (address, etc.) in the central system. To order a book or other document, the reader would fill out a call slip in the usual manner (title, author) except that the call number would be written in a form suitable for machine reading and the reader's name and address would not be used. This slip would then be taken to a material request terminal where the call number is read from the call slip and the reader's ID is read from his badge. The system immediately feeds back to the reader the status of the requested item which it gets from its central catalog and if the item is available, a request message is transmitted automatically to the appropriate deck where it is printed out as a drawing slip at a material drawing terminal (Category E-1). The drawing slip contains in addition to the reader's ID and call number the item's basic bibliographic information (author, title, etc.) which is automatically supplied from the system's central catalog.

The item is drawn from the shelf by a deck attendant and sent to the appropriate issue desk with the drawing slip. If the item is not found on the shelf the drawing slip is so marked and again returned to the issue desk for special action, as required.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Material Request	Reference No. <u> I </u>
Subcategory:	

	a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
G030	L122	On Premise Readers (L.C. Staff) On Premise Readers (General Public)		None known Ability to perform only simple manual tasks should be assumed.
G030	L262	On Premises Readers (L.C. Staff) On Premises Readers (General Public)		Same as above.
G030	L261	Special Study Facility Reader		None known
F180	L261	Study Facilities Asst. (GS-1411-3-7115)		Does not necessarily possess foreign language skills.
<p>Note: User profile is only indicative of the types of users and locations in which material request terminals would be used.</p>				

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Material Request Reference No. I

Subcategory:

1. Functions:
1. Records request data
 2. Records user data
 3. Transmits request/user data
 4. Issues request feedback message

2. Modes of operation: [Check one or more in each column]

On-line x Single user _____ Attended and Unattended _____

Off-line _____ Multiple users x Attended only X

3. Type(s) of inputs:

- a. Reading room circulation requests

4. Type(s) of outputs:

- a. Reading room charge messages

5. Remarks: None

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Material Request	Sheet a. Reference No. <u>I</u>
Subcategory:	Input No. <u>a</u>
Type(s): [Refer to Sheet a.] a. Reading Room Circulation Request	

1. Number of characters (average):	<u>31</u>
2. Number of data elements (average):	<u>3</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u>X</u>
Variable number of data elements	<u> </u>
	Length of data elements:
	All fixed <u> </u>
	Some fixed <u> X </u>
	None fixed <u> </u>
4. Character sets: [Check one or more]	
Standard Roman	<u> X </u>
Extended Roman	<u> </u>
Non-Roman	<u> </u>
Oriental	<u> </u>
Special	<u> </u>
5. References: [Source(s) for above]	
H1-K	
6. Remarks: None	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Material Request	Sheet a. Reference No. <u>I</u>
Subcategory:	Output No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Reading Room Charge Messages	

1. Number of characters (average):	<u>14</u>	
2. Number of data elements (average):	<u>2</u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u>X</u>	All fixed <u>X</u>
Variable number of data elements	<u> </u>	Some fixed <u> </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	Non-Roman <u> </u>
Extended Roman	<u> </u>	Oriental <u> </u>
Special	<u> </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u>X</u>
		Permanent <u>X</u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u>X</u>	Overnight (24 hours) <u> </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
8. Remarks: H1-L None		

3.3.15 FUNCTIONAL REQUIREMENTS - TERMINALS

I. GENERAL DESCRIPTION

CATEGORY J-1: CHARGING

All books charged out of the Library by staff members with borrowing privileges and other agencies and organizations must pass through the charge station in the Loan Division. Each item charged is issued a pass slip which contains the basic information relating to the charge. The charging station must be flexible enough to be able to charge items automatically if they are PIN labeled (with a catalog record already available in the central system) or accept bibliographic data furnished by the Charge Records Assistant to create the basic record. Borrowers are assigned permanent machine readable badges containing an identification code which is automatically read at the charging station. The pass slip is designed so that it can be used to automatically discharge items when they are returned (see Category J-2).

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Loan Control Subcategory: 1. Charging	Reference No. <u> J1 </u>
--	---------------------------------

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F080	L111	Charge Records Assistant (GS-1411-6-553)	Does not necessarily possess foreign language skills "
F090	L111	Charge Records Assistant (GS-1411-5-554)	
F080	L111	Charge Records Assistant (GS-1411-4-555)	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Loan Control

Reference No. J1

Subcategory: 1. Charging

1. Functions:
1. Records PIN
 2. Creates transaction data
 3. Generates status data
 4. Records borrower data
 5. Creates material description data (see remarks)
 6. Transmits PIN, status, borrower, material description, transaction data
 7. Issues charge message

2. Modes of operation: [Check one or more in each column]

On-line Single user Attended and Unattended

Off-line Multiple users Attended only

3. Type(s) of inputs:

a. Outside loan charge data

b. Custodial assignment charge data

4. Type(s) of outputs:

a. Loan charge data slips

5. Remarks:

Function 5 will be required to charge those materials for which a MR record does not exist.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Loan Control	Sheet a. Reference No. <u>J1</u>
Subcategory: 1. Charging	Input No. <u>a,b</u>
Type(s): [Refer to Sheet a.]	
a. Outside loan charge data	
b. Custodial assignment charge data	

1. Number of characters (average):	<u>97</u>
2. Number of data elements (average):	<u>4</u>
3. Format: [Check one in each column]	
Fixed number of data elements	<u>X</u>
Variable number of data elements	_____
Length of data elements:	
All fixed	_____
Some fixed	<u>X</u>
None fixed	_____
4. Character sets: [Check one or more]	
Standard Roman	<u>X</u>
Extended Roman	_____
Non-Roman	_____
Oriental	_____
Special	_____
5. References: [Source(s) for above]	
J1-A	
J1-E	
6. Remarks:	
It will be necessary to create the material description for the charge slip if a MR record does not exist in the system. Normal operations will be automatic output of slip based on PIN and badge ID.	

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Loan Control .

Sheet a. Reference No. J1

Subcategory: 1. Charging

Output No. a

Type(s): [Refer to Sheet a.]

a. Loan charge data slips

1. Number of characters (average): 33
2. Number of data elements (average): 7
3. Format: [Check one in each column]:
- | | | |
|----------------------------------|-------------------|------------------------------|
| Fixed number of data elements | <u> </u> | Length of data elements: |
| Variable number of data elements | <u>x</u> | All fixed <u> </u> |
| | | Some fixed <u>x</u> |
| | | None fixed <u> </u> |
4. Character sets: [Check one or more]
- | | | | |
|----------------|-------------------|-----------|-------------------|
| Standard Roman | <u>x</u> | Non-Roman | <u> </u> |
| Extended Roman | <u> </u> | Oriental | <u> </u> |
| Special | <u> </u> | | |
5. Form(s) of output: [Check one or more]
- | | | | |
|------------------|----------|----------------|-------------------|
| Machine readable | <u>x</u> | Human readable | <u>x</u> |
| | | Permanent | <u>x</u> |
| | | Transient | <u> </u> |
6. Reaction time: [Check one of the following]
- | | | | |
|------------------------|-------------------|------------------------|-------------------|
| Immediate (3-5 sec.) | <u>x</u> | Overnight (24 hours) | <u> </u> |
| Rapid (during the day) | <u> </u> | Time avail. (>24 hrs.) | <u> </u> |
7. References: [Source(s) for above]
J1-G
8. Remarks:

None

I. GENERAL DESCRIPTIONCATEGORY J-2: DISCHARGING

Items being returned to the Library must be discharged in the Loan Division. The discharging station is designed to read data automatically off of the previously generated pass slips and transmit these together with manually entered transaction data, such as routing information, to update the central catalog. Reserve slips may be automatically generated at the station as a result of the discharging operation if there is a request for an item which was entered previously through a reference station.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Loan Control Reference No. J2
Subcategory: 2. Discharging.

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F080	L111	Charge Records Assistant (GS-1411-6-553)	Does not necessarily possess foreign language skills
F080	L111	Charge Records Assistant (GS-1411-5-554)	"
F080	L111	Charge Records Assistant (GS-1411-4-555)	"

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Loan Control

Reference No. J2

Subcategory: 2. Discharging

1. Functions:
1. Records discharge data
 2. Generates status data
 3. Transmits discharge, status data
 4. Issues discharge feedback message

2. Modes of operation: [Check one or more in each column]

On-line x Single user x Attended and Unattended x

Off-line Multiple users Attended only

3. Type(s) of inputs:

a. Loan charge data slips

4. Type(s) of outputs:

a. Material control messages

5. Remarks:

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Loan Control	Sheet a. Reference No. <u>J2</u>
Subcategory: 2. Discharging	Input No. <u>a</u>
Type(s): [Refer to Sheet a.]	
a. Loan charge data slips	

1. Number of characters (average):	<u>29</u>	
2. Number of data elements (average):	<u>3</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	
Variable number of data elements	<u> </u>	
	Length of data elements:	
	All fixed	<u>X</u>
	Some fixed	<u> </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above]		
J1-D		
6. Remarks:		
Material Status Recording terminal (Category C) could be used to discharge material if a MR record is available in central files.		

FUNCTIONAL REQUIREMENTS - TERMINALS -

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Loan Control .

Sheet a. Reference No. J2

Subcategory: 2. Discharging

Output No. a

Type(s): [Refer to Sheet a.]

a. Material control message

1. Number of characters (average): 173
2. Number of data elements (average): 6
3. Format: [Check one in each column]:

Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	<u> </u>	All fixed <u> </u>
		Some fixed <u>X</u>
		None fixed <u> </u>
4. Character sets: [Check one or more]

Standard Roman	<u>X</u>	Non-Roman	<u> </u>
Extended Roman	<u> </u>	Oriental	<u> </u>
Special	<u> </u>		
5. Form(s) of output: [Check one or more]

Machine readable	<u> </u>	Human readable	<u>X</u>
		Permanent	<u>X</u>
		Transient	<u> </u>
6. Reaction time: [Check one of the following]

Immediate (3-5 sec.)	<u> </u>	Overnight (24 hours)	<u> </u>
Rapid (during the day)	<u>X</u>	Time avail. (>24 hrs.)	<u> </u>
7. References: [Source(s) for above]
J1-E
8. Remarks:
This a an availability notice for reserved material.

I. GENERAL DISCRPTION

CATEGORY K: INVOICE CLEARING

Invoice clearing station is used to carry out the responsibility of receiving, recording, examining and clearing for payment, all invoices received for materials purchased by the Order Division for the Library of Congress and for preparing the necessary records and transmittal documents.

The operations performed at this terminal category are divided into two sequences. Sequence 1 is the log-in function of basic invoice data. The operation consists of recording invoice ID data and transmitting this data together with transaction and status data to the central system.

Sequence 2 is basically a bookkeeping operation in which Invoice Examiners carry out detailed operations on the invoice that was received and logged-in in Sequence 1. This includes recalling base invoice information and other procurement data. From this information a payment record is created and transmitted to the central system. This payment record can be further recalled and revised as desired. During these operations, the terminal user will require the capability to store data and perform arithmetic calculations. The final step in this sequence is the clearing for payment of the invoice and the issuance of a payment document which authorizes the payment of the invoice. At all times during the above sequences, the terminal user must be able to create and generate status and transaction data and transmit them together with ID data to the central system.

FUNCTIONAL REQUIREMENTS - TERMINALS

II. User Profile

Category: Invoice Clearing	Reference No. <u> K </u>
Subcategory:	

a. ORGANIZATIONAL IDENTIFICATION	b. PRESENT LOCATION (FUTURE PLANNED LOCATION)	c. JOB CLASSIFICATION	d. USER CONSTRAINTS
F060	L251(L351)	Invoice Examiner (GS-540-5-265)	Does not necessarily possess foreign language skills

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Invoice Clearing

Reference No. K

Subcategory:

1. Functions:
- Sequence 1: a. Records invoice ID data
b. Creates transaction data
c. Generates status data
d. Transmits invoice ID transaction and status data
- Sequence 2: a. Recalls base invoice record
b. Creates transaction data
c. Generates status data
d. Creates payment records
e. Calculates payment data (continued)
2. Modes of operation: [Check one or more in each column]
- | | | | | | |
|----------|--------------|----------------|---------------|-------------------------|------------------|
| On-line | <u> X </u> | Single user | <u> </u> | Attended and Unattended | <u> </u> |
| Off-line | <u> X </u> | Multiple users | <u> X </u> | Attended only | <u> X </u> |
3. Type(s) of inputs:
- Sequence 1: a. Payment account data, Type I
- Sequence 2: a. Payment account data, Type II
4. Type(s) of outputs:
- Sequence 1: None
- Sequence 2: a. Purchase order settlement messages
5. Remarks:
1. Sequence 1 is the log-in function, Sequence 2 is the book-keeping function. They may be carried out by different persons.
 2. This category should, as an option, be able to operate in an off-line mode.

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

a. Tasks to be Performed

Category: Invoice Clearing (Continued)	Reference No. <u> K </u>
Subcategory:	

1. Functions:	Sequence 2: (Continued)	
	f. Recalls payment record	
	g. Revises payment record	
	h. Issues payment document	
	i. Transmits payment, transaction and status data	
2. Modes of operation:	[Check one or more in each column]	
On-line <u> </u>	Single user <u> </u>	Attended and Unattended <u> </u>
Off-line <u> </u>	Multiple users <u> </u>	Attended only <u> </u>
3. Type(s) of inputs:		
4. Type(s) of outputs:		
5. Remarks:		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Invoice Clearing	Sheet a. Reference No. <u> K </u>
Subcategory:	Input No. <u> 1a </u>
Type(s): [Refer to Sheet a.]	
1a. Payment account data, Type I	

1. Number of characters (average):	<u> 76 </u>	
2. Number of data elements (average):	<u> 7 </u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u> </u>	
Variable number of data elements	<u> X </u>	
	Length of data elements:	
	All fixed	<u> X </u>
	Some fixed	<u> </u>
	None fixed	<u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> X </u>	
Extended Roman	<u> </u>	
Non-Roman	<u> </u>	
Oriental	<u> </u>	
Special	<u> </u>	
5. References: [Source(s) for above]		
O.D.16		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

b. INPUTS - Representative Detailed Characteristics

Category: Invoice Clearing	Sheet a. Reference No. <u>K</u>
Subcategory:	Input No. <u>2a</u>
Type(s): [Refer to Sheet a.]	
2a. Payment account data, Type II	

1. Number of characters (average):	<u>177</u>	
2. Number of data elements (average):	<u>25</u>	
3. Format: [Check one in each column]		
Fixed number of data elements	<u>X</u>	Length of data elements:
Variable number of data elements	_____	All fixed <u>X</u>
		Some fixed _____
		None fixed _____
4. Character sets: [Check one or more]		
Standard Roman	<u>X</u>	
Extended Roman	_____	
Non-Roman	_____	
Oriental	_____	
Special	_____	
5. References: [Source(s) for above]		
O.D.17		
6. Remarks:		
None		

FUNCTIONAL REQUIREMENTS - TERMINALS

III. Operations Profile

c. OUTPUTS - Representative Detailed Characteristics

Category: Invoice Clearing	Sheet a. Reference No. <u> K </u>
Subcategory:	Output No. <u> 2a </u>
Type(s): [Refer to Sheet a.]	
2a. Purchase order settlement messages	

1. Number of characters (average):	<u> 128 </u>	
2. Number of data elements (average):	<u> 10 </u>	
3. Format: [Check one in each column]:		Length of data elements:
Fixed number of data elements	<u> </u>	All fixed <u> </u>
Variable number of data elements	<u> X </u>	Some fixed <u> X </u>
		None fixed <u> </u>
4. Character sets: [Check one or more]		
Standard Roman	<u> X </u>	Non-Roman <u> </u>
Extended Roman	<u> </u>	Oriental <u> </u>
Special	<u> </u>	
5. Form(s) of output: [Check one or more]		
Machine readable	<u> </u>	Human readable <u> X </u>
		Permanent <u> X </u>
		Transient <u> </u>
6. Reaction time: [Check one of the following]		
Immediate (3-5 sec.)	<u> </u>	Overnight (24 hours) <u> X </u>
Rapid (during the day)	<u> </u>	Time avail. (>24 hrs.) <u> </u>
7. References: [Source(s) for above]		
	O.D.18, 19, 20	
8. Remarks:		
	Used weighted averages of O.D.18, 19, 20 for Items 1 and 2.	

4. DETERMINATION OF MAXIMUM (1980) TRAFFIC LOADS AND QUANTITATIVE FACTORS.

4.1 1980 LOAD ANALYSIS.

4.1.1 REVIEW OF 1972 UAC WORK.

In order to obtain sufficient information to project the 1972 loads listed in Table VIII of the UAC Task III Report, Volume II to 1980, an analysis of the 1972 algorithms was carried out. This resulted in a verification of the 1972 work in the United Aircraft Corporation report. The results indicated no significant changes in the figures shown in the terminal loads and numbers. Table 1 is a compilation and comparison of the 1972 terminal numbers as reported in the UAC study and as updated in this analysis. The figures include the recommended number of terminals as enumerated in the UAC report including allowances for dispersal of stack locations and ten percent allowance for spares, variation of loads, etc.

4.1.2 ANALYSIS OF 1980 LOADS.

The traffic load analysis utilizing the United Aircraft Corporation algorithms for 1980 traffic loads and numbers of terminals are shown in Table 2. Table 2 is patterned after Table VIII of the UAC Task III report. As in the UAC report, the number of terminals required was derived from message flow data analysis from the data sheets in Volume III supplemented by allowances for certain terminals such as storage location entry stations and PIN readers for fine control. The methods of determining the number of terminals required are indicated in notes following the table. These numbers have not taken into consideration allowances for stack dispersion factors and for spares. Table 3 shows the numbers of terminals corrected for these factors with a ten percent allowance for spares.

4.1.3 COMPARISON OF 1980 UAC DATA WITH RECOMMENDED DATA.

It was mentioned earlier that the estimates of terminal requirements for 1980 in Table A-VI of Appendix A, Page A-14 of

TABLE 1

COMPARISON OF 1972 NUMBER OF TERMINALS REQUIRED FROM UAC
STUDY WITH THAT UPDATED IN PRESENT STUDY

	<u>1972 UAC</u>	<u>1972 UPDATED</u>
DATA ENTRY	125	129
PIN LABELER	4	4
PIN READER	265	257
VISUAL DISPLAY	419	412
HARD COPY DEVICE (REMOTE)	59	59
HARD COPY DEVICE (DP CENTER)	2	2
STORAGE LOCATION ENTRY STATION	50	50

TABLE 2
TERMINAL DEVICES - TRAFFIC AND NUMBER OF DEVICES REQUIRED - 1980

TYPE OF ACTIVITY	Data Entry Terminals			PIN Labeler			PIN Reader			Data Input	
	No. Records (K)	No. Char. (M)	No. Terminals (1)	No. Records (K)	No. Char. (M)	No. Labelers (2)	No. Records (K)	No. Char. (M)	No. Readers	No. Records (K)	No. Char. (M)
1. Recommended Acquisitions (10)											
2. Prepare Input Data Records	12,722	3456.5	167							1,890.0	69.9
3. Order or Request Material										501.7	11,547
4. Receive and Route Material				4460	227.4	5	3560.0	32.0	37 (3)	4,110.0	286.7
5. Catalog and Provide Bibliographic Control of Material									224 (4)	25,702	1798.3
6. Prepare Material for Storage									12 (4)	2,626	95.9
7. Receive Requests for Material (outside retention)	982	162.0	13								
8. Provide Reference Service										28,650	2206
9. Generate Routine Products (CBS Files)										600	30.6
10. Provide Circulation Control	12,380	233.0	19								
11. Allowance for Storage Entry Stations											
12. Allowance for Fire Control of Material							46,100	415	152 (5)		
TOTAL			199			5			425		

NOTES (TABLE 2)

- (1) Based on Keying rate of 2 Char. per sec., and effective operating time of 7 hours per day, 250 days per year, (61% of traffic keyed, 39% estimated to be in digital form, applies to item 2.)
- (2) Based on 6 seconds per piece, and effective operating time of 7 hours per day, 250 days per year. Includes labeling of recataloged and other recycled material being prepared for storage.
- (3) One PIN Reader per console plus four, for 32.0 traffic (6 sec. per piece, 7 hours per day, 250 days per year).
- (4) One PIN Reader per console.
- (5) Based on a 66 percent rate request increase over 1972 UAC numbers of readers.
- (6) Based on Keying rate of 2 char. per second data input and 20 seconds review time for each record output. Operation 7 hours per day, 250 days per year.
- (7) Based on 10 char. per second printing speed; operation time 6 hours per day, 250 days per year. 20% traffic added for fixed format printing.
- (8) Based on 1100 char. per second printing speed; operation time 6 hours per day, 250 days per year, 30% traffic added for fixed format printing.
- (9) Based on 1972 estimate of deck attendants increased for 1980 traffic.
- (10) Terminal requirements are subsumed in other activities.

TABLE 3
RECOMMENDED NUMBER OF TERMINALS - 1980

Type of Terminal	No. of Terminals Based on Traffic Volumes	Allowances for Stack Dispersal	10% Allowance for spares, variation of loads, etc.	Recommended No. of Terminals
1. Data Entry Terminals	199		20	219
2. PIN Labelers	5		1	6
3. PIN Readers	425		43	468
4. Visual Display Consoles	669		67	736
5. Hardcopy Devices a. Remote b. At DP Center	32 4	47	8 1	87 5
6. Storage Location Entry Stations	83		9	92

Volume IV, Part 1 of the UAC Task III Report were determined by percentage increases based on across-the-board increases between 1972 and 1980. Table 4 is a comparison of the number of terminals estimated in the UAC report with the numbers recommended as a result of this study. It is noted that the totals are within five percent of each other.

4.1.4 UTILIZATION OF 1980 RECOMMENDED DATA.

The traffic load and terminal number determinations depicted in Table 2 are not generally directly usable in their present form, but must be used as a basis for additional analysis based on changes in numbers and types of terminals. As will be shown later in this report, the functional requirements for the automated system (Section I of the Attachment to RFP 950) place a requirement for additions, subdivisions and refinements on the number of terminal type modules that were envisaged in the UAC report. In certain isolated categories, such as PIN LABELERS, the data from Table 2 can be utilized directly, but in most instances, the data in Table 2 is usable as the necessary framework within which the matrix of terminal modules and categories may be assigned quantitative factors.

TABLE 4

COMPARISON OF NUMBER OF TERMINALS REQUIRED IN 1980
AS ESTIMATED IN UAC REPORT AND AS RECOMMENDED

<u>TERMINALS</u>	<u>1980 UAC</u>	<u>1980 RECOMMENDED</u>
PIN LABELER	--- *	6
PIN READER	--- *	468
VISUAL DISPLAY	--- *	736
HARD COPY DEVICE (REMOTE)	--- *	87
HARD COPY DEVICE (DP CENTER)	--- *	5
STORAGE LOCATION ENTRY STATION	--- *	92
TOTAL	<hr/> 1,325	<hr/> 1,393
DATA ENTRY	208	219

*1980 terminal complement not estimated by UAC on an individual type basis.

5. DERIVATION OF MODULES FROM CATEGORY DESCRIPTIONS.

5.1 INTRODUCTION.

The specific set of modules which have been derived (see Section 5.5) by analyzing the functional requirements are listed below (5.3). These modules have also been mapped onto a series of matrices showing classes of input and output devices, (5.4) which have been defined by considering the following factors:

Input Devices - Factors

1. Number of fields per message
2. Length of fields per message
3. Frequency of occurrence of messages
4. Character sets represented in messages

Output Devices - Factors

1. Number of fields per message
2. Length of fields per message
3. Forms of presentation of messages
4. Character sets represented in messages

All of the character sets are defined in Appendix A.

5.2 TERMINOLOGY.

Wherever possible, the terms used in describing modules are those in common practice, e.g., "printers, visual displays". In cases where a common term was not available for describing a particular kind of device, one was devised with an attempt to make it as descriptive as possible.

5.3 LIST OF MODULES.

1. Full printer - standard Roman character set
2. Full printer - extended Roman character set

3. Full printer - combined sets (extended Roman and selected Non-Roman)
4. Full printer - combined sets (extended Roman and selected set for Oriental language or special symbols)
5. Full printer - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
6. Machine readable media generator - standard Roman character sets
7. Machine readable media generator - extended Roman character set
8. Machine readable media generator - combined sets (extended Roman and selected Non-Roman)
9. Machine readable media generator - combined sets (extended Roman and selected set for Oriental language or special symbols)
10. Machine readable media generator - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
11. Marking device - numeric character set
12. Machine readable unit document generator - standard Roman character set
13. PIN labeler - standard Roman character set
14. Full visual display - extended Roman character set
15. Full visual display - combined sets (extended Roman and selected Non-Roman)
16. Full visual display - combined sets (extended Roman and selected set for Oriental language or special symbols)

17. Full visual display - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
18. Keyboard - standard Roman character set
19. Keyboard - extended Roman character set
20. Keyboard - combined sets (extended Roman and selected Non-Roman)
21. Entry device - Oriental language character set
22. Entry device - special symbols
23. Preprogrammed data entry device - numeric character set
24. Machine readable unit document reader - standard Roman character set
25. PIN Reader - standard Roman character set
26. Badge reader - numeric character set
27. I D Code generator - numeric character set
28. Time/date code generator - numeric character set
29. Calculating unit - numeric character set

5.4 DEVICE CLASS MATRICES.

As indicated in Section 5.1, the basic functional requirements from Section 3 were analyzed from the standpoint of the input and output factors listed in Section 5.1. A matrix was then produced as a result of this analysis, assigning classification numbers for the various combinations of factors. These were divided into three matrices as follows:

1. Classes of output devices - permanent forms of presentation
2. Classes of output devices - transient forms of presentation
3. Classes of input devices

The classification letters assigned are used in Section 5.5. The module numbers derived are from Section 5.3 and are also used in Section 5.5.

5.4.1* CLASSES OF OUTPUT DEVICES - PERMANENT FORMS OF PRESENTATION.

		Variable No. of Fields Variable and/or Fixed length	Fixed No. of Fields Variable Length	Fixed No. of Fields Fixed Length
Human Readable	Class Module**	A 1, 2, 3, 4, 5	B 1, 2, 3, 4, 5	C 1, 2, 3, 4, 5, 11
Machine Readable	Class Module	D 6, 7, 8, 9, 10	E 6, 7, 8, 9, 10	F 6, 7, 8, 9, 10
Human & Machine Readable	Class Module	G 12	H 12	I 12, 13

* Note: Letter in box is designator assigned for that class and used in Paragraph 5.5.

** Module number from Paragraph 5.3.

5.4.2 CLASSES OF OUTPUT DEVICES - TRANSIENT FORMS OF PRESENTATION.

		Variable No. of Fields Variable and/or Fixed Length	Fixed No. of Fields Variable Length	Fixed No. of Fields Fixed Length
Human Readable	Class Module	J 14, 15, 16, 17	K 14, 15, 16, 17	L 14, 15, 16, 17

5.4.3 CLASSES OF INPUT DEVICES.

		Variable No. of Fields Variable and/or Fixed Length	Fixed No. of Fields Variable Length	Fixed No. of Fields Fixed Length
Message Frequency - Low Less than 200 per day	Class Module	M 18, 19, 20, 21, 22	N 23	O
Message Frequency - Medium Less than 3,000 per day	Class Module	P 18, 19, 20, 21, 22	Q 23	R
Message Frequency - High More than 3,000 per day	Class Module	S 18, 19, 20, 21 22, 29*	T 23.	U 24, 25, 26, 27, 28

* Arithmetic operations required on data before transmitting.

5.5

DERIVATION OF TERMINAL MODULES.

Based on an analysis of the functional requirements of Section 3 and the input-output factors of Section 5.4, a final tabulation of module terminal derivation factors was performed. This includes a listing of similar functions which could be satisfied by the same or corresponding modules, a list of categories having the above functions, significant message characteristics, character sets, recommended modules, and remarks. The recommended modules include their class designation from Section 5.4 and the module numbers from Section 5.3.

The following abbreviations were used:

1. SR - standard Roman character set
2. ER - extended Roman character set
3. ER and SNR - combined sets - extended Roman and selected Non-Roman
4. ER, O and S - combined sets - extended Roman and selected set for Oriental language or special symbols
5. ER, NR, O and S - combined sets - extended Roman, Non-Roman, Oriental language set, and special symbols

The terminal module derivations follow.

DERIVATIONS OF TERMINAL MODULES

CLASSES

SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

A, B, C

1. Issues procurement message
2. Issues procurement feedback message
3. Issues, on demand, material control message
4. Issues intermediate or final results of accessioning data
5. Issues intermediate or final results of cataloging work
6. Issues results of reference work
7. Issues drawing request message
8. Issues discharge feedback message
9. Issues payment document
10. Issues results of searches

CATEGORIES HAVING ABOVE FUNCTIONS

1. Material Procurement
2. Material Status Recording
3. Accessioning
4. Preliminary Cataloging
5. Descriptive Cataloging
6. Subjective Cataloging, etc.
7. Reviewing
8. Drawing Material
9. Reference
10. Reading Room Control
11. Discharging
12. Invoice Clearing

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Output

- Variable number of fields of variable and/or fixed length
- Fixed number of fields of variable length
- Fixed number of fields of fixed length
- Human readable

CHARACTER SETS

1. Standard Roman
2. Extended Roman
3. Non-Roman
4. Oriental
5. Special

RECOMMENDED MODULES

1. Full printer - SR (A, B, C) (1)
2. Full printer - ER (A, B, C) (2)
3. Full printer ER and SNR (A, B, C) (3)
4. Full printer - ER, O and S (A, B, C) (4)
5. Full printer - ER, NR, O and S (A, B, C) (5)

REMARKS

None

DERIVATIONS OF TERMINAL MODULES

CLASSES

C

SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

Issues request feedback message

CATEGORIES HAVING ABOVE FUNCTIONS

1. Reference
2. Reading Room Control
3. Material Request

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Output
 - ° Fixed number of fields of fixed length
 - ° Human readable

CHARACTER SETS

Numeric character set

RECOMMENDED MODULES

Marking Device (C) (11)

REMARKS

This function would be implemented by outputting a limited number of messages on a request slip in conjunction with a machine readable unit document reader by a user who had placed his request slip under the reader.

DERIVATIONS OF TERMINAL MODULES

CLASSES SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

- D, E, F
1. Issues delayed material control message
 2. Issues procurement message
 3. Issues intermediate or final results of accessioning work
 4. Issues payment document

CATEGORIES HAVING ABOVE FUNCTIONS

1. Material Procurement²
2. Accessioning²
3. Reshelving Material¹
4. Inventorying Material¹
5. Invoice Clearing²

SIGNIFICANT MESSAGE CHARACTERISTICS

Output

- Variable numbers of fields of variable and/or fixed length
- Fixed numbers of fields of variable length
- Fixed numbers of fields of fixed length
- Machine readable

CHARACTER SETS

1. Standard Roman
2. Extended Roman
3. Non-Roman
4. Oriental
5. Special

RECOMMENDED MODULES

1. Machine Readable Media Generator - SR (D, E, F) (6)
2. Machine Readable Media Generator - ER (D, E, F) (7)
3. Machine Readable Media Generator - ER and SNR
(D, E, F) (8)
4. Machine Readable Media Generator - ER, O and S
(D, E, F) (9)
5. Machine Readable Media Generator - ER, SNR, O and S
(D, E, F) (10)

REMARKS (SEE SUPERSCRIPTS ABOVE)

1. For off-line capture of data (Reshelving Material and Inventorying Material).
2. Categories B (Material Procurement), D (Accessioning) and K (Invoice Clearing) should - as an option - be able to operate in an off-line mode. This would require machine readable media generators (MRMG) for these categories. With this, of course, the functions listed in "Tasks to be Performed" in Section 3 which imply an on-line mode would not be available. The above categories, B, D, and K, will require character sets other than standard Roman. Therefore the category - module matrix in Section 6 will show MRMGS in the appropriate character sets.

DERIVATIONS OF TERMINAL MODULES

CLASSES

SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

G, H, I

1. Issues PIN Message
2. Issues charge message
3. Issues PIN label

CATEGORIES HAVING ABOVE FUNCTIONS

1. PIN Assignment
2. Charging

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Output
 - Variable number of fields of variable and/or fixed length
 - Fixed numbers of fields of variable length
 - Fixed numbers of fields of fixed length
 - Human and machine readable
 - High frequency of usage (PIN Labeler)

CHARACTER SETS

1. Standard Roman

RECOMMENDED MODULES

1. Machine Readable Unit Document Generator - (G, H, I)(12)
2. PIN Labeler - (I) (13)

REMARKS

None

DERIVATIONS OF TERMINAL MODULES

CLASSES

SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

U

1. Records PIN data
2. Records request data
3. Records discharge data
4. Records invoice ID data
5. Generates status data¹
6. Records user ID data²
7. Records user/attendant data²
8. Records borrower data²
9. Records user data²
10. Records PIN

CATEGORIES HAVING ABOVE FUNCTIONS

1. PIN Assignment
2. Material Procurement
3. Material Status Recording
4. Accessioning
5. Preliminary Cataloging
6. Descriptive Cataloging
7. Subject Cataloging, etc.
8. Reviewing
9. Drawing Material
10. Reshelving Material
11. Inventorying Material
12. Reference
13. Reading Room Control
14. Material Request

15. Charging
16. Discharging
17. Invoice Clearing

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Input
 - Fixed number of fields of fixed length
 - High message frequency

CHARACTER SETS

1. Standard Roman
2. Roman Numeric

RECOMMENDED MODULES

1. Machine Readable Unit Document Reader (MRUDR) (U) (24)
2. Time/Date Code Generator (U) (28)
3. ID Code Generator (U) (27)
4. Badge Reader (U) (26)
5. PIN Reader (U) (25)

REMARKS (SEE SUPERSCRIPIT ABOVE)

1. This function may be implemented by a separate module or by logic or software in the terminal or in a controller.
2. Field contents controlled and assigned by central system (Input)

DERIVATIONS OF TERMINAL MODULES

<u>CLASSES</u>	<u>SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)</u>
J, K, L	1. Recalls base catalog record
M, P, S	2. Recalls procurement record
	3. Recalls base of completed catalog record
	4. Recalls preliminary catalog record
	5. Recalls final descriptive catalog records
	6. Recalls final provisional catalog records
	7. Consults catalog and other records
	8. Consults catalog authority files and catalog
	9. Consults/recalls records from catalog and other files
	10. Recalls base invoice
	11. Recalls payment record
	12. Creates procurement record
	13. Creates payment records
	14. Creates material description data
	15. Revises procurement records
	16. Revises base or completed catalog records with accession data
	17. Revises base catalog records with preliminary descriptive catalog data
	18. Revises preliminary descriptive catalog records with final descriptive catalog data
	19. Revises final descriptive catalog records with subject, classification, book and author number data
	20. Revises final provisional catalog records
	21. Revises payment record
	22. Calculates payment data

CATEGORIES HAVING ABOVE FUNCTIONS

1. PIN Assignment
2. Material Procurement
3. Accessioning
4. Preliminary Cataloging
5. Descriptive Cataloging
6. Subject Cataloging, etc.
7. Reviewing
8. Reference
9. Reading Room Control
10. Invoice Clearing
11. Charging

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Input
 - Variable number of fields of variable and/or fixed length
 - Fixed number of fields of variable length
 - Fixed number of fields of fixed length
 - Low, medium and high message frequency
2. Output
 - Variable number of fields, variable and/or fixed length
 - Fixed number of fields, variable length
 - Fixed number of fields, fixed length
 - Human readable

CHARACTER SETS

1. Standard Roman
2. Extended Roman
3. Non-Roman
4. Oriental
5. Special

RECOMMENDED MODULES

1. Keyboard - SR (M, P, S) (18)
2. Keyboard - ER (M, P, S) (19)
3. Keyboard - ER and SNR (M, P, S) (20)
4. Entry Device - Oriental language character set (M, P, S) (21)
5. Entry Device - Special symbols (M, P, S) (22)
6. Full visual display - ER (J, K, L) (14)
7. Full visual display - ER and SNR (J, K, L) (15)
8. Full visual display - ER, O and S (J, K, L) (16)
9. Full visual display - ER, NR, O and S (J, K, L) (17)
10. Calculating unit - (S) (29)

REMARKS

None

DERIVATIONS OF TERMINAL MODULES

CLASSES

N, Q, T

SIMILAR FUNCTIONS (FROM FUNCTIONAL REQUIREMENTS)

Creates transaction data

CATEGORIES HAVING ABOVE FUNCTIONS

1. Material Status Recording
2. Accessioning
3. Preliminary Cataloging
4. Descriptive Cataloging
5. Subject Cataloging, etc.
6. Reviewing
7. Drawing Material
8. Reshelving Material
9. Inventorying Material
10. Reading Room Control
11. Charging
12. Invoice Clearing

SIGNIFICANT MESSAGE CHARACTERISTICS

1. Input
 - ° Fixed number of fields of variable length
 - ° Low, medium and high message frequency

CHARACTER SETS

Standard Roman

RECOMMENDED MODULES

Preprogrammed Data Entry Device (PPDED) (N, Q, T) (23)

REMARKS

This function could also be carried out by inputs at the various keyboards.

5.6 TRANSMIT FUNCTIONS.

The functional requirements of Section 3 include the following "transmit" type functions which have not been considered in the module derivations of Section 5.

1. Transmits procurement data
2. Transmits revised base or completed catalog record, transaction data
3. Transmits preliminary catalog data, transaction data
4. Transmits final descriptive catalog data, transaction data
5. Transmits final provisional catalog record, transaction data
6. Transmits verification data for final catalog record, transaction data
7. Transmits payment, transaction and status data
8. Transmits PIN, status, borrower, material description and transaction data
9. Transmits PIN, status, user/attendant, transaction data
10. Transmits request data
11. Transmits request/user data
12. Transmits discharge/status data
13. Transmits invoice ID, transaction and status data

These are utilized in the following categories:

1. PIN Assigment
2. Material Procurement
3. Material Status Recording
4. Accessioning
5. Preliminary Cataloging
6. Descriptive Cataloging
7. Subject Cataloging, etc.
8. Reviewing
9. Drawing Material
10. Reshelving Material

11. Inventorying Control
12. Reference
13. Reading Room Control
14. Material Request
15. Charging
16. Discharging
17. Invoice Clearing

Implementing these functions will require the capability to transmit a wide variety of messages from short, high message volume, fixed number and length of data elements to low message frequency, variable number and length of data elements, many of substantial length (such as catalog records). Character sets to be transmitted include Standard Roman, Extended Roman, Non-Roman, Oriental and Special.

There are several possible methods of carrying out these transmit functions. One method involves utilizing an end of message signal which automatically transmits all data generated and stored since the start of message signal. Another method would utilize a transmit key at the terminal for transmitting, as desired, data created and stored at the terminal. Automatic recording devices such as Badge readers, Time/date code generators and PIN readers could have logic processes to automatically transmit their appropriate data on completion of the recording function. These methods would all utilize buffer storage in the terminal module and possibly in the terminal chassis or controller as well.

6. INTERRELATIONSHIP OF TERMINAL CATEGORIES AND MODULES.

6.1 INTRODUCTION.

Table 5 is a matrix of terminal categories (vertical) and terminal modules (horizontal) which indicates the component module elements of the various categories. The X indicates the inclusion of a module within a category and the numbers in parenthesis are the estimated numbers of each type of module required for each CBS function utilizing 1980 traffic loads. Numbers in upper right hand corner refer to notes following Table 5 which explain derivation used.

6.2 DERIVATION OF QUANTITATIVE FACTORS.

The qualitative information in Table 5 is mapped directly from Section 5. The quantitative information on estimated numbers of each type of module required came from three basic sources:

1. 1980 data in Table 2, Section 4.1.2.
2. Automation of the Order Division, Design Report, August 20, 1969.
3. Discussions with Library of Congress personnel and examination of Library work spaces.

As stated in Section 4.1.4, the traffic load and terminal number determinations are not generally directly usable in their present form and the data in Table 2 is sufficient only as the necessary framework within which quantitative factors may be assigned. This was true because in deriving the lists of categories/subcategories and expanding the functional requirements from the UAC report (see Section 3) it was not possible to identify directly inputs and outputs in all cases.

These numbers are a projection eleven years into the future and should therefore be used for guidance and comparison purposes only. The concept of the automated Library envisages a modular, evolutionary system with phased implementation, and more refined information will become available as the implementation progresses and as experience will indicate.

6.3 MATRIX.

NOTES - TABLE 5

1. From Activity 4, Table 2, 1980 devices required. Number of 5 PIN labelers used for sequence 2 of PIN Assignment.
2. Same as number of PIN labelers.
3. From Activity 5, Table 2, 1980 devices required. UAC E-2 portion of total number of visual displays used for Preliminary Cataloging. These were further divided into terminals for Roman, Non-Roman, Oriental and Special character sets in accordance with the 74-20-6 ratios explained in Appendix A.
4. Same as Note 3 except used UAC E-3 portion for Descriptive Cataloging.
5. Same as Note 3 except used UAC E-4 and E-5 portions for Subject Cataloging, Classification and Shelflisting.
6. Same as Note 3 except used UAC E-6 portion for Reviewing.
7. A Keyboard for each visual display.
8. One special symbol entry device for Library of Congress.
9. One PIN reader per terminal station.
10. A printer for each visual display . Usage factors from UAC report indicate this is a maximum figure.
11. This function assigned this module can be implemented by the Keyboards.
12. One Badge Reader per terminal station.
13. From Activity 8, Table 2, 1980 devices required. The number of 144 is the table number of 377 decreased by 222 terminals from Card Division and 11 from Photo Duplication Service which are not included herein.
14. One printer and keyboard per display.

	PIN LABELER	PIN READER	PREPROGRAMMED DATA ENTRY DEVICE	ID CODE GENERATOR	KEYBOARD - SR	KEYBOARD - ER	KEYBOARD - ER and SNR	ENTRY DEVICE - ORIENTAL LANGUAGE CHARACTER SET	ENTRY DEVICE - SPECIAL SYMBOLS	BADGE READER	MR UNIT DOCUMENT GENERATOR	MR UNIT DOCUMENT READER	CALCULATING UNIT
A. PIN ASSIGNMENT	X(5) ¹			X(29) ²⁵		X(21) ²⁵	X(6) ²⁵	X(2) ²⁵	X(0) ⁸		X(29) ²⁵	X(5) ²	
B. MATERIAL PROCUREMENT						X(22) ²⁴	X(6) ²⁴	X(2) ²⁴	X(0) ⁸	X(30) ²⁴			
C. MATERIAL STATUS RECORDING		X(93) ¹⁸	X(93) ¹⁸	X(93) ¹⁸									
D. ACCESSIONING		X(33) ²⁷	X(0) ¹¹			X(24) ²⁷	X(7) ²⁷	X(2) ²⁷	X(0) ⁸	X(33) ²⁷			
E. CATALOGING													
1. PRELIMINARY CATALOGING		X(42) ⁹	X(0) ¹¹			X(30) ⁷	X(8) ⁷	X(3) ⁷	X(1) ⁸	X(42) ¹²			
2. DESCRIPTIVE CATALOGING		X(40) ⁹	X(0) ¹¹			X(29) ⁷	X(8) ⁷	X(3) ⁷	X(0) ⁸	X(40) ¹²			
3. SUBJECT CATALOGING CLASSI- FICATION AND SHEFLISTING		X(135) ⁹	X(0) ¹¹			X(100) ⁷	X(27) ⁷	X(8) ⁷	X(0) ⁸	X(135) ¹²			
4. REVIEWING		X(8) ⁹	X(0) ¹¹				X(8) ⁷	X(8) ⁷	X(0) ⁸	X(8) ¹²			
F. STACK CONTROL													
1. DRAWING MATERIAL		X(58) ¹⁷	X(58) ¹⁷	X(58) ¹⁷						X(58) ¹⁷			
2. RESHELVING MATERIAL		X(0) ¹⁹	X(0) ¹⁹	X(0) ¹⁹									
3. INVENTORYING MATERIAL		X(0) ¹⁹	X(0) ¹⁹	X(0) ¹⁹									
G. REFERENCE						X(144) ¹⁴				X(36) ¹⁵		X(36) ¹⁵	
H. READING ROOM CONTROL		X(10) ¹⁶	X(0) ¹¹	X(10) ¹⁶		X(10) ¹⁶				X(10) ¹⁶		X(10) ¹⁶	
I. MATERIAL REQUEST										X(20) ²³		X(20) ²³	
J. LOAN CONTROL													
1. CHARGING		X(6) ²¹	X(0) ¹¹	X(6) ²¹	X(6) ²¹					X(6) ²¹	X(6) ²¹		
2. DISCHARGING				X(3) ²²								X(3) ²²	
K. INVOICE CLEARING			X(0) ¹¹	X(12) ²⁰	X(12) ²⁰							X(12) ²⁰	X(12) ²⁰

15. An arbitrary 1 Material request station per 4 reference stations is used.
16. Used figure of 10 based upon expected number of Reading Room stations in 1980 after discussions with L. C. Personnel.
17. Used note 5 of Table VIII of Volume II of UAC study as basis for number of Drawing Material stations in stacks. This 1972 figure of 35 was increased 66 percent to 58 for 1980 loads.
18. Used note 5 of Table VIII of Volume II of UAC study as basis for number of material status recording stations. This 1972 figure of 56 was increased 66 percent to 93 for 1980 loads.
19. Same equipment used as for Drawing Material.
20. From Order Division Design Report, p. 43. The design load invoice clearing input devices has been increased from 7 to 12 reflecting 66 percent of growth by 1980.
21. Arbitrary number of 6 charge stations listed based on discussions with L. C. personnel.
22. Arbitrary number of 3 Discharge stations listed based on discussions with L. C. personnel.
23. Arbitrary number of 20 Material Request stations listed based on discussions with L. C. personnel. These are in addition to the request stations included under Reference and Reading Room Control.
24. Purchase and Exchange and Gift only. Other methods such as copyright are relatively small. (See UAC C2-3, C2-4 and C2-5) From Order Division Design Report, p. 43 and UAC Report. The design load bibliographic input devices from Order Division Design Report have been increased from a total of 10 to 17 reflecting 66% growth by 1980. To these have been added 13 stations for use in Exchange and Gift Division. These 13 were based on ratio of UAC number of monographs in 1980 to be procured by purchase and by exchange and Gift (UAC C2-3 and C2-4). This total of 30 terminal stations was further divided by Extended Roman, Non-Roman, Oriental and Special character sets in accordance with the 74-20-6 ratios explained in Appendix A.

25. From Activity 2, Table 2, 1980 devices required. UAC B1-M, B1-N and B1-0 portions of total number of data entry terminals used as key to number of sequence 1 PIN Assignment terminal stations required. This total of 29 was further divided into terminals for Extended Roman, Non-Roman, Oriental and Special character sets in accordance with the 74-20-6 ratios explained in Appendix A.
26. No estimate made for number of MR media generators required for off-line operations.
27. From Activity 4, Table 2, Used 33 displays as basis for 33 terminal stations. This figure was further divided into terminals for Extended Roman, Non-Roman, Oriental and Special character sets in accordance with the 74-20-6 ratios explained in Appendix A.

PART II

7. PERFORMANCE SPECIFICATIONS OF MODULES.

7.1 GENERAL.

The broad general concept underlying the approach employed in preparing the specifications is modularity. The extent of the modularity specified will permit the maximum flexibility in combining modules. This will produce useful operator terminal stations which are designed to meet most Library of Congress needs today and through 1980. Further the individual modules will be easily removable if replacement or upgrading is required.

In order to achieve this level of modularity three constraints have been imposed: (1) the use of a uniform transmission code, (2) the inclusion (as a basic module) of a "universal" terminal chassis, and (3) the specifications of a highly flexible terminal controller.

7.1.1 CENTRAL BIBLIOGRAPHIC SYSTEM TRANSMISSION CODES.

The Library of Congress has developed an extended Roman alphabet of 176 characters which includes (hopefully) all of the special characters and diacritical marks necessary to transliterate any known language. In addition, most Roman alphabets are expected to be proper subsets of the LC Extended Roman Alphabet. In order to digitally encode this alphabet of 176 characters, the Library of Congress has proposed an eight level expanded ASCII code which is given in Table I of Appendix A.

The implementation of a system employing the Library of Congress Extended Roman Alphabet requires the making of certain key decisions in the course of system design. These decisions are:

- (1) Should the transmission code used throughout the automated Central Bibliographic System be:

- (a) The eight level expanded ASCII code,
 - (b) The standard seven level ASCII code,
 - (c) Some other transmission code, or
 - (d) A mixture of codes.
- (2) Should the encoding of this character set be accomplished by:
- (a) Hard-wiring within the modules,
 - (b) Hard-wiring in the terminal station controller,
 - (c) Software encoding routines in the terminal station controller, or
 - (d) Software encoding routines in the central processor.

7.1.1.1 CHOICE OF CODE

7.1.1.1.1 EIGHT LEVEL EXPANDED ASCII CODE.

The eight level expanded ASCII code would be a good choice for use throughout the automated CBS from the point of view of speed and efficiency of operation of the final system. However, in terms of initial investment cost, it is possible that specification of this code would result in a general markup of the cost of equipment in all terminal stations.

7.1.1.1.2 SEVEN LEVEL STANDARD ASCII CODE.

The general use of this code would eliminate the need for some customizing of equipment but would impose several added strains on the final system:

- (a) Message loads would be somewhat higher due to the insertion of shift codes into the messages (see Table I of Appendix A).
- (b) Valuable processing time within the central processor and at the terminal stations would have to be devoted to translation between the

seven level transmission code and the eight level storage code.

- (c) The complexity and consequent cost of terminal station controllers would have to be upgraded to handle the translation problem.

7.1.1.1.3 USE OF A TRANSMISSION CODE OTHER THAN THE ASCII CODE.

Specification of a general transmission code other than a seven or eight level ASCII code would simplify the task of acquiring certain kinds of equipment but would impose the same translation problems as noted in the preceding section.

7.1.1.1.4 USE OF A MIXTURE OF TRANSMISSION CODES.

Use of a mixture of transmission codes in the automated CBS system would simplify the task of acquiring certain kinds of equipment at reasonable cost but would multiply the need for translation work by the central processor and terminal station controllers.

The most desirable code for use, taking all facets of the Library of Congress effort into account, would be the eight level expanded ASCII code developed by the Library of Congress. This has been indicated in the succeeding specifications by classifying the expanded ASCII code as desirable. Due to the current state-of-the-art, and potential cost factors however, use of the eight level expanded ASCII code may not be feasible. Therefore, the standard ASCII code has been specified as mandatory.

7.1.1.2 METHODS OF DIGITAL ENCODING.

7.1.1.2.1 HARD-WIRED ENCODING WITHIN THE TERMINAL STATION MODULES.

This is a good method of encoding Roman Alphabet data from the point of view of speed and efficiency of operation of the final system. However, at the present time, keyboards which

are hard-wired to encode the Extended Roman alphabet do not exist. They would have to be specially made, thus increasing the initial investment of system implementation.

7.1.1.2.2 HARD-WIRED ENCODING WITHIN THE TERMINAL STATION CONTROLLER.

This method would allow the use of standard keyboards but would require an upgrading in the complexity of the terminal station controllers. Also, the controllers would probably have to be customized, thus adding to their cost.

7.1.1.2.3 SOFTWARE ENCODING IN THE TERMINAL STATION CONTROLLER.

This method would eliminate the need for customized keyboard or controller but would require that the controller be programmable: a requirement that would upgrade the initial cost of the terminal stations.

7.1.1.2.4 SOFTWARE ENCODING IN THE CENTRAL PROCESSOR.

This method would eliminate the need for a customized keyboard, or programmable controller, but would add to the burdens placed on the central processor since virtually every message would have to be subjected to a translation process.

7.1.1.3 DIGITAL ENCODING OF DIACRITICAL MARKS.

The encoding of diacritical marks is relatively easy to accomplish. Depression of the "back-space" key, or of a special "non-space" key would result in the transmission of a special character which would link the diacritical mark character with the preceding character (or following character).

7.1.1.4 DIGITAL ENCODING OF NON-ROMAN KEYABLE ALPHABETS.

In the case of those alphabets which are encoded with standard keyboards, encoding of these alphabets is relatively easy to accomplish. Depression of a designated key would result in the transmission of a special character which would identify the ensuing string of characters as belonging to a specific alphabet. Depression of the same key or of another designated key would terminate the special string.

7.1.1.5 DIGITAL ENCODING OF HAND DRAWN CHARACTERS WITH MANUAL CURVE FOLLOWER OR LIGHT PEN.

A manual curve follower is a device which digitally encodes figures which the operator draws in free hand. It usually consists of a small table and a pencil-like instrument which the operator moves over the surface of the table. The position of the "pencil" at each moment is digitized and this information is transmitted to a computer.

A light pen is a device which allows a remote terminal operator to draw figures in free hand on the face of the terminal's visual display console. It consists of a pen-like device which the operator points at the face of the visual display. The exact point at which the pen is pointed is digitally encoded. With proper programming, the display can be made to light up and stay lit at those points aimed at by the pen, and as the pen is moved across the face of the display, a line is drawn. At the same time, the exact positions lit up are recorded in the visual display's buffer. This information can be transmitted to the Central computer at the discretion of the operator.

Characters drawn with either of these devices are encoded as dot matrices (see Figure 6). There are two basic methods of storing this type of data. One method is to transfer the image of the entire visual display to microfiche (see "Film recorders for computer output" September 1968, pp. 120-124, and "Graphic Data Systems and Devices," 1967-68, pp. 97, and 98. Bibliography in Appendix A.)

The other method is to store a digital representation of each of the characters on disc, drum or tape. The most straightforward way of doing this is by simply storing the entire dot matrix. In the case of a 32 x 32 matrix, this would require 128 bytes of storage.

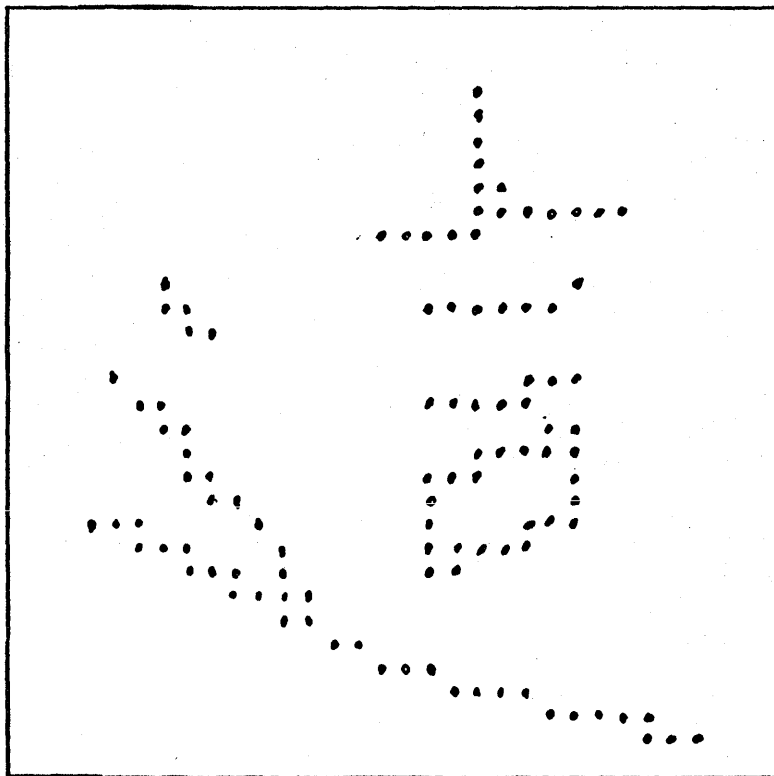
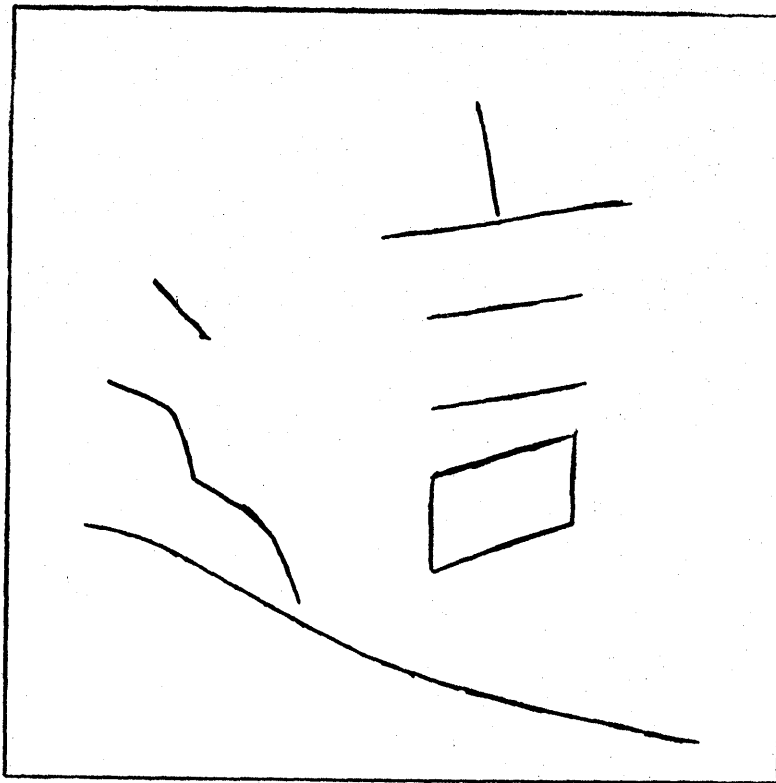


FIGURE 6
Digital encoding of a Chinese
Character using a 32 x 32 dot
matrix.

Another method which would work fairly well with Chinese characters would be to store only the coordinates of the end-points of each line making up the character. In the case of some of the simpler characters, such as 丨 or 人, only a very few bytes of storage would be required. In the case of other characters such as the one illustrated in Figure 6, many more bytes would be required. The chief disadvantage of this method is that large amounts of computer time would be required for accomplishing the encoding. In addition, other types of characters (such as the Hiragana characters pictured in Figure 12 of Appendix A) would not be easy to encode in this fashion.

7.1.2 TERMINAL CHASSIS MODULE.

For simplicity in constructing individual, tailored work stations, a generalized, "universal" terminal chassis module has been defined and specified. This unit will be so designed as to permit the insertion (and integration) of any subset of modules to produce any terminal configuration required. It will also contain all necessary power sources, indicators, etc.

Among the functional specifications for this component are the following characteristics. It must have:

- a. Fittings for mounting in desk or stacks.
- b. Transformers, rectifiers, etc., to provide for any configuration of module types.
- c. Line switch.
- d. Grounded shield to prevent electric shocks to personnel.
- e. Pin jacks or similar type of device for connecting modules to chassis module.

- f. A hard wired panel which permits the integration of all modules connected into a single functional terminal.

7.1.3 TERMINAL CONTROLLER.

The next higher level of systems interconnection beyond the terminal chassis can be performed in one of two ways; either by a central computer, or by a terminal controller. Both approaches show promise under certain conditions, thus neither will be excluded at this time.

Based upon these general remarks it can be seen that:

- (1) Each terminal will be assembled by interconnecting the appropriate modules necessary to implement the functional requirements specified in Section 3.
- (2) The modules will be housed in or grouped around a common chassis.
- (3) Groups of terminal stations may be connected to shared controllers.
- (4) Where or when hardware controllers are employed they will feed a central processor unit.

The remainder of this chapter is devoted to the presentation of a detailed (although preliminary) set of specifications for each of the modules and the terminal chassis as currently defined.

7.2 DERIVATION OF MODULES.

A review of the UAC report, study of other documentation furnished by the ISO and discussions with Library of Congress personnel resulted the the following list of modules.

- (1) Full printer - standard Roman character set
- (2) Full printer - extended Roman character set
- (3) Full printer - combined sets (extended Roman and selected Non-Roman)
- (4) Full printer - combined sets (extended Roman and selected set for Oriental language or special symbols.
- (5) Full printer - combined sets (extended Roman, Non-Roman, Oriental language set, and special symbols)
- (6) Machine readable media generator - standard Roman character set
- (7) Machine readable media generator - extended Roman character set
- (8) Machine readable media generator - combined sets (extended Roman and selected Non-Roman)
- (9) Machine readable media generator - combined sets (extended Roman and selected sets for Oriental language or special symbol)
- (10) Machine readable media generator - Combined sets (extended Roman, Non-Roman, Oriental language set and special symbol)
- (11) Marking device - numeric character set
- (12) Machine readable unit document generator - standard Roman character set
- (13) PIN labeler - standard Roman character set
- (14) Full visual display - extended Roman character set

- (15) Full visual display - combined sets (extended Roman and selected Non-Roman)
- (16) Full visual display - combined sets (extended Roman and selected set for Oriental language or special symbols)
- (17) Full visual display - combined sets (extended Roman, Non-Roman Oriental language set, and special symbols)
- (18) Keyboard - standard Roman character set
- (19) Keyboard - extended Roman character set
- (20) Keyboard - combined sets (extended Roman and selected Non-Roman)
- (21) Entry device - Oriental language character set
- (22) Entry device - special symbols
- (23) Preprogrammed data entry device - numeric character set
- (24) Machine readable unit document reader - standard Roman character set
- (25) PIN reader - standard Roman character set
- (26) Badge reader - numeric character set
- (27) I D Code generator - numeric character set
- (28) Time/date code generator - numeric character set
- (29) Calculating unit

7.3 FORMAT FOR PERFORMANCE SPECIFICATIONS OF MODULES.

The performance specifications for the modules listed in paragraph 7.1 above were developed according to the outline given in Figure 7.

7.3.1 FUNCTIONAL DESCRIPTION - USE/APPLICATION.

The functional description section includes a prose description of the module with sufficient information to identify its general function.

7.3.2 FUNCTIONAL CHARACTERISTICS.

The functional characteristics are divided into:

- (A) logical functions
- (B) operational controls
- (C) control functions, and
- (D) data specifications.

7.3.3 INTERFACING.

This section deals with the interrelationship of the module to other modules. It is divided into:

- (A) Units interfaced with
- (B) Sequence of Events
- (C) Interlocking requirements
- (D) Other.

7.3.4 ENVIRONMENT.

This section references Appendix B.

7.3.5 RELIABILITY/AVAILABILITY.

7.3.6 OTHER.

This section deals with any item not dealt with by the other sections.

7.4 TERMS USED.

1. Buffer - The storage unit of a terminal or group of terminals. It is usually housed within the controller.
2. Chassis module - A device which is used to interconnect all of the modules making up a terminal. It contains all of the electrical components needed to effect their smooth integration.

3. Controller - A device which performs the logical functions of a remote terminal. Among the components of the controller are the buffers and character generators. A single controller may control more than one terminal.
4. Extended Roman character set - See Appendix A.
5. Module - A piece of equipment which performs a specific task, i.e., keyboard, visual display, time date generator, etc. Several modules are interconnected to form a terminal.
6. Standard Roman Character set - A subset of the extended Roman character set. See Appendix A.
7. Terminal - A work station consisting of two or more interconnected modules. A terminal may consist of a chassis module, printer, visual display. Several terminals may be grouped around a single controller.

MODULE NAME:

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED _____

b. OPERATOR CONTROLLED _____

c. NONE _____

FIGURE 7

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO _____

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED _____

(2) ERROR INDICATION _____

(3) ACTION BY TERMINAL HARDWARE _____

c. OPERATOR ACTION _____

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

2. DELETE FEATURES

a. BY CHARACTER

b. BY LINE

c. BY FRAME

d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS

e. NONE

3. OTHER

C. CONTROL FUNCTIONS

1. ON/OFF

2. INTERLOCK FACILITY

3. OTHER

D. DATA SPECIFICATIONS

1. CHARACTER SET _____

2. CHARACTER CODES

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH _____

b. MAXIMUM LENGTH _____

III. INTERFACING

A. UNITS INTERFACED WITH:

B. SEQUENCE OF EVENTS:

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE _____

2. TO MODULE _____

D. OTHER

IV. ENVIRONMENT (SEE APPENDIX B)

V. RELIABILITY/AVAILABILITY

VI. OTHER

MODULE NAME: FULL PRINTER - STANDARD ROMAN CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow issuing of hard copy of catalog and other data which contains characters of the standard Roman alphabet.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a.	PRE-PROGRAMMED	<u>X</u>
b.	OPERATOR CONTROLLED	<u>X</u>
c.	NONE	<u> </u>

Hard copy format can be controlled by operator.

It can also be preprogrammed into terminal con-
troller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE _____

 N.A.

c. OPERATOR ACTION _____

 N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Format controls on printing module.

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Tabs set.
- (f) Slew to top of page.

(2) Format controls from central processor (module on-line).

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Slew to top of page.

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. DARKNESS OF CHARACTERS.
 - (1) Adjustable by operator.
 - (2) Adjustable to levels which allow maximum ease of reading (see Appendix B).
- b. PRINT MODE.
 - (1) All subsequent transactions involving terminal are automatically printed.
- c. DISCONNECT.
 - (1) Disconnects printer from terminal.
- d. PRINT BUFFER.
 - (1) Prints contents of buffer segment.

D. DATA SPECIFICATIONS

1. CHARACTER SET Standard Roman (see Appendix A).

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Off-line.
 - a. Message entered into terminal buffer via data entry device.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.
2. On-line.
 - a. Message entered into terminal buffer from central processor.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(L361), L211(L311),
L241(L361), L111, L111(L322), L222, L252, L262, L192, L292,
L392, L192(L392)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. PAPER FEED MECHANISM: DESIRABLE.

1. Manual platten control or equivalent.
2. Allows ease of loading.
3. Does not jam easily.
4. Holds a reasonably large sized stack.

B. PAPER: DESIRABLE.

1. Width: 10 inch (minimum).
2. Stock: 20 lb. - 125 lb.

MODULE NAME: FULL PRINTER EXTENDED ROMAN
CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow issuing of hard copy of catalog and other data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow the issuing of the above named characters with proper registration.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u> X </u>
b. OPERATOR CONTROLLED	<u> X </u>
c. NONE	<u> </u>

Hard copy format can be controlled by operator.

It can also be preprogrammed into terminal
controller or control processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO x

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (NA)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE
 N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES
- b. NO
- c. LIST OF CONTROLS

(1) Format controls on printing module.

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Tabs set.
- (f) Slew to top of page.

(2) Format controls from Central processor
(Module on-line)

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Slew to top of page.

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. DARKNESS OF CHARACTERS.
 - (1) Adjustable by operator.
 - (2) Adjustable to levels which allow maximum ease of reading (see Appendix B).
- b. PRINT MODE.
 - (1) All subsequent transactions involving terminal are automatically printed.
- c. DISCONNECT.
 - (1) Disconnects printer from terminal.
- d. PRINT BUFFER.
 - (1) Prints contents of buffer segment.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY

3. OTHER

a. CONDITION INDICATORS.

(1) More paper required.

D. DATA SPECIFICATIONS

1. CHARACTER SET 176 character Library of Congress
Extended Roman (see Appendix A).

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Off-line.
 - a. Message entered into terminal buffer via data entry device.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.
2. On-line.
 - a. Message entered into terminal buffer from central processor.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L291(L361), L231(L361), L241(L361), L131(L331), L261(L331),
L121, L261, L122, L262, L111, L112(L322), L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as
$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER

A. PAPER FEED MECHANISM: DESIRABLE.

1. Manual platten control or equivalent.
2. Allows ease of loading.
3. Does not jam easily.
4. Holds a reasonably large sized stack.

B. PAPER: DESIRABLE.

1. Width: 10 inch (minimum).
2. Stock: 20 lb. - 125 lb.

FULL PRINTER - COMBINED SETS (EXTENDED ROMAN AND
SELECTED NON-ROMAN)

MODULE NAME:

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow issuing of hard copy of catalog and other data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow issuing of hard copy of catalog and other data which contains characters of a selected non-Roman alphabet.
- C. To allow the issuing of the above-named characters with proper registration.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- | | | |
|----|---------------------|-----------------------------------|
| a. | PRE-PROGRAMMED | <u> X </u> |
| b. | OPERATOR CONTROLLED | <u> X </u> |
| c. | NONE | <u> </u> |

Hard copy format can be controlled by operator.

It can also be preprogrammed into terminal controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
(2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE _____

 N.A.

c. OPERATOR ACTION _____

 N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Format controls on printing module.

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Tabs set.
- (f) Slew to top of page.

(2) Format controls from central processor (module on-line).

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Slew to top of page.

2. DELETE FEATURES

- | | |
|---|---------------|
| a. BY CHARACTER | _____ |
| b. BY LINE | _____ |
| c. BY FRAME | _____ |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | _____ |
| e. NONE | _____ X _____ |

3. OTHER

- a. DARKNESS OF CHARACTERS.
- (1) Adjustable by operator.
 - (2) Adjustable to levels which allow maximum ease of reading (see Appendix B).
- b. PRINT MODE.
- (1) All subsequent transactions involving terminal are automatically printed.
- c. DISCONNECT.
- (1) Disconnects printer from terminal.
- d. PRINT BUFFER.
- (1) Prints contents of buffer segment.

C. CONTROL FUNCTIONS

1. ON/OFF X

2. INTERLOCK FACILITY

3. OTHER

a. CONDITION INDICATORS.

(1) More paper required.

D. DATA SPECIFICATIONS

1. CHARACTER SET Library of Congress
Extended Roman Alphabet (see Appendix A) and a
selected Non-Roman alphabet.
-
-

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Off-line.
 - a. Message entered into terminal buffer via data entry device.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.
2. On-line.
 - a. Message entered into terminal buffer from central processor.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L291(L361), L231(L361), L241(L361), L131(L331), L261(L331),
L121, L261, L122, L262, L111, L112(L322), L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. PAPER FEED MECHANISM: DESIRABLE.

1. Manual platten control or equivalent.
2. Allows ease of loading.
3. Does not jam easily.
4. Holds a reasonably large sized stack.

B. PAPER: DESIRABLE.

1. Width: 10 inch (minimum)
2. Stock: 20 lb. - 125 lb.

FULL PRINTER - COMBINED SETS (EXTENDED ROMAN AND
MODULE NAME: SELECTED SET FOR ORIENTAL LANGUAGE OR SPECIAL SYMBOLS

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow issuing of hard copy of catalog and other data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow issuing of hard copy of catalog and other data which contains characters of a selected Oriental language or of special symbols.
- C. To allow the issuing of the above-named characters with proper registration.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED X
- b. OPERATOR CONTROLLED X
- c. NONE

Hard copy format can be controlled by operator.

It can also be preprogrammed into terminal con-
troller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE _____

 N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Format controls on printing module.

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Tabs set.
- (f) Slew to top of page.

(2) Format controls from central processor (module on-line).

- (a) Forward space.
- (b) Backspace.
- (c) Carriage return.
- (d) Tab.
- (e) Slew to top of page.

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. DARKNESS OF CHARACTERS.
 - (1) Adjustable by operator.
 - (2) Adjustable to levels which allow maximum ease of reading (see Appendix B).
- b. PRINT MODE.
 - (1) All subsequent transactions involving terminal are automatically printed.
- c. DISCONNECT.
 - (1) Disconnects printer from terminal.
- d. PRINT BUFFER.
 - (1) Prints contents of buffer segment.

C. CONTROL FUNCTIONS

1. ON/OFF X
2. INTERLOCK FACILITY _____

3. OTHER

a. CONDITION INDICATORS.

(1) More paper required.

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined sets - Library of Congress
Extended Roman character set and a selected set
for Oriental language or special symbols.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Off-line.
 - a. Message entered into terminal buffer via data entry device.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.
2. On-line.
 - a. Message entered into terminal buffer from central processor.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(L361), L241(L361),
L231(L361)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. PAPER FEED MECHANISM: DESIRABLE.

1. Manual platten control or equivalent.
2. Allows ease of loading.
3. Does not jam easily.
4. Holds a reasonably large sized stack.

B. PAPER: DESIRABLE.

1. Width: 10 inch (minimum)
2. Stock: 20 lb. - 125 lb.

FULL PRINTER - COMBINED SETS (EXTENDED ROMAN, NON-
ROMAN ORIENTAL LANGUAGE SET AND SPECIAL SYMBOLS)

MODULE NAME:

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow issuing of hard copy of catalog and other data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow issuing of hard copy of catalog and other data which contains characters of a selected Non-Roman alphabet.
- C. To allow issuing of hard copy of catalog and other data which contains characters of a selected Oriental language or of special symbols.
- D. To allow the issuing of the above-named characters with proper registration.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED X
- b. OPERATOR CONTROLLED X
- c. NONE

Hard copy format can be controlled by operator.

It can also be preprogrammed into terminal con-
troller or control processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO _____ X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

- (1) CODE USED Not Applicable (N.A.)
- _____
- (2) ERROR INDICATION N.A.
- _____
- (3) ACTION BY TERMINAL HARDWARE _____
- N.A.
- _____
- _____

- c. OPERATOR ACTION _____
- N.A.
- _____
- _____
- _____
- _____

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

 x

b. NO

c. LIST OF CONTROLS

(1) Format controls on printing module.

(a) Forward space.

(b) Backspace.

(c) Carriage return.

(d) Tab.

(e) Tabs set.

(f) Slew to top of page.

(2) Format controls from central processor
(module on-line)

(a) Forward space.

(b) Backspace.

(c) Carriage return.

(d) Tab.

(e) Slew to top of page.

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. DARKNESS OF CHARACTERS.
 - (1) Adjustable by operator.
 - (2) Adjustable to levels which allow maximum ease of reading (see Appendix B).
- b. PRINT MODE.
 - (1) All subsequent transactions involving terminal are automatically printed.
- c. DISCONNECT.
 - (1) Disconnects printer from terminal.
- d. PRINT BUFFER.
 - (1) Prints contents of buffer segment.

C. CONTROL FUNCTIONS

- | | |
|-----------------------|-------------------|
| 1. ON/OFF | <u>X</u> |
| 2. INTERLOCK FACILITY | <u> </u> |

3. OTHER

a. CONDITION INDICATORS.

(1) More paper required.

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined sets - Extended Roman,
selected Non-Roman and a selected set for
Oriental language or special symbols.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Off-line.
 - a. Message entered into terminal buffer via data entry device.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.
2. On-line.
 - a. Message entered into terminal buffer from central processor.
 - b. Message may be displayed on full visual display.
 - c. Hard copy generated with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L291(L361), L231(L361), L241(L361), L131(L331), L261(L331),

L121, L261, L122, L262, L111, L112(L322), L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. PAPER FEED MECHANISM: DESIRABLE.

1. Manual platten control or equivalent.
2. Allows ease of loading.
3. Does not jam easily.
4. Holds a reasonably large sized stack.

B. PAPER: DESIRABLE.

1. Width: 10 inch (minimum).
2. Stock: 20 lb. - 125 lb.

MACHINE READABLE MEDIA GENERATOR -
MODULE NAME: STANDARD ROMAN CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

1. To permit the encoding of data containing characters of the standard Roman alphabet into machine readable form for the purpose of buffering it into a permanent storage media.
2. To allow the encoded data to be stored as necessary and to be loaded into the central system at periodic intervals.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u> X </u>
b. OPERATOR CONTROLLED	<u> X </u>
c. NONE	<u> </u>

Data format can be controlled by operation.
It can also be preprogrammed into terminal
Controller or Central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES x
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

- (1) CODE USED Parity bit and check
character.
(2) ERROR INDICATION Operator signaled
of parity error.
(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication
DESIRABLE: Automatic erasure and
rewriting of message from buffer.

- c. OPERATOR ACTION MANDATORY: Operator
rekeys message.
DESIRABLE: Media automatically erased
and message rewritten from buffer with-
out need for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 X

c. LIST OF CONTROLS

Not Applicable (N.A.)

2. DELETE FEATURES

- | | |
|---|-----------------------------------|
| a. BY CHARACTER | <u> X </u> |
| b. BY LINE | <u> X </u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

- a. Rewind
(1) If module is tape device requiring rewinding.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY

- 3. OTHER
None

D. DATA SPECIFICATIONS

1. CHARACTER SET STANDARD ROMAN (See Appendix A)

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Not Applicable.

b. MAXIMUM LENGTH Not Applicable.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full Visual display.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer with data entry device.
2. Message displayed on Full Visual Display.
3. If necessary operator corrects message.
4. Operator signals terminal to write message onto machine readable media.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

~~L251(L351), L231(L351), L192, L292, L392, L192 (L392)~~
~~L251(351)~~

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER
None

MODULE NAME: MACHINE READABLE MEDIA GENERATOR -
EXTENDED ROMAN CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the encoding of data containing characters of the L.C. Extended Roman Alphabet (176 characters) into machine readable form for the purpose of buffering it into a permanent storage media.
- B. To allow the encoded data to be stored as necessary and to be loaded into the central system at periodic intervals.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u>X</u>
b. OPERATOR CONTROLLED	<u>X</u>
c. NONE	<u> </u>

Data format can be controlled by operator.

It can also be preprogrammed into terminal con-
troller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check character.

(2) ERROR INDICATION Operator signaled of parity error.

(3) ACTION BY TERMINAL HARDWARE

MANDATORY: Error Indication

DESIRABLE: Automatic erasure and rewriting of message from buffer.

c. OPERATOR ACTION

MANDATORY: Operator rekeys message.

DESIRABLE: Media automatically erased and message rewritten from buffer without need for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

 X

2. DELETE FEATURES

- | | |
|---|-----------------------------------|
| a. BY CHARACTER | <u> X </u> |
| b. BY LINE | <u> X </u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

a. REWIND

- (1) If module is tape device requiring
rewinding.

C. CONTROL FUNCTIONS

1. ON/OFF

X

2. INTERLOCK FACILITY

3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET 176 Character Library of Congress
Extended Roman character set. (See Appendix A)

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH N.A.

b. MAXIMUM LENGTH N.A.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer with data entry device.
2. Message displayed on full visual display.
3. If necessary operator corrects message.
4. Operator signals terminal to write message onto machine readable media.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MACHINE READABLE MEDIA GENERATOR -
MODULE NAME: COMBINED SETS (EXTENDED ROMAN AND SELECTED NON-ROMAN)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the encoding of data containing characters of the L.C. Extended Roman Alphabet (176 characters) into machine readable form for the purpose of buffering it into a permanent storage media.
- B. To permit the encoding of data containing characters of a selected Non-Roman alphabet into machine readable form for the purpose of buffering it into a permanent storage media.
- C. To allow the encoded data to be stored as necessary and to be loaded into the central system at periodic intervals.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- | | | |
|----|---------------------|-----------------------------------|
| a. | PRE-PROGRAMMED | <u> X </u> |
| b. | OPERATOR CONTROLLED | <u> X </u> |
| c. | NONE | <u> </u> |

Data format can be controlled by operator.

It can also be preprogrammed into terminal controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Operator signaled
of parity error.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication.
DESIRABLE: Automatic erasure and
rewriting of message from buffer.

c. OPERATOR ACTION

MANDATORY: Operator rekeys message.

DESIRABLE: Media automatically erased and
message rewritten from buffer without need
for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 X

c. LIST OF CONTROLS

Not Applicable.

2. DELETE FEATURES

- | | |
|---|-------------------|
| a. BY CHARACTER | <u>X</u> |
| b. BY LINE | <u>X</u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

- a. REWIND
- (1) If module is tape device requiring
rewinding.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY

- 3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET Combination sets - Library of Congress Extended Roman Alphabet (see Appendix A) and a selected Non-Roman Alphabet.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

- a. AVERAGE LENGTH N.A.

- b. MAXIMUM LENGTH N.A.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer with data entry device.
2. Message displayed on full visual display.
3. If necessary operator corrects message.
4. Operator signals terminal to write message onto machine readable media.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MACHINE READABLE MEDIA GENERATOR - COMBINED SETS
MODULE NAME: (EXTENDED ROMAN AND SELECTED SET FOR ORIENTAL LANGUAGE
OR SPECIAL SYMBOLS)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the encoding of data containing characters of the L.C. Extended Roman Alphabet (176 characters) into machine readable form for the purpose of buffering it into a permanent storage media.
- B. To permit the encoding of data containing characters of a selected Oriental language or of special symbols into machine readable form for the purpose of buffering it into a permanent storage media.
- C. To allow the encoded data to be stored as necessary and to be loaded into the central system at periodic intervals.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u>X</u>
b. OPERATOR CONTROLLED	<u>X</u>
c. NONE	<u> </u>

Data format can be controlled by operator.

It can also be preprogrammed into terminal
controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Operator signaled
of parity error.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication
DESIRABLE: Automatic erasure and
rewriting of message from buffer.

c. OPERATOR ACTION MANDATORY: Operator
rekeys message.
DESIRABLE: Media automatically erased and
message rewritten from buffer without need
for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

X

2. DELETE FEATURES

- | | |
|---|-----------------------------------|
| a. BY CHARACTER | <u> X </u> |
| b. BY LINE | <u> X </u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

- a. REWIND
- (1) If module is tape device requiring
rewinding.

C. CONTROL FUNCTIONS

1. ON/OFF X

2. INTERLOCK FACILITY _____

3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined Sets - Library of
Congress Extended Roman character set and a
selected set for Oriental Language or special
symbols.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH N.A.

b. MAXIMUM LENGTH N.A.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer with data entry device.
2. Message displayed on Full Visual Display.
3. If necessary operator corrects message.
4. Operator signals terminal to write message onto machine readable media.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351)

V. RELIABILITY/AVAILABILITY

99% Defined as

$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER None

MODULE NAME: MACHINE READABLE MEDIA GENERATOR -
COMBINED SETS (EXTENDED ROMAN, NON-ROMAN, ORIENTAL
LANGUAGE SET AND SPECIAL SYMBOLS)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the encoding of data containing characters of the L.C. Extended Roman Alphabet (176 characters) into machine readable form for the purpose of buffering it into permanent storage media.
- B. To permit the encoding of data containing characters of a selected Non-Roman Alphabet into machine readable form for the purpose of buffering it into a permanent storage media.
- C. To permit the encoding of data containing characters of a selected Oriental language or of special symbols into machine readable form for the purpose of buffering it into a permanent storage media.
- D. To allow the encoded data to be stored as necessary and to be loaded into the central system at periodic intervals.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a.	PRE-PROGRAMMED	<u>X</u>
b.	OPERATOR CONTROLLED	<u>X</u>
c.	NONE	<u> </u>

Data format can be controlled by operator.
It can also be preprogrammed into terminal
controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO _____

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Operator signaled
of parity error.

(3) ACTION BY TERMINAL HARDWARE _____
MANDATORY: Error indication.

DESIRABLE: Automatic erasure and rewriting
of message from buffer.

c. OPERATOR ACTION _____

MANDATORY: Operator rekeys message.

DESIRABLE: Media automatically erased
rewritten from buffer without need for
operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable.

X

2. DELETE FEATURES

- a. BY CHARACTER X
- b. BY LINE X
- c. BY FRAME
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS
- e. NONE

3. OTHER

- a. REWIND
 - (1) If module is tape device requiring
rewinding.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY

- 3. OTHER
None

D. DATA SPECIFICATIONS

1. CHARACTER SET Comined sets- Extended Roman,
selected Non-Roman and a selected set for
Oriental language or special symbols.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH N.A.

b. MAXIMUM LENGTH N.A.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
3. Full visual display.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer with data entry device.
2. Message displayed on full visual display.
3. If necessary operator corrects message.
4. Operator signals terminal to write message onto machine readable media.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None.

MODULE NAME: MARKING DEVICE - NUMERIC

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the outputting on a reader request slip of a small number of simple precoded messages.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED N.A.

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not applicable

X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE _____ X

3. OTHER

a. MARK

- (1) Operator signals module that reader request slip is in position to be marked by inserting it into unit document reader and initiating reading of unit document.

C. CONTROL FUNCTIONS

1. ON/OFF X

2. INTERLOCK FACILITY _____

3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH 1 character

b. MAXIMUM LENGTH 1 character

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Machine readable unit document reader.
3. Badge reader.

B. SEQUENCE OF EVENTS:

1. Operator initiates reading of messages on unit document and badge.
2. Messages transmitted to central processor.
3. Return message via marking device onto unit document.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

IV. ENVIRONMENT (SEE APPENDIX B)

L121(L331), L261(L331), L121, L261, L122, L262, L111,
L112(L322), L122, L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: MACHINE READABLE UNIT DOCUMENT GENERATOR

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the generation of machine readable turn around documents.
- B. To permit the generation of a machine readable record for the purpose of returning a record of data entered into the system.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED MANDATORY: Check character or parity bits DESIRABLE: Check character and parity bits

(2) ERROR INDICATION Operator signaled of error in generation of unit document

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error indication
DESIRABLE: Automatic regeneration of unit document

c. OPERATOR ACTION MANDATORY: Operator signals module to generate new unit document
DESIRABLE: Automatic regeneration of unit document without need for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

 X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. GENERATE UNIT DOCUMENT
 - (1) Operator signals module to generate or regenerate unit document.

C. CONTROL FUNCTIONS

1. ON/OFF

X

2. INTERLOCK FACILITY

3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET Standard Roman (See Appendix A)

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH 35 (see note)

b. MAXIMUM LENGTH 57 (from O.D.3)

Note: Weighed average of UAC J1-6 and
Order Division O.D.3

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller
2. Data entry devices

B. SEQUENCE OF EVENTS:

1. Off-line
 - a. Message entered into terminal buffer via data entry device.
 - b. Unit document generated.
2. On-line
 - a. Message transmitted to terminal buffer from control processor.
 - b. Unit document generated.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(L361),
L211(L311), L111

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: PIN LABELER

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

A. MANDATORY:

1. To permit the dispensing of human and machine readable PIN labels (see Section 3 for discussion of PIN Assignment terminal category).

B. DESIRABLE:

1. To permit removing protective backing from PIN labels or performing comparable preparation.

2. To permit the automatic affixing of PIN labels to L.C. bibliographic material.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a.	PRE-PROGRAMMED	_____
b.	OPERATOR CONTROLLED	_____
c.	NONE	_____X_____

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

- (1) CODE USED MANDATORY: Check Digit
DESIRABLE: Parity Bit
(2) ERROR INDICATION Operator signalled of
error in issue of PIN label
(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error indication
DESIRABLE: Automatic reissue of PIN
label

- c. OPERATOR ACTION MANDATORY: Operator requests
reissue of PIN label
DESIRABLE: Automatic reissue of label
without need for operator intervention.
-

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

 X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

- a. PIECE READY TO RECEIVE PIN LABEL
 - (1) Operator signals module that piece is in place, ready to receive PIN label.
 - a. If fixing of PIN label to piece by module is automatic.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

3. OTHER

a. CONDITION INDICATORS

- (1) Module ready to issue label.
- (2) Malfunction in module.

D. DATA SPECIFICATIONS

1. CHARACTER SET Standard Roman

MANDATORY: Digits: 0-9

Alphabet: A-Z

Punctuation Marks: Period, comma

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH 10 characters

b. MAXIMUM LENGTH 10 characters

Note: Library of Congress call number in human readable form will be placed on PIN Label subsequent to PIN Labeling process (See PIN Reader).

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Unit document reader.

B. SEQUENCE OF EVENTS:

1. Unit document reader reads PIN card.
2. PIN sent from unit document reader to PIN labeler.
3. PIN labeler dispenses PIN label (affixes label to piece).

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER
None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L211(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. PIN LABELS:

1. FUNCTIONAL CHARACTERISTICS

- a. Provide unique and permanent identification for Library holdings (Hard cover and pamphlet).
- b. Man readable.
- c. Machine readable.

2. PHYSICAL CHARACTERISTICS

- a. Size and shape: 1½" x 3" (Max); Rectangular.
- b. Material.
 - (1) Paper, cloth, plastic, metal, etc.
- c. Number of labels per roll, cartridge or stack.
 - (1) To be determined by trade-off analysis.
- d. Adhesive or other attachment means.
 - (1) Mandatory.
 - a. Readily attachable.
 - b. Form permanent, but reversible, bond.
 - c. Non-injurious to books.
 - d. Offer no hazard to personnel.
 - (2) Desirable.
 - a. Removable with a special solvent or other appropriate means.
 - b. Labels to come from factory with adhesive and protective backing or separate solvent for application.
 - c. Removal non-destructive with respect to label or piece.

MODULE NAME: FULL VISUAL DISPLAY - EXTENDED ROMAN CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow displaying of catalog data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow displaying the above-named characters with proper registration.
- C. To allow human interaction with the displayed data to perform editing and transposition functions.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u> X </u>
b. OPERATOR CONTROLLED	<u> X </u>
c. NONE	<u> </u>

Display Format can be controlled by operator.

It can also be preprogrammed into terminal
controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Parity error
indicated by error character.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication.

DESIRABLE: Terminal automatically
~~requests retransmission of message~~
by central processor.

c. OPERATOR ACTION

DESIRABLE: Automatic retransmission of
message without operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Positioning Controls on display module.

(a) Mandatory.

1. Forward (one character).
2. Backspace (one character).
3. Up (one line).
4. Down (one line).
5. Reset to first character of first line.

(b) Desirable.

1. Midtab.

(2) Positioning controls from central processor.

(a) Mandatory.

1. Forward (one character).
2. Backspace (one character).
3. Up (one line).
4. Down (one line).
5. Reset to first character of first line
6. Positioning of cursor (any position of any line).
7. Determination of position of cursor.

(b) Desirable.

1. Midtab.

2. DELETE FEATURES

a. BY CHARACTER	<u>X</u>
b. BY LINE	<u>X</u>
c. BY FRAME	<u>X</u>
d. WITHIN LIMITS SPECIFIED BY CONTROL CHARACTERS	<u>X</u>
e. NONE	<u> </u>

3. OTHER

a. Mandatory.

(1) Data formatting.

(a) Format characters displayed on screen.

(b) Cursor automatically moves to positions designated by format characters.

(2) Brightness control.

(a) Operator adjusts brightness to level which assures maximum ease of viewing (See Appendix B).

(3) Contrast control.

(a) Operator adjusts contrast to level which assures maximum ease of viewing (See Appendix B).

b. Desirable.

(1) Split screen capability.

(2) Partial transmit.

(a) Portion of field between cursor and end of field is transmitted.

(3) Insert character.

(a) Character designated by cursor and entire field to right of cursor is moved one character to the right.

(4) Delete character.

(a) Entire field to right of cursor is moved one character to the left.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

3. OTHER

a. Refreshment rate.

(1) Mandatory: Flicker not detectable to human eye under conditions defined by IV.

D. DATA SPECIFICATIONS

1. CHARACTER SET Library of Congress Extended Roman Alphabet (see Appendix A).
-
-
-

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS (Master records without tags)

a. AVERAGE LENGTH 457 characters

b. MAXIMUM LENGTH (as a function of the number of messages)

65% of number of messages have 457 characters or less.

83% of number of messages have 600 characters or less.

91% of number of messages have 800 characters or less.

96% of number of messages have 1000 characters or less.

97% of number of messages have 1200 characters or less.

98% of number of messages have 1400 characters or less.

All other record types have averages which are smaller than 457.

See UAC Task I report Appendix C, page c185, c186.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
 - a. Keyboard.
 - b. Unit document reader.
3. Full printer.

B. SEQUENCE OF EVENTS:

1. Message entered into terminal buffer from central processor, or data entry device.
2. Message displayed on display device.
3. Message copy with full printer.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L231 (L361), L241 (L361)

L211 (L311), L292 (L361)

V. RELIABILITY/AVAILABILITY

99% Defined as

$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER

None

MODULE NAME: FULL VISUAL DISPLAY - COMBINED SETS (EXTENDED ROMAN AND
SELECTED NON-ROMAN)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow displaying of catalog data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow displaying of catalog data which contains characters of a selected Non-Roman Alphabet.
- C. To allow displaying the above-named characters with proper registration.
- D. To allow human interaction with the displayed data to perform editing and transposition functions.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a.	PRE-PROGRAMMED	<u>X</u>
b.	OPERATOR CONTROLLED	<u>X</u>
c.	NONE	<u> </u>

Display Format can be controlled by operator.

It can also be preprogrammed into terminal
controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Parity error
indicated by error character.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication.

DESIRABLE: Terminal automatically
requests retransmission of message
by central processor.

c. OPERATOR ACTION

DESIRABLE: Automatic retransmission of
message without operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Positioning controls on display module.

(a) Mandatory.

1. Forward (one character).
2. Backspace (one character).
3. Up (one line).
4. Down (one line).
5. Reset to first character of first line.

(b) Desirable.

1. Midtab.

(2) Positioning controls from central processor.

(a) Mandatory.

1. Forward (one character).
2. Backspace (one character).
3. Up (one line).
4. Down (one line).
5. Reset to first character of first line.
6. Positioning of cursor (any position of any line).
7. Determination of position of cursor.

(b) Desirable.

1. Midtab.

2. DELETE FEATURES

a. BY CHARACTER	<u>X</u>
b. BY LINE	<u>X</u>
c. BY FRAME	<u>X</u>
d. WITHIN LIMITS SPECIFIED BY CONTROL CHARACTERS	<u>X</u>
e. NONE	<u> </u>

3. OTHER

a. Mandatory.

(1) Data formatting.

(a) Format characters displayed on screen.

(b) Cursor automatically moves to positions designated by format characters.

(2) Brightness control.

(a) Operator adjusts brightness to level which assures maximum ease of viewing (see Appendix B).

(3) Contrast control.

(a) Operator adjusts contrast to level which assures maximum ease of viewing (see Appendix B).

b. Desirable.

(1) Split screen capability.

(2) Partial transmit.

(a) Portion of field between cursor and end of field is transmitted.

(3) Insert character.

(a) Character designated by cursor and entire field to right of cursor is moved one character to the right.

(4) Delete character.

(a) Entire field to right of cursor is moved one character to the left.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

3. OTHER

a. Refreshment rate.

(1) Mandatory: Flicker not detectable to human eye under conditions defined by IV.

D. DATA SPECIFICATIONS

1. CHARACTER SET Library of Congress Extended Roman Alphabet (see Appendix A) and a selected Non-Roman Alphabet.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS (Master records without tags)

- a. AVERAGE LENGTH 457 characters

- b. MAXIMUM LENGTH (as a function of the number of messages)

65% of number of messages have 457 characters or less.

83% of number of messages have 600 characters or less.

91% of number of messages have 800 characters or less.

96% of number of messages have 1000 characters or less.

97% of number of messages have 1200 characters or less.

98% of number of messages have 1400 characters or less.

It is assumed that distribution of Non-Roman master records is similar to that of Roman master records.

See UAC Task I report Appendix C, page c185, c186.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
 - a. Keyboard.
 - b. Unit document reader.
3. Full printer.
4. Machine readable media generator.

B. SEQUENCE OF EVENTS:

1. Message entered into terminal buffer from central processor, or data entry device.
2. Message displayed on display device.
3. Operator may create hard copy with full printer.
4. Operator may create machine readable record with machine readable media generator.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L231 (L361), L241 (L361)

L211 (L311), L291 (L361)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: FULL VISUAL DISPLAY - COMBINED SETS (EXTENDED ROMAN AND
SELECTED SET FOR ORIENTAL LANGUAGE OR SPECIAL SYMBOLS)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow displaying of catalog data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow displaying of catalog data which contains characters of a selected Oriental language or of special symbols.
- C. To allow displaying the above-named characters with proper registration.
- D. To allow human interaction with the displayed data to perform editing and transposition functions.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a. PRE-PROGRAMMED	<u> X </u>
b. OPERATOR CONTROLLED	<u> X </u>
c. NONE	<u> </u>

Display format can be controlled by operator.
It can also be preprogrammed into terminal
controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Parity error
indicated by error character.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication

DESIRABLE: Terminal automatically
requests retransmission of message
by central processor.

c. OPERATOR ACTION

DESIRABLE: Automatic retransmission of
message without operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Positioning controls on display module.

(a) Mandatory.

- 1. Forward (one character).
- 2. Backspace (one character).
- 3. Up (one line).
- 4. Down (one line).
- 5. Reset to first character of first line.

(b) Desirable.

- 1. Midtab.

(2) Positioning controls from central processor.

(a) Mandatory.

- 1. Forward (one character).
- 2. Backspace (one character).
- 3. Up (one line).
- 4. Down (one line).
- 5. Reset to first character of first line.
- 6. Positioning of cursor (any position of any line).
- 7. Determination of position of cursor.

(b) Desirable.

- 1. Midtab.

2. DELETE FEATURES

a. BY CHARACTER	<u>X</u>
b. BY LINE	<u>X</u>
c. BY FRAME	<u>X</u>
d. WITHIN LIMITS SPECIFIED BY CONTROL CHARACTERS	<u>X</u>
e. NONE	<u> </u>

3. OTHER

a. Mandatory.

(1) Data formatting.

(a) Format characters displayed on screen.

(b) Cursor automatically moves to positions designated by format characters.

(2) Brightness control.

(a) Operator adjusts brightness to level which assures maximum ease of viewing (see Appendix B).

(3) Contrast control.

(a) Operator adjusts contrast to level which assures maximum ease of viewing (see Appendix B).

b. Desirable.

(1) Split screen capability.

(2) Partial transmit.

(a) Portion of field between cursor and end of field is transmitted.

(3) Insert character.

(a) Character designated by cursor and entire field to right of cursor is moved one character to the right.

(4) Delete character.

(a) Entire field to right of cursor is moved one character to the left.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

3. OTHER

a. Refreshment rate.

- (1) Mandatory: Flicker not detectable to human eye under conditions defined by IV.

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined sets - Library of Congress Extended Roman character set and a selected set for Oriental language or special symbols.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS (Master records without tags)

a. AVERAGE LENGTH 457 characters

b. MAXIMUM LENGTH (as a function of the number of messages)

65% of number of messages have 457 characters or less.

83% of number of messages have 600 characters or less.

91% of number of messages have 800 characters or less.

96% of number of messages have 1000 characters or less.

97% of number of messages have 1200 characters or less.

98% of number of messages have 1400 characters or less.

It is assumed that distribution of Oriental master records is similar to that of Roman master records.

See UAC Task I report Appendix C, page c185,c186.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
 - a. Keyboard.
 - b. Unit document reader.
3. Full printer.
4. Machine readable media generator.

B. SEQUENCE OF EVENTS:

1. Message entered into terminal buffer from central processor, or data entry device.
2. Message displayed on display device.
3. Operator may create hard copy with full printer.
4. Operator may create machine readable record with machine readable media generator.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L231 (L361), L241 (L361)

L211 (L311), L291 (L361)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: FULL VISUAL DISPLAY - COMBINED SETS (EXTENDED ROMAN, NON-ROMAN, ORIENTAL LANGUAGE SETS AND SPECIAL SYMBOLS)

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow displaying of catalog data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow displaying of catalog data which contains characters of a selected Non-Roman Alphabet.
- C. To allow displaying of catalog data which contains characters of a selected Oriental language or of special symbols.
- D. To allow displaying the above-named characters with proper registration.
- E. To allow human interaction with the displayed data to perform editing and transposition functions.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

a.	PRE-PROGRAMMED	<u>X</u>
b.	OPERATOR CONTROLLED	<u>X</u>
c.	NONE	<u> </u>

Display Format can be controlled by operator.

It can also be preprogrammed into terminal controller or central processor or both.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bit and check
character.

(2) ERROR INDICATION Parity error
indicated by error character.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error Indication

DESIRABLE: Terminal automatically
requests retransmission of message
by central processor.

c. OPERATOR ACTION

DESIRABLE: Automatic retransmission of
message without operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

- a. YES X
- b. NO
- c. LIST OF CONTROLS

(1) Positioning Controls on display module.

(a) Mandatory.

- 1. Forward (one character).
- 2. Backspace (one character).
- 3. Up (one line).
- 4. Down (one line).
- 5. Reset to first character of first line.

(b) Desirable. 1. Midtab.

(2) Positioning controls from central processor.

(a) Mandatory.

- 1. Forward (one character).
- 2. Backspace (one character).
- 3. Up (one line).
- 4. Down (one line).
- 5. Reset to first character of first line.
- 6. Positioning of cursor (any position of any line).
- 7. Determination of position of cursor.

(b) Desirable.

- 1. Midtab.

2. DELETE FEATURES

a. BY CHARACTER	<u>X</u>
b. BY LINE	<u>X</u>
c. BY FRAME	<u>X</u>
d. WITHIN LIMITS SPECIFIED BY CONTROL CHARACTERS	<u>X</u>
e. NONE	<u> </u>

3. OTHER

a. Mandatory.

(1) Data formatting.

- (a) Format characters displayed on screen.
- (b) Cursor automatically moves to positions designated by format characters.

(2) Brightness control.

- (a) Operator adjusts brightness to level which assures maximum ease of viewing.
(See Appendix B)

(3) Contrast control.

- (a) Operator adjusts contrast to level which assures maximum ease of viewing.
(See Appendix B)

b. Desirable.

(1) Split screen capability.

(2) Partial transmit.

- (a) Portion of field between cursor and end of field is transmitted.

(3) Insert character.

(a) Character designated by cursor and entire field to right of cursor is moved one character to the right.

(4) Delete character.

(a) Entire field to right of cursor is moved one character to the left.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

3. OTHER

a. Refreshment rate.

- (1) Mandatory: Flicker not detectable to human eye under conditions defined by IV.

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined sets - Extended Roman, a selected Non-Roman and a selected set for Oriental language or special symbols.
-
-

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS (Master records without tags)

- a. AVERAGE LENGTH 457 characters

- b. MAXIMUM LENGTH (as a function of the number of messages)

~~65% of number of messages have 457 characters or less.~~

~~83% of number of messages have 600 characters or less.~~

~~91% of number of messages have 800 characters or less.~~

~~96% of number of messages have 1000 characters or less.~~

~~97% of number of messages have 1200 characters or less.~~

98% of number of messages have 1400 characters or less.

All other record types have averages which are smaller than 457.

See UAC Task I report Appendix C, page c185, c186.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Data entry devices.
 - a. Keyboard.
 - b. Unit document reader.
3. Full printer.
4. Machine readable media generator.

B. SEQUENCE OF EVENTS:

1. Message entered into terminal buffer from central processor, or data entry device.
2. Message displayed on display device.
3. Operator may create hard copy with full printer.
4. Operator may create machine readable record with machine readable media generator.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L291(L361), L231(L361), L241(L361), L131(L331), L261(L331),
L121, L261, L122, L262, L111, L112(L322), L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER
None

MODULE NAME: KEYBOARD FOR STANDARD ROMAN CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow keying of catalog and other data which contains characters of the Standard Roman Alphabet.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO x

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE
 N.A.

c. OPERATOR ACTION

 N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

N.A.

 X

2. DELETE FEATURES

- a. BY CHARACTER x
- b. BY LINE
- c. BY FRAME
- d. WITHIN LIMITS SPECIFIED BY CONTROL CHARACTERS
- e. NONE

3. OTHER

- a. Mandatory.
 - (1) Shift.
 - (2) Space.
 - (3) Backspace.
 - (4) Carriage return.
 - (5) Shift-lock.
 - (6) Shift-release.
 - (7) Tab.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY X

~~Only one key may be depressed at a time.~~

- 3. OTHER

D. DATA SPECIFICATIONS

1. CHARACTER SET Standard Roman character
set (see Appendix A).

2. CHARACTER CODES
Mandatory: 7 level ASCII code
Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS
a. AVERAGE LENGTH Does not apply.
b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Machine readable unit document generator.
3. Full visual display.
4. Full printer.

B. SEQUENCE OF EVENTS:

1. Operator keys message into terminal buffer.
2. Message displayed on full visual display.
3. Operator may signal terminal to create hard copy using full printer.
4. Operator may signal terminal to transmit message.
5. Operator may signal terminal to create machine readable unit document.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE ~~When module is operating other~~
input devices connected to terminal do not
operate.

2. TO MODULE ~~Module will not operate while~~
other input devices connected to terminal
are operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L111

V. RELIABILITY/AVAILABILITY

99% Defined as
$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER

A. KEYBOARD DESIGN.

1. Mandatory.

a. Layout.

(1) Layout of standard Roman character subset (88 characters) conforms to current practice.

b. Total travel of keys.

(1) Comparable to that of standard electric typewriter.

c. Touch pressure of keys.

(1) Comparable to that of standard electric typewriter.

d. Size and spacing of keys.

(1) Comparable to that of standard electric typewriter.

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO _____

X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE _____

N.A.

c. OPERATOR ACTION _____

N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 X

c. LIST OF CONTROLS

N.A.

2. DELETE FEATURES

- | | |
|---|-------------------|
| a. BY CHARACTER | <u>X</u> |
| b. BY LINE | <u> </u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

- a. Mandatory.
- (1) Shift.
 - (2) Space.
 - (3) Backspace.
 - (4) Carriage return.
 - (5) Shift-lock.
 - (6) Shift-release.
 - (7) Tab.

D. DATA SPECIFICATIONS

1. CHARACTER SET Library of Congress Extended
Roman Alphabet (see Appendix A).

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Full visual display.
3. Full printer.

B. SEQUENCE OF EVENTS:

1. Operator Keys message into terminal buffer.
2. Message displayed on full visual display.
3. Operator may signal terminal to create hard copy using full printer.
4. Operator may signal terminal to transmit message.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating
other input devices connected to terminal
do not operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L231 (L361), L241 (L361),
L211 (L311), L291 (L361), L222, L261, L262, L131(L331),
L261(L331), L121, L111, L112(L322), L211, L411(L311)

V. RELIABILITY/AVAILABILITY

99% Defined as
$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER

A. KEYBOARD DESIGN.

1. Mandatory.

a. Layout.

- (1) Layout of standard Roman character subset (88 characters) conforms to current practice.
- (2) Layout of new standard subset (special characters and diacriticals) to be determined.
- (3) Key(s) to effect shift from one subset to another.

b. Total travel of keys.

- (1) Comparable to that of standard electric typewriter.

c. Touch pressure of keys.

- (1) Comparable to that of standard electric typewriter.

d. Size and spacing of keys.

- (1) Comparable to that of standard electric typewriter.

MODULE NAME: **KEYBOARD - COMBINED SETS (EXTENDED ROMAN AND
SELECTED NON-ROMAN)**

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow keying of catalog data which contains characters of the L.C. Extended Roman Alphabet (176 characters).
- B. To allow keying of catalog data which contains characters of a selected Non-Roman Alphabet.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 X

c. LIST OF CONTROLS
N.A.

2. DELETE FEATURES

- | | |
|---|-------------------|
| a. BY CHARACTER | <u>X</u> |
| b. BY LINE | <u> </u> |
| c. BY FRAME | <u> </u> |
| d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS | <u> </u> |
| e. NONE | <u> </u> |

3. OTHER

- a. MANDATORY
- (1) Shift.
 - (2) Space.
 - (3) Backspace.
 - (4) Carriage return.
 - (5) Shift-lock.
 - (6) Shift-release.
 - (7) Tab.

C. CONTROL FUNCTIONS

- | | |
|---|----------|
| 1. ON/OFF | <u>X</u> |
| 2. INTERLOCK FACILITY | <u>X</u> |
| <u>Only one key may be depressed at a time.</u> | |
| <hr/> | |
| <hr/> | |

3. OTHER - None

D. DATA SPECIFICATIONS

1. CHARACTER SET Combined sets - Extended Roman
and a selected Non-Roman character set.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH Does not apply.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal Controller.
2. Full visual display.
3. Full printer.
4. Machine readable media generator.

B. SEQUENCE OF EVENTS:

1. Operator keys message into terminal buffer.
2. Message displayed on full visual display.
3. Operator may signal terminal to create hard copy using full printer.
4. Operator may signal terminal to transmit message.
5. Operator may signal terminal to create machine readable record of message.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating, other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are
operating.

D. OTHER

None.

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(L361), L211(L311),
L296(L361), L231(L361), L241(L361)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

A. KEYBOARD DESIGN.

1. MANDATORY.

a. Layout.

- (1) Layout of standard Roman Character subset (88 characters) conforms to current practice.
- (2) Layout of new standard subset (spécial characters and diacriticals) to be determined.
- (3) Layout of selected Non-Roman Alphabet characters to be determined.
- (4) Key(s) to effect shift from one subset to another and from one language to another if same keyboard used.

b. Total travel of keys.

- (1) Comparable to that of standard electric typewriter.

c. Touch pressure of keys.

- (1) Comparable to that of standard electric typewriter.

d. Size and spacing of keys.

- (1) Comparable to that of standard electric typewriter.

MODULE NAME: ENTRY DEVICE - ORIENTAL LANGUAGE CHARACTER SET

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow keying of catalog data which contains characters of a selected Oriental language character set (Chinese, Japanese, or Korean).

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO _____ X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE N.A.

c. OPERATOR ACTION _____

N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

 X

N.A.

2. DELETE FEATURES

a. BY CHARACTER

b. BY LINE

c. BY FRAME

d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS

e. NONE

_____ X _____

3. OTHER

N.A.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
 - 2. INTERLOCK FACILITY
-
- N.A.
-
-

3. OTHER

N.A.

D. DATA SPECIFICATIONS

1. CHARACTER SET Chinese, Japanese and Korean
characters (see Appendix A).

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Full visual display.
3. Full printer.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer.
2. Message may be displayed on full visual display.
3. Message may be placed on hard copy with full printer.
4. Message may be transmitted to central processor.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating, other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are opera-
ting.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(L361),
L231(L361), L211(L311), L241(L361)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: ENTRY DEVICE - SPECIAL SYMBOLS

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow keying of catalog data which contains special symbols.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE _____

 N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

 X

N.A.

2. DELETE FEATURES

a. BY CHARACTER _____

b. BY LINE _____

c. BY FRAME _____

d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____

e. NONE _____ X

3. OTHER

N.A.

D. DATA SPECIFICATIONS

1. CHARACTER SET Indefinite (see Appendix A).

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Does not apply.

b. MAXIMUM LENGTH _____

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Full visual display.
3. Full printer.

B. SEQUENCE OF EVENTS:

1. Operator enters message into buffer.
2. Message may be displayed in full visual display.
3. Operator may create hard copy with full printer.
4. Message may be transmitted to central processor.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating,
other input devices connected to terminal do
not operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

Location of one entry device unknown at this
time. Probably in Cataloging Division.

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: PREPROGRAMMED DATA ENTRY DEVICE

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow the input of a variable number of predefined messages.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable (N.A.)

(2) ERROR INDICATION N.A.

(3) ACTION BY TERMINAL HARDWARE N.A.

c. OPERATOR ACTION N.A.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

N.A.

 X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE _____ X

3. OTHER

a. MESSAGE SELECT

- (1) Operator signals module as to which one of a repertoire of preprogrammed messages is to be generated for transmission to central processor.

C. CONTROL FUNCTIONS

1. ON/OFF X
2. INTERLOCK FACILITY X
- Only one message of the repertoire may be
selected for transmission at one time.
-

3. OTHER
None

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH (Arbitrary) 4

b. MAXIMUM LENGTH (Arbitrary) 4

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller

B. SEQUENCE OF EVENTS:

1. Operator selects message and signals module.
2. Message selected by operator is generated by module and transmitted by terminal to central processor.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating, other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are
operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

~~L251(L351), L231(L351), L291(L361), L231(L361), L211(L311),
L131(L331), L261(L331), L121, L261, L122, L262, L111,
L112(L322)~~

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER
None

MODULE NAME:MACHINE READABLE UNIT DOCUMENT READER

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow the reading of the machine readable records generated by the machine readable unit document generator.
- B. To permit the reading of machine readable turn about documents.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

- (1) CODE USED MANDATORY: Check character
or parity bits. DESIRABLE: Check character
and parity bits.
(2) ERROR INDICATION Operator signaled
of error in reading unit document.
(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error indication
DESIRABLE: Automatic rereading of unit
document

- c. OPERATOR ACTION MANDATORY: Operator reinitiates
reading of Unit Document.
DESIRABLE: Automatic rereading of Unit
Document without need for operator intervention.
-

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

**c. LIST OF CONTROLS
Not Applicable**

 X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE _____ X

3. OTHER

- a. READ UNIT DOCUMENT
 - (1) Operator signals module to read unit document.

C. CONTROL FUNCTIONS

- | | |
|-----------------------|-----------------------------------|
| 1. ON/OFF | <u> X </u> |
| 2. INTERLOCK FACILITY | <u> </u> |
| | <u> </u> |
| | <u> </u> |
| 3. OTHER | |
| None | |

D. DATA SPECIFICATIONS

1. CHARACTER SET Standard Roman (See Appendix A)

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH _____

b. MAXIMUM LENGTH _____

(1) For PIN Assignment and Discharging
see paragraph II D3 of Machine Readable
Unit Document Generator.

(2) For Reference, Reading Room Control
and Material Request characteristics unknown
until MR request slip is designed.

(3) For Invoice Clearing an average maximum
length of 177 characters from OD 17.

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.
2. Marking device.
3. Badge reader.

B. SEQUENCE OF EVENTS:

1. Sequence initiates reading of message on unit document and badge.
2. Messages transmitted to central processor.
3. Return message via marking device onto unit document.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are operating.

D. OTHER
None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L291 (L361), L231 (L361), L211 (L311),
L131 (L331), L261 (L331), L121, L261, L122, L212, L111, L112
(L322), L211, L411 (L311)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: PIN READER

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To allow reading of "PIN labels."
- B. To permit operation from a fixed or hand-held position.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
- (2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED MANDATORY: Check digit.
DESIRABLE: Parity bit.

(2) ERROR INDICATION MANDATORY: Operator
signaled that PIN has been misread.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error indication.
DESIRABLE: Automatic rereading of PIN.

c. OPERATOR ACTION MANDATORY: Operator
requests rereading of PIN label.
DESIRABLE: Automatic rereading of label
without need for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 x

c. LIST OF CONTROLS

Not Applicable

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE _____ X

3. OTHER

- a. READ PIN LABEL.

(1) Operator signals module that PIN reader and PIN label on piece are in proper spatial relationship for reading of PIN.

D. DATA SPECIFICATIONS

1. CHARACTER SET STANDARD ROMAN

MANDATORY: Digits: 0-9

Alphabet: A-Z

Punctuation marks: Period,

comma.

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

Machine readable field

a. AVERAGE LENGTH 10 characters

b. MAXIMUM LENGTH 10 characters

Human readable field

AVERAGE LENGTH 11 characters

MAXIMUM LENGTH 42 characters

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.

B. SEQUENCE OF EVENTS:

1. Operator brings PIN reader and piece into proper spatial relationship.
2. Operator signals reader to read PIN label.
3. PIN stored in terminal buffer.
4. PIN stored on machine readable media, or transmitted to central processor or listed on hard copy, etc.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating, other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while
other input devices connected to terminal
are operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251 (L351), L231 (L351), L231 (L361), L241 (L361),
L261, L122, L111, L222, L252, L262, L192, L292, L392,
L291 (L361), L122 , L111(L322), L192(L392)

V. RELIABILITY/AVAILABILITY

99% Defined as
$$\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$$

VI. OTHER

A. PIN labels.

1. Functional Characteristics.

- a. Provide unique and permanent identification for library holdings (hard cover and pamphlet).
- b. Man readable.
- c. Machine readable.

2. Physical Characteristics.

- a. Size and shape: 1 1/2" x 3" (Max.); Rectangular.
- b. Material.
 - (1) Paper, cloth, plastic, metal, etc.

MODULE NAME: BADGE READER-NUMERIC CHARACTER

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the recording and identification of attendents/
users/borrowers.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE _____ X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES X
(2) NO

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED MANDATORY: Check digit.
DESIRABLE: Parity bit.

(2) ERROR INDICATION MANDATORY: Operator
signaled that badge has been misread.

(3) ACTION BY TERMINAL HARDWARE
MANDATORY: Error indication.
DESIRABLE: Automatic rereading of
badge.

c. OPERATOR ACTION MANDATORY: Operator
reactivates reading of badge.
DESIRABLE: Automatic rereading of badge
without need for operator intervention.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

 X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

a. READ BADGE

- (1) Insertion of badge into reader auto-
matically activates read mechanism.

C. CONTROL FUNCTIONS

- 1. ON/OFF X
- 2. INTERLOCK FACILITY
-
-
-

- 3. OTHER
None

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH (Arbitrary) 10

b. MAXIMUM LENGTH (Arbitrary) 10

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.

B. SEQUENCE OF EVENTS:

1. Operator inserts badge into reader.
2. Insertion of badge triggers reading of information on badge into terminal buffer.
3. Information transmitted on command to central processor.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating other
input devices connected to terminal do not
operate.

2. TO MODULE Module will not operate while other
input devices connected to terminal are operating.

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L291(L361), L231(B61), L241(L361),
L192, L292, L392, L192(L392), L131(L331), L261(L331), L121,
L261, L122, L262, L111, L112(L322), L211, L411(L311), L261

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: ID CODE GENERATOR

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the generation (and eventual transmission) of a fixed user or location ID code along with other data being buffered.
- B. To allow the positive identification of specific terminals by user or location.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES _____

(2) NO X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Not Applicable

(2) ERROR INDICATION Not Applicable

(3) ACTION BY TERMINAL HARDWARE _____
Not Applicable

c. OPERATOR ACTION Not Applicable

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS

Not Applicable

X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

a. SET IDENTIFICATION CODE

(1) A mechanism is provided so that the identification code can be set on-site.

b. LOCKING DEVICE

(1) A lock is provided so that after the ID code is set, accidental changing of the ID code or changing of the IC code by unauthorized personnel is prevented.

C. CONTROL FUNCTIONS

1. ON/OFF X

2. INTERLOCK FACILITY

3. OTHER

None

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH (Arbitrary) 4

b. MAXIMUM LENGTH (Arbitrary) 4

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal buffer.
2. Operator signals terminal to transmit message.
3. Terminal controller inserts ID code into message.
4. Message transmitted with ID code.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L391(L361), L231(L361), L211(L311),
L241(L361), L111(L322), L222, L252, L262, L192, L292,
L392, L192(L392), L122, L261, L111

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: TIME/DATE CODE GENERATOR

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the generation (and automatic transmission) of time of day and date along with other data being buffered.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE _____ X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

- (1) YES _____
- (2) NO _____ X

b. IMPLEMENTATION OF DETECTION AND RECOVERY

- (1) CODE USED N.A. _____
- _____
- (2) ERROR INDICATION N.A. _____
- _____
- (3) ACTION BY TERMINAL HARDWARE N.A. _____
- _____
- _____

c. OPERATOR ACTION N.A. _____

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

 X

c. LIST OF CONTROLS

Not Applicable

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE X

3. OTHER

a. SET TIME AND DATE

- (1) Operator sets device to make it
synchronous with current time and date.

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES

Mandatory: 7 level ASCII code

Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS

a. AVERAGE LENGTH Time: 4, Date: 6

b. MAXIMUM LENGTH Time: 4, Date: 6

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal controller.

B. SEQUENCE OF EVENTS:

1. Operator enters message into terminal controller.
2. Operator signals terminal to transmit message.
3. Terminal controller inserts TIME/DATE code into message.
4. Message transmitted with TIME/DATE code.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE None

2. TO MODULE None

D. OTHER

None

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351), L231(L351), L391(L361), L231(L361), L211(L311),
L241(L361), L111(L322), L222, L252, L262, L192, L292, L392,
L192(L392), L122, L261, L111

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

MODULE NAME: CALCULATING UNIT

I. FUNCTIONAL DESCRIPTION - USE/APPLICATION:

- A. To permit the performance of certain arithmetic calculations on a given set of data prior to its transmission to the central computer.

II. FUNCTIONAL CHARACTERISTICS.

A. LOGICAL FUNCTIONS:

1. FORMAT CONTROL

- a. PRE-PROGRAMMED _____
- b. OPERATOR CONTROLLED _____
- c. NONE X

2. ERROR DETECTION AND RECOVERY

a. AUTOMATIC DETECTION

(1) YES X

(2) NO _____

b. IMPLEMENTATION OF DETECTION AND RECOVERY

(1) CODE USED Parity bits.

(2) ERROR INDICATION Operator signaled
of parity error.

(3) ACTION BY TERMINAL HARDWARE _____
Error indication.

c. OPERATOR ACTION Operator rekeys data and/or
reinitializes computations.

B. OPERATIONAL CONTROLS

1. POSITIONING CONTROL

a. YES

b. NO

c. LIST OF CONTROLS
Not applicable.

X

2. DELETE FEATURES

- a. BY CHARACTER _____
- b. BY LINE _____ X _____
- c. BY FRAME _____
- d. WITHIN LIMITS SPECIFIED
BY CONTROL CHARACTERS _____
- e. NONE _____

3. OTHER

- a. OPERATOR CONTROLS: MANDATORY
 - 1. RESET
 - a. Resets registers
 - 2. START
 - a. Starts computations
 - 3. STOP
 - a. Stops computations
- b. PRE-PROGRAMMED CONTROLS
 - 1. ARITHMETIC OPERATIONS
 - a. MANDATORY
 - (1) Add
 - (2) Subtract
 - b. DESIRABLE
 - (1) Multiply
 - (2) Divide
 - (3) Square root
 - 2. LOGICAL OPERATIONS: DESIRABLE
 - a. And
 - b. Or
 - 3. PROGRAM SEQUENCE CONTROL: DESIRABLE
 - a. Branch
 - b. Conditional branch
 - 4. STOP

D. DATA SPECIFICATIONS

1. CHARACTER SET Digits: 0-9

2. CHARACTER CODES
Mandatory: 7 level ASCII code
Desirable: 8 level Expanded ASCII code

3. MESSAGE CHARACTERISTICS
a. AVERAGE LENGTH (Arbitrary) 22
b. MAXIMUM LENGTH (Arbitrary) 22

III. INTERFACING

A. UNITS INTERFACED WITH:

1. Terminal Controller.
2. Data Entry Devices.
 - a. Keyboard.
 - b. Machine readable unit document reader.
3. Readout Devices.
 - a. Full visual display.
 - b. Full printer.
 - c. Machine readable media generator.

B. SEQUENCE OF EVENTS:

1. OFF-LINE.
 - a. Calculator program entered via keyboard device or unit document reader.
 - b. Data entered via keyboard device or unit document reader.
 - c. Results of computations stored in terminal buffer.
 - d. Results of computations may be displayed on display device.
 - e. Results of computations may be generated on full printer.
 - f. Results of computations may be stored on machine readable media.
2. ON-LINE.
 - a.-f. Same as off-line.
 - g. Results of computations transmitted to central processor.

C. INTERLOCKING REQUIREMENTS

1. FROM MODULE When module is operating input devices connected to terminal do not operate.

2. TO MODULE Module does not operate when input devices connected to terminal are operating.

D. OTHER

None.

IV. ENVIRONMENT (SEE APPENDIX B)

L251(L351)

V. RELIABILITY/AVAILABILITY

99% Defined as $\frac{100 \times \text{MEAN-TIME-TO-FAILURE}}{\text{MEAN-TIME-TO-FAILURE} + \text{MEAN-TIME-TO-REPAIR}}$

VI. OTHER

None

APPENDIX A

LANGUAGES AND CHARACTER SETS

1. SCOPE OF THE PROBLEM.

A critical problem facing automation of the Library of Congress is that of handling materials which have been printed in foreign alphabets.

As the UAC Task III report shows, nearly one-third of the new monographic material arriving at the Library of Congress is of this type (United Aircraft Corp. p. B 13). In 1966 the number of monographs added to the LC collection which were in foreign (Non-Roman) alphabets came to 31,700 (Op-cit p. B 13).

In order to understand the problem posed by these foreign publications, it is necessary to understand the part they play in a Bibliographic system. The three basic operations in a Bibliographic system are: update file; search file; and retrieve record. All basic decisions based on the content of these records, i.e., decisions made on the basis of what the records "mean" are made by human operators interfacing with the system. As an illustrative example, consider a Japanese cataloger working with the serial whose manuscript card is illustrated in Figure 1.

The cataloger must make certain basic decisions about this serial (i.e., Subject heading, Organization publishing serial, etc.).

In order to make these decisions the cataloger must search the Central Bibliographic file. If there is no record of the serial in the file and the cataloger concludes that the volume in hand is the first copy of that serial to enter the LC's collection, the cataloger will request permission to update the file with a new subject heading record or authority record. On the other hand, if a record is retrieved which seems to refer to the same serial, the cataloger must then decide on the basis of information contained in the volume in hand and on information contained in the retrieved record that a successful retrieval has in fact been made. This requires, of course, that the

Keiō Gijuku Daigaku, Tokyo. Shidō Bunko.
 斯道文庫論集 第1-6冊 輯 昭和 ~~37~~-42
 [1963-67] 慶應義塾大学附属研究所斯道文
 庫 ^{etc.} ^冊 21 cm. annual.
 (5) v. 1

Began in 1962. Cf. Zen-Nihon shuppanbutsu
 sōmoku-roku, 1962.

(v. c. set imperfect: v. 2 wanting)

I. Title.

Shidō Bunko ron shū.

Library of Congress		J

FIGURE 1

Manuscript card for a Japanese serial.

cataloger be able to read and understand the contents of the file record and the contents of the serial being cataloged.

Now, the reader should consider Figure 1 carefully. Note that portions of the manuscript card are in English. Note in addition that the names of the serial, the publisher, and the place of publication have been transliterated into Romanized Japanese. This is important because it is on the basis of the Romanized Japanese that all updating, searching and retrieval operations are performed.

However, it will be noted that author and publisher of the serial are also given in Chinese characters. Why is this necessary? It is necessary because transliteration from one alphabet to another is always inexact. In order that the cataloger's decisions be made correctly, Non-Roman text must accompany the bibliographic record even though the record is retrieved on the basis of its Romanized portion. Again, this has serious implications for an automated Central Bibliographic System. It means that methods must be found for linking Non-Roman character records with the Romanized record which provides the file key, and for displaying them upon subsequent retrieval of the Romanized record.

The preceding discussion leads to the following conclusion. While proper identification of a Non-Roman character by the digital computer is desirable, it is not mandatory. Text utilizing Non-Roman alphabets must be entered, stored and displayed by the computer system. For the majority of cataloging and processing operations, however, it is human operators interfacing with the computer system, rather than the computer itself who have to properly identify the characters.

A catalog card for a Chinese monograph is shown in Figure 2. Other examples of catalog cards for monographs printed in Non-Roman alphabets are illustrated on Pages B-28 to B-33 of Appendix B of the UAC Task III report. Note that in all cases, the basic information on the card, the information required for updating, searching and retrieval are coded in Roman characters.

Shên, Hsien-hêng.

國家與主義 (附圖解) 沈咸恆編述 江西泰和
勝利出版社江西分社 國風書局總經售 民國32
1943,

4, 2, 2, 36 p. 19 cm.

Colophon title.

1. China—Pol. & govt.

i. Title.

Title romanized: Kuo chia yü chu i.

JC273.S5 1943

C 67-1754

Library of Congress

[13]

FIGURE 2

Catalog Card for a Chinese monograph.
Note that author and title are given
in Romanized form for purposes of
filing, searching and retrieval.

2. CLASSIFICATION OF CHARACTER SETS.

The character sets used in the publication of texts in various languages can be divided (for strategic purposes) into four classes. These are:

- a. Roman alphabet character sets (74%)
- b. Non-Roman character sets (20%)
- c. Chinese characters (6%)
- d. Special Symbols (.1%)

Note: Percentages add up to more than 100% because of rounding.

This classification reflects considerations of strategy in devising the technology for entering the various character sets. Roman alphabets (a) are most easily and effectively entered with keyboard devices. Special symbols (d), because they can take an unlimited variety of forms might best be entered with devices which allow the operator to draw the character in free hand. The size of the character set of some Non-Roman alphabets (b) are small enough to permit entering with keyboard devices. However, free-hand drawing devices may be more cost-effective for those Non-Roman keyable alphabets whose materials represent only a small fraction of those acquired by the Library of Congress. Chinese characters (c) - which are also used in the publication of Japanese and Korean texts - might also be entered with devices which allow the operator to draw them. On the other hand, there is considerable activity in the U. S., Japan and Taiwan directed toward the development of keyboard devices for encoding Chinese characters.

In determining the work load percentages shown above for each of the four language divisions, two sources were used. First the information for mid-1972 in Table D-1, Page 138 of "Conversion of Retrospective Catalog Records to Machine-Readable Form" prepared by the RECON working Task Force, Library of Congress 1969 (L. C. Card 70-601790) was utilized. Second, the 1966 data in Table B3-1, Pages B-16 and B-17, Part I, Volume IV of that Task 3 report was analyzed and compared to the RECON information. These are cataloging workloads.

2.1 ROMAN ALPHABET CHARACTER SET.

Seventy-four percent of all materials cataloged by the Library of Congress, domestically published and foreign, were printed in Roman alphabets. A Roman alphabet is defined as one in which the majority of characters are Latin characters. Usually there are additional special characters and diacritical marks which are needed to denote idiosyncratic sounds which are found in that particular language.

Some representative Roman alphabets are illustrated in Figure 3.

Diacritical marks are used in a special way which is of special significance to the problem of automation. They are placed directly over or directly under other characters. For example, in the Pinyin system used to write Mandarin Chinese, the four tones used in speaking that language are represented by four diacritical marks. These can be used with any vowel as follows:

mā, má, mǎ, mà,
bī, bí, bǐ, bì,
jiān, jián, jiǎn, jiàn,
etc.

These diacritical marks are to be distinguished from special characters like ũ, in which the two dots are part of a character which is used in the same way as any other character. The two dots are not used above any other character. Also, ú is completely distinguished from u.

The Library of Congress has developed an extended Roman alphabet of 176 characters which includes most of the special characters and diacritical marks necessary to transliterate language materials cataloged. In addition, most other Roman alphabets are expected to be proper subsets of the LC Extended Roman Alphabet.

PORTUGUESE

No princípio criou Deus os céus e a terra. E a terra era sem fôrma e vazia; e havia trevas sôbre a face do abismo: e o Espírito de Deus se movia sôbre a face das águas. E disse Deus: Haja luz: E viu Deus que era boa a luz: e fez Deus separação entre a luz as trevas. E Deus chamou à luz Dia; e às trevas chamou Noite. E foi a tarde e a manhã, o dia primeiro. Genesis 1:1-5.

A ã Ê Ñ Õ B C Ç D E F G H I J (K) L L H M N N H O Õ E P Q R S T U V (W) X Y Z
a ãe ão b c ç d e f g h i j (k) l l h m n n h o õe p q r s t u v (w) x y z

CATALAN

A B C Ç C H D E F G G U G Û H I J K L L L L I L M N O P Q U Q Û R S T U V X Z
a b c ç c h d e f g g u g ù h i j k l l l l i l m n o p q u q ù r s t u v x z
NY

ICELANDIC

A Á AE B D E É F G H I Í J K L M N O Ó Ö P R S T U Ú V X Y Ý Z Þ ð
a á æ b d e é f g h i í j k l m n o ó ö p r s t u ú v x y ý z þ ð

LUGANDA

Kubanga Katonda bweyayagala ensi bwati, nokuwayo nāwayo
Omwānanawe eyazālibwa omu ye'ka, bali muntu yena amu'kirza
aleme okubula, naye abēre nobulamu obuta'gwāwo.

A A I B C D E F G I J K L M N N G' N Y O P R S T U V W Y Z
a a i b c d e f g i j k l m n n g' n y o p r s t u v w y z

YORUBA

Nitori Olorun fẹ araiye tobẹ gẹ, ti o fi Ono bfi
rẹ kansoso funni, ki enikeni ti o ba gbà a gbọ ma
ba segbé, şugbon ki o le ni iye ainipekun.

A A I A U B C D E E F G H I J K L M N O O O I P Q R S S T U
a a i a u b c d e e f g h i j k l m n o o o i p q r s s t u
V W X Y Z
v w x y z

FIGURE 3

Representative Roman Alphabets
(see Wemyss, Stanley, The Languages
of the world, Philadelphia, Stanley
Wemyss, 1950)

In order to digitally encode this alphabet of 176 characters, the Library of Congress has proposed as an U. S. Standard, an eight level expanded ASCII code which is given in Table I.

The Library of Congress has also designed a special keyboard with a second shift key which would permit the doubling of the character set to 176 characters. This special keyboard, the MARC Pilot Project Keyboard is illustrated in Figure 4.

The term Standard Roman character set is used throughout this report to mean that subset of the Extended Roman alphabet consisting of the Standard 6-bit set and the non control characteristics of Non-Standard Set 1 (i.e., Columns 2-7 of Table I).

Table II presents a list of all Languages using Roman Character sets for which the LC currently catalogs materials and most of the Languages using Roman character sets for which the LC has materials but does not catalog. This list was compiled with the aid of Mr. William Huntley, Mr. George Shipman and Mr. Daniel Clemmer of the staff of the Library of Congress. Any Language using a Romanized alphabet which is not on this list, either has no materials in the LC collection or is of such rare occurrence that it was impossible to determine its status in our system of categories.

2.2 NON-ROMAN CHARACTER SETS.

Twenty percent of all materials cataloged by the Library of Congress are printed in Non-Roman alphabets. A Non-Roman alphabet is defined as one in which the majority of characters are not Latin characters. The vast majority of these alphabets have fewer than one hundred characters and can therefore be entered with a keyboard. In the UAC Task III report (pp. B-47 through B-52) it was recommended that certain of these alphabets be considered for digitizing, i.e., Cyrillic, Arabic, Hebrew, Devanagari and Bengali. Illustrations of some representative Non-Roman alphabets are given in Figures 5-11.

In Table III is given an exhaustive list of Non-Roman alphabets and places where pictures of the entire alphabet may

TABLE I

THE LIBRARY OF CONGRESS EXTENDED
ROMAN ALPHABET AND THE EIGHT LEVEL
EXPANDED ASCII TRANSMISSION CODE.
(See Rather, Lucia J. "Expanded
library character set", Library
of Congress internal communication.)

Proposed Expanded ASCII
Character Set

----- Standard 6-bit set
 - - - - - Non-standard set 1
 Non-standard set 2

		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	8	7	6	5
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	8	7	6	5
0 0 0 0	0	NUL	DLE	SP	Ø	@	P	`	p				‘			?	’				
0 0 0 1	1	SOH	DC1	!	1	A	Q	a	q			Ł	ł			˘	˙				
0 0 1 0	2	STX	DC2	"	2	B	R	b	r			Ø	ø			ˆ	˚				
0 0 1 1	3	ETX	DC3	#	3	C	S	c	s			Đ	đ			ˆ	˚				
0 1 0 0	4	EOT	DC4	\$	4	D	T	d	t			Đ	đ			˘	˙				
0 1 0 1	5	ENQ	NAK	%	5	E	U	e	u			Æ	æ			˘	˙			=	
0 1 1 0	6	ACK	SYN	&	6	F	V	f	v			Œ	œ			˘	˙			—	
0 1 1 1	7	BEL	ETB	'	7	G	W	g	w			/	//			˘	˙			˘	
1 0 0 0	8	BS	CAN	(	8	H	X	h	x			•	ı			˘	˙			˘	
1 0 0 1	9	HT	EM	)	9	I	Y	i	y			ı	İ			˘	˙			˘	
1 0 1 0	A	LF	SUB	*	:	J	Z	j	z			®	š			˘	˙			˘	
1 0 1 1	B	VT	ESC	+	;	K	[	k	{			±				˘	˙			˘	
1 1 0 0	C	FF	FS	,	<	L	\	l	|			σ	ο			˘	˙			˘	
1 1 0 1	D	CR	GS	-	=	M	]	m	}			U	u			˘	˙			˘	
1 1 1 0	E	SO	RS	.	>	N	^	n	~			,				˘	˙			"	'
1 1 1 1	F	SI	US	/	?	O	_	o	DEL							˘	˙			˘	

4 3 2 1
B I T S

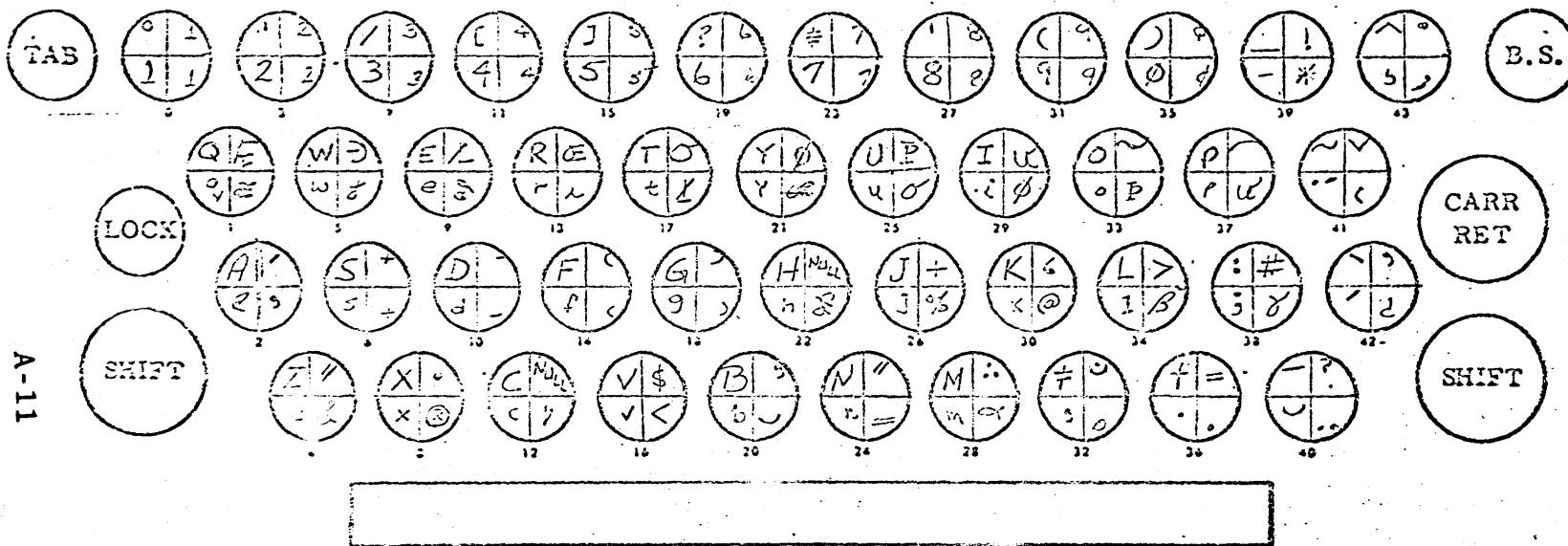
Key:

1 Not in proposed character set
 2 Redefined elsewhere in the set.

3 To be used as terminators or delimiters.

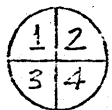
5 To be used as shift codes for 6-bit set (nonlocking)

01-V



KEYBOARD LAYOUT

KEY



1. SET 1 UPPER CASE
2. SET 2 UPPER CASE
3. SET 1 LOWER CASE
4. SET 2 LOWER CASE

FIGURE 4

Pilot Project Keyboard
 (See Rather, L. J., "Expanded Library Character Set", Library of Congress internal communication)

TABLE II

LANGUAGES USING ROMAN CHARACTER SETS
FOR WHICH MATERIALS ARE CATALOGUED BY THE
LIBRARY OF CONGRESS OR FOR WHICH THE LIBRARY
HAS MATERIALS IN ITS COLLECTION

Abbé	Gaelic
Afrikaans	German
Albanian	Guarani
Basque	Hawaiian
Bikol	Hiligaynon
Bilaañ	Hungarian
Binisayan	Ibanag
Binukid	Icelandic
Bolinao	Ifugao
Buana	Ignaciano
Buang Bena Bena	Ilianen Manobo
Casiguran Dumagat	Iloko
Catalan	Ilongot
Cebuano (Cebu Dialect)	Interlingua
Congo	Iraqw
Creole (Cape Verde)	Italian
Czech	Joloano - Moró
Danish	Kamano - Kafe
Dutch	Kpelle
English	Latin
Esperanto	Lettish (Latvian)
Estonian	Lithuanian
Finnish	Luba
Flemish	Maquindinao
French	Maltese
Frisian	

TABLE II (Cont'd)

Maranao	Western Bukidnon, Manobe
Magosatubig Subanen	Xosa
Mortlock	Yoruba
Namu	Zulu
Navajo	
Norwegian	
Palawano	
Panyan	
Papiamentu	
Polish	
Ponape	
Portuguese	
Provençal (Occitane)	
Raeto-Romance	
Romantsch	
Rumanian	
Savangani Biloan	
Spanish	
Subanun	
Swahili	
Swedish	
Tagabili	
Tairora	
Tinagolog	
Toba	
Turkish	
Umirey Dumagat	
Vietnamese	

4	3	2	1		4	3	2	1	
ا			ا	'a	ط	ط	ط	ط	t
ب	ب	ب	ب	b	ظ	ظ	ظ	ظ	dh
ت	ت	ت	ت	t	ث	ث	ث	ث	'
ث	ث	ث	ث	th	ج	ج	ج	ج	gh
ج	ج	ج	ج	j	ح	ح	ح	ح	f
ح	ح	ح	ح	h'	ق	ق	ق	ق	k
خ	خ	خ	خ	kh	ك	ك	ك	ك	k
د			د	d	ل	ل	ل	ل	l
ذ			ذ	th	م	م	م	م	m
ر			ر	r	ن	ن	ن	ن	n
ز			ز	z	ه	ه	ه	ه	h
س	س	س	س	s	ة	ة	ة	ة	t
ش	ش	ش	ش	sh	و			و	w
ص	ص	ص	ص	s	ي	ي	ي	ي	y
ض	ض	ض	ض	dh	لا	لا	لا	لا	la

4. Final 3. Medial 2. Initial 1. Isolated

FIGURE 6

The Arabic Alphabet
 (see Wemyss, Stanley,
 1950, p. 126)

MODERN GREEK

'Εν ἀρχῇ ἐποίησεν ὁ Θεὸς τὸν οὐρανὸν καὶ τὴν γῆν. Ἡ δὲ γῆ ἦτο ἀμορφος καὶ ἔρημος· καὶ σκότος ἐπὶ τοῦ προσώπου τῆς ἀβύσσου. Καὶ Πνεῦμα Θεοῦ ἐφέρετο ἐπὶ τῆς ἐπιφανείας τῶν ὑδάτων. Καὶ εἶπεν ὁ Θεός, Γενηθήτω φῶς· καὶ ἔγεινε φῶς· καὶ εἶδεν ὁ Θεὸς τὸ φῶς ὅτι ἦτο καλόν· καὶ διεχώρισεν ὁ Θεὸς τὸ φῶς ἀπὸ τοῦ σκότους· καὶ ἐκάλεσεν ὁ Θεὸς τὸ φῶς, Ἡμέραν· τὸ δὲ σκότος ἐκάλεσε, Νύκτα. Καὶ ἔγεινεν ἑσπέρα, καὶ ἔγεινε πρῶτῃ, ἡμέρα πρώτη.—

Α α	<i>Α α</i>	a	Ν ν	<i>Ν ν</i>	n, ny, m
Β β	<i>Β β</i>	v	Ξ ξ	<i>Ξ ξ</i>	ks
Γ γ	<i>Γ γ</i>	gh, y, ng	Ο ο	<i>Ο ο</i>	o
Δ δ	<i>Δ δ</i>	dh	Π π	<i>Π π</i>	p, b
Ε ε	<i>Ε ε</i>	e	Ρ ρ	<i>Ρ ρ</i>	r
Ζ ζ	<i>Ζ ζ</i>	z	Σ σ, σ*	<i>Σ σ, σ*</i>	s, z
Η η	<i>Η η</i>	i	Τ τ	<i>Τ τ</i>	t, d
Θ θ	<i>Θ θ</i>	th	Υ υ	<i>Υ υ</i>	i, f, v
Ι ι	<i>Ι ι</i>	i	Φ φ	<i>Φ φ</i>	f
Κ κ	<i>Κ κ</i>	k, ky, g, gy	Χ χ	<i>Χ χ</i>	kh, ch
Λ λ	<i>Λ λ</i>	l, ly	Ψ ψ	<i>Ψ ψ</i>	ps, bz
Μ μ	<i>Μ μ</i>	m, n	Ω ω	<i>Ω ω</i>	o

HEBREW ALPHABETS

1	2	3		1	2	3	
א	ה	כ	A	ל	ב	ו	L
ב	ו	א	B	מ	ג	ז	M
ג	ז	ב	G	ד	ח	ח	N
ד	ח	ג	D	ט	ט	ט	S
ה	ט	ד	H	י	י	י	'
ו	י	ה	V	כ	ק	ק	F
ז	ק	ו	Z	ל	ר	ר	TS
ח	ר	ז	KH	ש	ש	ש	K
ט	ש	ח	T	ת	ת	ת	R
י	ת	ט	Y				S, SH
כ	ת	י	KH				TH

1. Square characters 2. Rabbinical 3. Cursive

FIGURE 7

The Greek and Hebrew alphabets
(see Wemyss, Stanley, 1950,
pp. 82 and 131)

SANSKRIT

THE DEVANAGARI ALPHABET

यत ईश्वरो धर्मतीर्थं प्रेम चकार, यन्निजमेवाजातं पुत्रं
ददी, तस्मिन् विद्यासो सर्वप्रबुधो यथा न विदयामनं
जीवनं लप्स्यते।

अ	a	इ	i	उ	ga	ऋ	ṛa	ध	dha	र	ra
आ	ā	ई	ī	घ	gha	ॠ	ṛha	न	na	ल	la
इ	i	ए	e	ङ	ṅa	ड	ḍa	प	pa	ळ	ḷa
ई	ī	ऐ	ai	च	ṣa	ढ	ḍha	फ	pha	व	va
उ	u	ओ	o	छ	ṣha	ण	ṇa	ब	ba	स	sa
ऊ	ū	औ	au	ज	dža	त	ta	भ	bha	श	śa
ऋ	ṛ	क	ka	झ	džha	थ	ṭha	म	ma	ष	ṣa
ॠ	ṛ	ख	kha	ञ	ña	द	da	य	ya	ह	ha

का kā, कि ki, की kī, कु ku, कू kū, कृ kṛ, कृ kṛ, कृ kṛ, कृ kṛ, के ke, क kai.
को ko, कौ kau, कं kā, कँ kā, कः kaḥ, क+ kaḥ, कफ kaf, कर् rk, कर्के rke, क् k.

FIGURE 8

The Devanagari Alphabet

(see Wemyss, Stanley, 1950
p. 155)

PERSIAN

زیرا که خدا جهانرا اینقدر محبت نمود که پسر یکانه خود را داد تا
 هر که بر او ایمان آورد هلاک نگردد بلکه حیات جاودانی یابد ♦

4	3	2	1		4	3	2	1		
ا			ا	a, e	ا	ا	ا	ا	z, z	
ب			ب	b	ب	ب	ب	ب	t	
پ			پ	p	پ	پ	پ	پ	z	
ت			ت	t	ت	ت	ت	ت	'	
ث			ث	th, s	ث	ث	ث	ث	gh	
ج			ج	j	ج	ج	ج	ج	f	
چ			چ	ch	چ	چ	چ	چ	q, g	
ح			ح	h, h'	ح	ح	ح	ح	k	
خ			خ	kh	خ	خ	خ	خ	g	
د			د	d	د	د	د	د	l	
ذ			ذ	z	ذ	ذ	ذ	ذ	m	m
ر			ر	r	ر	ر	ر	ر	n	n
ز			ز	z	ز	ز	ز	ز	h	h
ژ			ژ	zh	ژ	ژ	ژ	ژ	v, s	w
س			س	s	س	س	س	س	y, i	i
ش			ش	sh	ش	ش	ش	ش	la	la
ص			ص	s, s	ص	ص	ص	ص		

1. Isolated. 2. Initial. 3. Medial 4. Final.

FIGURE 9

The Persian Alphabet
 (see Wemyss, Stanley
 1950, p. 140)

ARMENIAN

Capitals.	Minuscules.	Cursives.	Values.	Capitals.	Minuscules.	Cursives.	Values.
Ա	ա	ա	a	Մ	մ	մ	m
Բ	բ	բ	b, p	Ծ	ծ	ծ	h', y
Գ	գ	գ	g, k	Ն	ն	ն	n
Դ	դ	դ	d, t	Շ	շ	շ	sh
Ե	ե	ե	e, y	Ո	ո	ո	oo, wo
Զ	զ	զ	z	Չ	չ	չ	jh, j
Է	է	է	ē	Պ	պ	պ	p, b
Ը	ը	ը	ë	Ջ	ճ	ճ	ch
Թ	թ	թ	tt, th	Ռ	ր	ր	rr
Ժ	ժ	ժ	zh	Ս	ս	ս	s
Ի	ի	ի	i	Վ	վ	վ	v
Լ	լ	լ	l	Տ	տ	տ	t, d
Խ	խ	խ	kh	Ր	ր	ր	r
Օ	օ	օ	ts, dz	Յ	յ	յ	ts, dz
Կ	կ	կ	g, k	Է	է	է	u
Ը	ը	ը	h	Փ	փ	փ	pp, ph
Չ	չ	չ	dz, ts	Ք	ք	ք	kk, kh
Պ	պ	պ	gh	Օ	օ	օ	o
Ղ	ղ	ղ	j, jh	Ֆ	ֆ	ֆ	f

FIGURE 10

The Armenian Alphabet

(see Wemyss, Stanley, 1950, p. 140)

CHEROKEE

D a	R e	T i	ᄁ o	ᄃ u	i e
ᄎ gwa	ᄎ gwe	ᄎ gwi	ᄎ gwo	ᄎ gwu	ᄎ gwę
ᄎ ha	ᄎ he	ᄎ hi	ᄎ ho	ᄎ hu	ᄎ hę
ᄎ ka	-	-	-	-	-
ᄎ ga	ᄎ ge	ᄎ gi	A go	J gu	E gę
ᄎ ya	ᄎ ye	ᄎ yi	h yo	ᄎ yu	B yę
ᄎ ta	ᄎ te	ᄎ ti	-	-	-
ᄎ da	ᄎ de	ᄎ di	A do	S du	ᄎ dę
ᄎ na	ᄎ ne	ᄎ ni	Z no	ᄎ nu	ᄎ nę
ᄎ sa	ᄎ se	ᄎ si	ᄎ so	ᄎ su	R sę
ᄎ la	ᄎ le	ᄎ li	ᄎ lo	M lu	ᄎ lę
ᄎ da	ᄎ dse	ᄎ dsi	K dso	ᄎ dsu	ᄎ dseę
ᄎ tla	-	-	-	-	-
ᄎ dla	L dle	ᄎ dli	ᄎ dlo	ᄎ dlu	P dleę
ᄎ ma	ᄎ me	H mi	ᄎ mo	ᄎ mu	-
ᄎ wa	ᄎ we	ᄎ wi	ᄎ wo	ᄎ wu	ᄎ wę
	ᄎ hna	G nah	ᄎ s		

FIGURE 11

The Cherokee Syllabary
 (see Wemyss, Stanley,
 1950, p. 217)

TABLE III

SOURCES OF PICTURES OF NON-ROMAN ALPHABETS

KEY

EG = Cleichen and Reynolds, 1949
 JRFP = Pietta and Horzelska, 1965
 MCF = Fossey, M. Charles, 1927
 SW = Wemyss, Stanley, 1950

<u>LANGUAGE</u>	<u>SOURCE</u>	<u>PAGE</u>
Afghan (Pashto)	EG	66
	MCF	118
	SW	144
Amharic (Ethiopian)	EG	75
	MCF	98
	SW	117
Arabic	EG	63
	MCF	111
	SW	126
Armenian	EG	56
	MCF	153
	SW	142
Bengali	SW	150
Bisayas	SW	202
Brahmin (Indian)	MCF	216
Bulgarian	EG	42
	JRFP	37
	MCF	150
	SW	86
Burmese	MCF	258
	SW	158
Cherokee (American Indian)	SW	217
Coptic (Old Egyptian)	MCF	138
	SW	116
Cree (American Indian)	SW	220
Ethiopic	SW	117
Georgian (USSR)	EG	58
	MCF	157
	SW	143

TABLE III (Cont'd)

<u>LANGUAGE</u>	<u>SOURCE</u>	<u>PAGE</u>
Gothic (Old German)	EG	4
	MCG	183
Greek	EG	52
	MCF	133
	SW	82
Gujarati (India)	SW	150
Gupta (India)	SW	158
Hebrew	EG	72
	MCF	74
	SW	131
Hindu (India)	SW	150
Irish	EG	13
	SW	49
Javanese	MCG	286
	SW	202
Japanese (Syllabaries)	MCF	314
	SW	195
Kanarese (Kannada)	SW	150
Khmer (Cambodian)	MCG	248
	SW	158
Korean (Alphabet)	MCG	309
	SW	172
Ladino (Spanish Jewish)	SW	132
Lao	SW	158
Libyan	MCF	125
Malagasy	MCF	116
Malay	EG	66
	MCF	117
Malayalan (India)	SW	150
Manchu (China)	SW	171
Marathi (India)	SW	150
Mongolian	SW	169
Orissa	SW	150
Palu (India)	SW	158
Panjabi (India)	SW	162
Persian	EG	66
	MCF	82
	SW	140
Prakrit (India)	SW	157

TABLE III (Cont'd)

<u>LANGUAGE</u>	<u>SOURCE</u>	<u>PAGE</u>
Russian	EG	37
	JRFP	29
	MCF	149
	SW	86
Runic Alphabets (Old German)	MCF	176
Ruthenian	EG	40
Sanskrit (Devanagari)	MCG	221
	SW	150
Serbo-Croatian (Yugoslavia)	EG	43
	JRFP	33
	MCF	150
	SW	86
Sindhi	MCF	117
	SW	161
Sinhalese	MCF	234
	SW	166
South Arabic	MCF	88
Swahili (Africa)	MCF	116
Syrian	SW	133
Tamil (India)	SW	150
Telugu (India)	SW	150
Thai (Siamese)	SW	158
Tibetan	MCF	277
	SW	167
Touareg (North Africa)	MCF	125
Turki	EG	66
Turkish (Arabic alphabet)	SW	137
Ukranian	EG	40
	JRFP	32
	SW	86
Urdu	SW	160
White Russian (Byelorussian)	JRFP	32
	SW	86
Yiddish	EG	71

be found. Any alphabet not on the list is not there because it could not be found in any of the references listed at the end of this appendix. In Table III, the following reference key is used:

EG	=	Gleichen and Reynolds, 1944
JRFP	=	Piette and Horzelska, 1965
MCF	=	Fossey, M. Charles, 1927
SW	=	Wemyss, Stanley, 1950

A method of entering most of these alphabets which might be more cost effective than the keyboard method would be to treat them as special characters and encode them with devices which allow the remote terminal operator to draw them.

A keyboard which can be used to enter the entire Extended Roman alphabet plus one or more Non-Roman alphabets would be highly desirable. However, a device with such a large character set may not be feasible. In that case a keyboard for entering materials for a given Non-Roman character set should have a character set consisting of the Standard-Roman character set, the Non-Roman character set and those special symbols and diacritical marks necessary for transliteration of the language. Table IV gives a list of certain Non-Roman character sets and the special characters and diacritical marks needed to transliterate them.

These same considerations apply to full printers and full visual displays.

2.3 CHINESE CHARACTERS.

Chinese characters are used in the publication of Chinese, Japanese and Korean texts which account for six percent of the materials cataloged by the Library of Congress. Although there are alphabets for Japanese and Korean (Figures 12 and 13) both of these languages make heavy use of Chinese characters intermixed with the alphabetic characters. In 1946, the Ministry of

TABLE IV

List of Certain Non-Roman Character Sets and the Special Characters and Diacritical Marks Needed to Transliterate Them.

(See Rather, Lucia J., "Special Characters and Diacritical Marks used in Roman Alphabets," Library Services and Technical Resources, Summer 1968, pp. 290-291)

Oriya	ā ṅ	ī ś	ū ṁ	ṛ ḥ	Ṛ ṅ	ḷ ṁ	ṛ ,	ṅ	ṃ	ḷ	ṭ	ḍ
Panjabi	ā ṁ	ī ṁ	ū	ṭ	ḍ	ṅ	kh	gh	ṅ	ṅ	ḷ	ṛ
Pushto	ṭ ,	s ṅ	h ā	ś ū	z ī	ḍ ā	z	ṛ	z	ṣ	z	ṭ
Sanskrit or Prakrit	ā ś	ī ṣ	ū ṁ	ṛ ṁ	Ṛ ḥ	ḷ ḥ	ṛ ,	ṅ	ḷ	ṭ	ḍ	ṅ
Tamil	ā ṛ	ī ṁ	ū ś	k ṣ	ṅ	ṅ	ṭ	ṅ	ē	ō	ḷ	ḷ
Telugu	ā ṛ	ī ḷ	ū ṭ	ṛ ḍ	Ṛ ṅ	ḷ ś	ē ṣ	ō ṁ	ṅ ḥ	ō ṁ	ḷ ṅ	ṅ
Urdu	ṭ gh	s ṅ	h ā	kh ū	ḍ ī	z ,	ṛ	ṣ	z	ṭ	z	'
Burmese	ṅ	ā	ī	ī	u	ū	ē	ē	o	ō		
Thai	ā œ	ī č	ṛ ,	ṛ ,	ū	ē	æ	æ	ō	o	o	œ
Chinese	ē	ū	ū	'								
Japanese	ā	'	ē	ō	ū							
Korean	'	'	ō	ū								

THE JAPANESE SYLLABARIES

1. KATAKANA (GOJUON)	2. HIRAGANA (IROHA)
ア イ ウ エ オ a i u e o	い ろ は に ほ i ro ha ni ho
カ キ ク ケ コ ka ki ku ke ko	へ と ち り ぬ he to chi ri nu
サ シ ス セ ソ sa shi su se so	る を わ か よ ru wo wa ka yo
タ チ ツ テ ト ta chi tsu te to	た れ そ つ ね ta re so tsu ne
ナ ニ ヌ ネ ノ na ni nu ne no	な ら む う ゐ na ra mu u i
ハ ヒ フ ヘ ホ ha hi fu he ho	の お く や ま no o ku ya ma
マ ミ ム メ モ ma mi mu me mo	け ふ こ え て ke fu ko yo te
ヤ イ ユ エ ヨ ya i yu ye yo	あ さ き ゆ め a sa ki yu me
ラ リ ル レ ロ ra ri ru re ro	み し ゑ ひ も mi shi e hi mo
ワ ヲ ウ エ ヲ wa o u e o	せ す ん se su n

ン -n (katakana)

FIGURE 12

The Japanese Syllabaries
 (see Wemyss, Stanley, 1950,
 P. 195)

KOREAN

		<i>a</i>		<i>k</i>		<i>kh</i>
		<i>ya</i>		<i>n</i>		
		<i>ō ö</i>		<i>t</i>		<i>th</i>
		<i>yō, yē</i>		<i>l</i>		<i>ph</i>
		<i>o</i>		<i>m</i>		<i>ts</i>
		<i>yo</i>		<i>p</i>		<i>ds</i>
		<i>ū</i>		<i>s</i>		<i>h</i>
		<i>yū</i>		<i>y</i>		<i>h</i>
		<i>u</i>		<i>h</i>		<i>ū</i>
		<i>i</i>				
		<i>ā</i>				

FIGURE 13

The Korean Alphabet

(see Wemyss, Stanley,
1950, p. 172)

Education in Japan restricted the number of Chinese characters (which the Japanese call Kanji) to 1850. The Ministry of Education of South Korea has likewise attempted to restrict the use of Chinese characters (which the Koreans call Hancha). This move has met with some opposition. The Government has tried to limit the number of Hancha characters to 542 but Korean scholars and journalists insist that the number should be between 1300 and 2000.*

Chinese publications make use of upwards of 5000 characters.

Chinese characters have been considered as a special class in this appendix for two reasons. First, the tremendous number of characters involved make encoding with standard typewriter keyboards impossible. On the other hand, efforts are under way in Japan and Taiwan to develop a keyboard device which will encode upwards of 4600 Chinese characters in addition to the English alphabet, Arabic numerals, and various other symbols. Use of this device deserves consideration as an alternative to devices which allow the remote terminal operator to draw the characters ~~by~~ free hand.

Some representative Chinese characters are given in Figure 14.

2.4 SPECIAL SYMBOLS.

The term Special Symbol refers to all those alphabets and character sets for which encoding by keyboard devices is considered for one reason or another to be impractical. This category would include the following subcategories:

- (a) Non-Roman keyable alphabets which are of relatively infrequent occurrence amongst LC acquisitions.

* Information supplied by librarians in the Japanese and Korean sections of the Library of Congress.

100.	生	Sheng. Life.	121.	缶	Fen. Earthenware.	141.	虎	Hu. A tiger.
	用	Yung. To use.	122.	网	Wang. A net.	142.	虫	Ch'ung. Reptiles.
101.	田	T'ien. A field.		四	Yi. Four.	143.	血	Hüh. Blood.
102.	疋	P'ih. A piece of cloth.		元	Yuan. A sheep.	144.	行	Hing. Walk, work.
103.	疒	Nih. Sick.	123.	羊	Yang. A sheep.	145.	衣	I. Clothes.
104.	夬	Poh. To separate.	124.	羽	Yü. Wings.		衤	
105.	白	Peh. White.	125.	老	Lau. Aged.	146.	西	Si. West.
106.	皮	P'i. Skin.	126.	而	Er. And, still.		兩	
107.	皿	Min. A vessel.	127.	耒	Le. A plough.	7 Strokes.		
108.	目	Muh. The eyes.	128.	耳	Er. The ear.	147.	見	Kien. To see.
109.	四	Yü. Four.	129.	聿	Lüh. A pencil.	148.	角	Kioh. Horn.
110.	矛	Meu. A spear.	130.	肉	Juh. Flesh.	149.	言	Yien. Words.
111.	矢	Sh. An arrow.	131.	月	Ch'eng. A minister.	150.	谷	Kuh. A valley.
112.	石	Shih. A stone.	132.	臣	Ts. Self, from.	151.	豆	Teu. Beans.
113.	示	Sh. To show.	133.	自	Ch. To, most.	152.	豕	Sh. Swine.
114.	丩	Jeu. To creep.	134.	至	Kiu. A mortar.	153.	豸	Hic. Reptiles, wild beasts.
115.	禾	Ho. Growing rice.	135.	白	Shch. The tongue.	154.	貝	Pe. Pearls.
116.	穴	Huh. A cave.	136.	舌	Ch'üan. Error.	155.	赤	Ch'ih. Scarlet.
117.	立	Lih. To stand.	137.	舛	Cheu. A boat.	156.	走	Tseu. To walk.
6 Strokes.			138.	舟	Ken. Perverse.	157.	足	Tsub. The foot.
118.	竹	Chuh. Bamboo.	139.	艮	Seh. Color.	158.	身	Shen. The body.
119.	米	Mi. Hulled rice.	140.	艸	Ts'au. Grass.	159.	車	Kü, ch'e. A chariot.
120.	糸	S. Silk.				160.	辛	Sin. Acrid.
						161.	辰	Ch'en. Hour.

FIGURE 14

Some Representative Chinese Characters

(see Wemyss, Stanley, 1950, p. 185)

Examples: Amharic; Cherokee; Armenian; Aztec; etc.

(b) Archaic writing systems in which, presumably, nobody is currently publishing but for which materials may conceivably turn up and require cataloging. Examples are given in Figures 15-19.

(c) A very small percentage of the materials acquired by the LC consists of idiosyncratic productions of authors who sometimes produce books with such titles as:



or



RUNIC ALPHABETS
 GOTHIC ANGLIAN SCANDINAVIAN

f	♀ F	ƿ ƿ	ƿ
u	Λ Π	Π Π	Π
th	Ð Ð ƿ	ƿ	ƿ
a,xo	ƿ ƿ	ƿ ƿ	ƿ
r	ƿ ƿ	ƿ	ƿ ƿ
c,k	< ʌ	ʌ	ʌ
s	x	x	
v,w	ƿ	ƿ	
h	𐌺 𐌺 𐌺	𐌺	✱
n	† †	†	† †
i	|	|	|
y,ge,je	ʏ ʏ ʏ	ʏ	ʏ ʏ
ih,ieo	ʒ ʒ	ʒ	
p	ƿ	ƿ ƿ	k
e,i,k,z	ʏ	ʏ	
s	ʒ	ʒ	ʒ
t	↑	↑	↑ ʏ
b	ƿ	ƿ	B
e	Π M	M	
m	ƿ	ƿ	♀ ʏ
l	ʌ	ʌ	ʌ
ng	ʒ ʒ	ʒ	
d	ƿ ƿ	ƿ	
o,oe	ʒ ʒ	ʒ	

FIGURE 15

Runic Alphabets

(see Wemyss, Stanley, 1950, p. 47)

HITTITE



















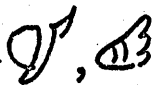

	A		Tá		R		Li
	A		Ba, Pa		Hi		Ru
	Wa		La		I		Sa
	Da		Mi, Me		Tu		Lu
	Ta		Ma		Ga		Sa

FIGURE 16

Hittite Hieroglyphics

(see Wemyss, Stanley,
1950, p. 105)

ASSYRIAN AND MEDE CUNEIFORM CHARACTERS

First Columns—Assyrian. Second Columns—Mede.

		<i>a</i>			<i>ya</i>			<i>ta</i>
		<i>i</i>			<i>ka</i>			<i>ti</i>
		<i>u</i>			<i>ki</i>			<i>tu</i>
		<i>ā</i>			<i>ku</i>			<i>da</i>
		<i>ī</i>			<i>ga</i>			<i>du</i>
		<i>ū</i>			<i>gi</i>			<i>at</i>
		<i>ha</i>			<i>ak</i>			<i>ut</i>
		<i>hi</i>			<i>ik</i>			<i>tu</i>
		<i>hu</i>			<i>uk</i>			<i>pa</i>
		<i>pi</i>			<i>ni</i>			<i>ul</i>
		<i>ba</i>			<i>nu</i>			<i>ša</i>
		<i>bi</i>			<i>an</i>			<i>ši</i>
		<i>bu</i>			<i>in</i>			<i>šu</i>
		<i>ap</i>			<i>un</i>			<i>šī</i>
		<i>ip</i>			<i>ra</i>			<i>aš</i>
		<i>up</i>			<i>ri</i>			<i>iš</i>
		<i>ma, va</i>			<i>ru</i>			<i>sa</i>
		<i>mi, vi</i>			<i>ir</i>			<i>ga</i>
		<i>mu, vu</i>			<i>ur</i>			<i>ši</i>
		<i>im</i>			<i>la</i>			<i>su</i>
		<i>um</i>			<i>li</i>			<i>aš</i>
		<i>na</i>			<i>lu</i>			<i>is</i>

FIGURE 17

Cuneiform Characters
 (see Wemyss, Stanley,
 1950, p. 104)

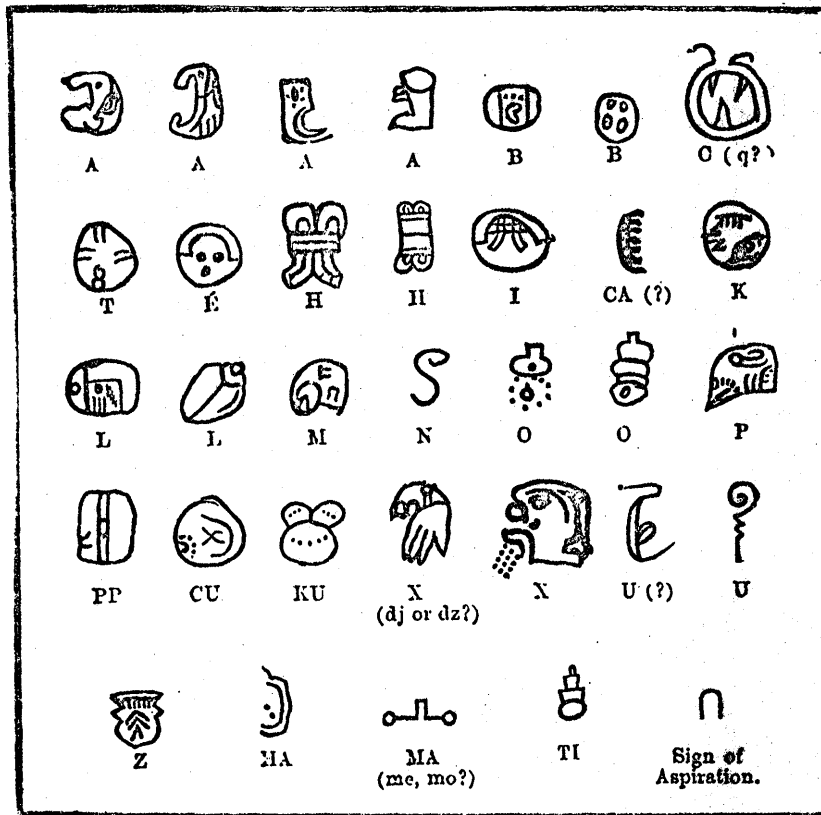


FIGURE 18

Mayan Characters

(see Wemyss, Stanley,
1950, p. 214)

IDEOGRAPHS AND PICTOGRAPHS OF THE PLAINS INDIANS



FIGURE 19

Ideographs and Pictographs of the Plains Indians
(see Wemyss, Stanley, 1950, p. 221)

3. MASTER LIST OF LANGUAGES.

In Table V all languages for which the Library of Congress has material are listed together with, first, classification as to Roman, Non-Roman, Oriental, and Special; second, percentage of the Library collection in these languages; and third, the list of the subset of the Extended Roman Character Set (ERCS), in addition to the Standard Roman Character Set, required for transliteration.

The list of languages was compiled and furnished by Mrs. Laura H. Malin, Mr. Joseph H. Howard, Mr. William Huntley, Mr. George W. Shipman and Mr. Dan O. Clemmer, Jr. of the staff of the Library of Congress. Where information was available, the language was indicated as Roman, Non-Roman, Oriental or Special.

The percentage of material in the specified language in the Library of Congress collection is a partial list and was obtained from Table B3-II, pp. B19-B24 of UAC Task III Report, Volume IV, Part I. This furnishes only a partial breakdown of the many languages listed and are representative only. Other pertinent approximate percentages of interest are:

Roman Alphabet	75%
Non-Roman Alphabets	11%
Oriental	14%

It is to be noted that these figures are different than those used in Paragraph 2. This is because the Paragraph 2 figures are based on projected cataloging workloads whereas the above figures are those already in the Library collection.

The right-hand column is the subset of the Extended Roman Character Set (ERCS) in addition to the Standard Roman Character Set required for transliteration. The numbers used are from Paragraph 4 of the internal Library of Congress paper on character sets which is included herewith as Table VI and entitled, "Expanded Library Character Set."

TABLE V

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Abazin						
Abbè	X					
Abkhazian						
Acoli						
Adyghe						
Aekyom						
Afghan (Pushto)		X			.03	102, 120, 122, 134, 137
Afrikaan	X					117
Agaribi						
Aguaruna						
Agusan						
Alangan						
Alanyan						
Albanian	X					117, 118, 123, 131
Amharic						
Amresha						
Anglo-Saxon		X				91, 92, 93, 106, 107, 108, 112, 120, 132
Angal Heneny						
Apachi						
Apinaje						
Arabic		X			.55	101, 102, 120, 133
Ararcanian						
Arawak						
Armenian		X			.08	102, 120, 124
Assamese		X				101, 117, 119, 120, 122, 130, 133, 135, 137
Avaric						
Awa						
Aymara						
Azerbaijani					.03	
Aztec (Nahuatl)				X		
Babangi						
Babatana						
Balinese						
Balkar						
Balochi						
Banare						
Bangala						
Bashkir						
Basque	X					
Bassa						
Baure						
Bemba						
Bena-bena						
Bengali		X			.14	101, 117, 119, 120, 122, 130, 133, 135, 137

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collec- tion</u>	<u>Subset of ERCS (See Table VI)</u>
Beti						
Bikol	X					
Bila'an	X					
Binandere						
Binisayan	X					
Binukid	X					
Binumarien						
Bisayas		X				
Bolinao	X					
Bontoc						
Bora						
Borani						
Botolan Sambal						
Brahman		X				
Breton	X					
Buana	X					
Buang Bena Bena	X					
Bulgarian		X			.23	94, 121, 126, 127, 130
Bulu						
Burmese		X			.05	
Cahita						
Cakchikel						
Capanahua						
Casiguran						
Dumagat	X					
Catalan	X					95, 116, 117, 125, 131
Cebuano (Cebu Dialect)	X					
Chasu						
Chechen (Ingush)						
Cheremissian (Mari)						
Cherokee		X				
Chinese			X		5.70	102, 118, 121, 123
Chingonde						
Chipaya						
Chippewa						
Cholti						
Chuoku						
Church Slavic						
Chuvashian						
Combe						
Congo	X					
Conob						
Coptic		X				
Cree		X				
Creole (Cape Verde)	X					
Creole-Haiti						
Cuna						
Cuneiform				X		

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Cuyonon						
Czech	X					117, 124, 128
Dakota						
Danish	X					
Darachay						
Dargua (Dargin)						
Deseret (Morman)						
Dungan						
Dutch	X					116, 117, 118, 123
Dyur						
Ekegusii						
Engenni						
English	X					
Eskimo		X				
Esperanto	X					118, 121
Estonian	X					119, 123
Ethiopic		X				
Eurika						
Ewage						
Fanti						
Figian						
Finnish	X					123, 125
Flemish	X					
Florida						
French	X					93, 108, 116, 117, 118, 123, 131
Frisian	X					
Ga						
Gadsup						
Gaelic	X					
Gagauzi						
Galician						
Gallegan						
Ganda						
Georgian		X			.05	
German	X					123
Gio						
Gogodala						
Gothic		X				
Greek		X			.23	120
Guarani	X					
Guhuku						
Gujarati		X			.03	101, 117, 119, 120, 122, 133, 135.
Gupta						
Gusii						
Halia						
Hanunoo						
Hawaiian	X					117

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Hebrew		X			.80	101, 102, 122, 133
Hiligaynon	X					
Hindi		X			.16	101, 117, 119, 120, 121, 122, 130, 133, 134, 135, 136, 137
Hopi						
Hula						
Hungarian	X					90, 117, 118, 123, 129
Iai						
Ibanag	X					
Ibo						
Icelandic	X					91, 92, 93, 106, 107, 108, 112, 117, 123
Ifugao	X					
Ignaciano	X					
Igorrote	X					
Ilianen Manobo	X					
Iloilo						
Iloko	X					
Ilongot	X					
Indonesian					.13	151
Inibaloi						
Interlingua	X					
Inupiat (Eskimo)						
Iraqw	X					
Irish		X				
Italian	X					116
Itomama						
Jabim						
Japanese			X		7.99	101, 120
Javanese		X				
Joloano	X					
Kabardian						
Kaingang (Central dialect)						
Kaingang (Southeast dialect)						
Kakwa						
Kalenjia						
Kalispel						
Kalmuck						
Kamba						
Kamano-Kafe	X					
Kanite						
Kankanaey						
Kanarese (Kannada)					.02	117, 119, 120, 122, 133, 134, 135, 137
Karaja						

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Kara-Kalpak						
Karimojonj						
Kashmiri						
Kawa (Dialect)						
Kazakh						
Kechua						
Kekchi						
Kerena						
Keres						
Kewa						
Khakass						
Khmer (Cambodian)		X				
Kidawika						
Kigiriana						
Kikuyu						
Kimbundu						
Kingwann						
Kirghiz						
Kiriwinian						
Kissi						
Kololo						
Konkani						
Korean			X		.46	102, 120, 121
Koryak						
Kpelle	X					
Kulango						
Kumyk						
Kurdish						
Kuri (Lesgian)						
Kussien						
Ladino		X				
Lak						
Lamut						
Lango						
Lao		X				
Latin	X					
Lettish (Latvian)	X					120, 124, 131, 138, 144
Libyan	X					
Lithuanian	X					88, 120, 122, 123, 124, 125, 132
Loma						
Lozi						
Luba	X					
Lubukusu						
Lugisi						
Lulogooli						
Luo						
Lusoga						

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Luyia						
Macedonian						103, 128
Maquindanao	X					
Mailu						
Mala						
Malagasy		X				
Malay		X				
Malayalam		X			.02	101, 117, 119, 120, 122, 133, 135, 137
Malpa						
Malecite						
Maltese	X					
Maninka						
Manobo	X					
Maori						
Maranao	X					
Marathi		X			.07	101, 117, 118, 119, 120, 122, 133, 135
Margosatubig						
Subanen	X					
Marshallese						
Masai						
Matai						
Mazahua						
Mazateco						
Mayan				X		
Mbai-Doba						
Mande						
Meru						
Micmac						
Misima-Paaeti						
Mixtec						
Mohawk						
Moldavian Dialect						
Mongolian		X				
Mordvinian						
Mortlock	X					
Mossi Languages						
Moti						
Motuna						
Movima						
Mpongwe						
Mukawan						
Muskhogeian						
Muala-Malu						
Mukawa						
Murai Huctoto						

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Musele						
Mutuna						
Muyuw						
Namu	X					
Nasioi						
Navajo	X					
Neo-Melanesian						
Nepali						
Nezperce						
Ngonde						
Niramba						
Niveah						
Nogai						
Norwegian	X					89, 92, 104, 107, 123, 125
Nunggubuyu						
Nyanuresi						
Nyanja						
Nyankole						
Nyiha						
Oirot (Altai)						
Onissa		X				
Oriya		X			.01	101, 117, 119, 120 122, 130, 133, 135
Orokolo						
Ossetic						
Ostiak (Khanty)						
Palawano Zambal	X					
Pali		X				
Pampanga						
Panyan	X					
Panjabi		X			.02	119, 120, 121, 122, 137
Papiamentu	X					
Paresi						
Pedi						
Persian		X			.18	101, 102, 120, 133, 134, 137
Piro (Tanoan)						
Polish	X					88, 103, 117, 122, 132
Ponape	X					
Portuguese	X					116, 117, 118, 119, 131
Prakrit		X				101, 117, 119, 120, 122, 130, 133, 135, 137
Provençal (Occitane)	X					
Purari						
Quechuapi						
Raeto-Romance	X					

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collec- tion</u>	<u>Subset of ERCS (See Table VI)</u>
Ragoli						
Raro						
Romantsch	X					
Roviana	X					
Ruanda						
Rumanian	X					118, 138
Rundi						
Runic alphabets				X		
Rungoro-Rutooro						
Russian		X			5.70	94, 109, 120, 121, 122 123, 126, 127
Ruthenian		X				
Samal						
Samal of Sulu (Siasi)						
Samareno						
Samoan						
Sanskrit		X			.07	117, 119, 120, 122, 130, 133, 135, 137, 140
Savangani						
Biloan	X					
Satere						
Serbo-Croatian (Serbian)		X			.05	90, 105, 117, 124
Shilluk						
Shona						
Shor						
Sindhi		X				
Sinhalese		X				
Sioux						
Siriono						
Slovak						117, 124, 125, 128
Slovenian						117, 118, 124
Sotho						
South Arabic		X				
Soyot (Tuva)						
Spanish	X					117, 119, 123
SRE						
Subanun	X					
Swahili	X					
Swedish	X					123, 125
Syrian		X				
Syryenian (Komi)						
Tabasaran						
Taensa						
Tagalog		X				117, 141, 142
Tagabili	X					
Tagbanwa						
Tahitian						

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collec- tion</u>	<u>Subset of ERCS (See Table VI)</u>
Tairora	X					
Tajik						
Tamba						
Tamil		X			.03	117, 119, 120, 122, 133, 137
Tarahumare						
Tat						
Tatar						
Tatar (Crimea)						
Tatar (Volga)						
Ta'u Sug						
Tausuy						
Teki						
Teleful						
Telugu		X			.02	117, 118, 119, 120, 122, 130, 133, 135, 137
Teop						
Tercha						
Teso						
Thai (Siamese)		X			.16	92, 93, 100, 102, 107, 108, 114, 120, 124, 139
Tibetan		X				
Ticuna						
Tinagolog	X					
Tiruray						
Tivi						
Toaripi						
Toba	X					
Tonga						
Totonae						
Tourey						
Truki		X				
Tshi						
Tsonga						
Tsua (Shectswa)						
Tswana (Setswana)						
Tumbuka						
Tungus (Evenki)						
Turkish (Pre 1928)		X			.21	101, 110, 118, 121, 123, 131
Turkish (Modern)	X					101, 110, 118, 121, 123, 131
Turkoman						
Udekhe						
Uduk						
Uigur						
Ukranian		X			.18	94, 121, 123, 126, 127
Umirey Dumagat	X					
Urdu		X			.09	101, 102, 120, 133

CATEGORY

<u>LANGUAGE</u>	<u>Roman</u>	<u>Non-Roman</u>	<u>Oriental</u>	<u>Special Symbol</u>	<u>% in Collection</u>	<u>Subset of ERCS (See Table VI)</u>
Uripiv						
Uzbek						134, 137
Vaturana						
Vietnamese	X				.05	90, 99, 100, 105, 113; 114, 115, 116, 117, 118, 119, 121, 133
Vogul (Mause)						
Votiak (Udmurt)						
Wailu						
Warao						
Washkuk	X					
Waziriku						
Wedur (dialect)						
Wendic						88, 117, 124, 128
Western Bukidnon, Manobe	X					
White Russian (Byelorussian)		X				94, 103, 121, 122, 126, 127
Wiru						
Xosa	X					
Yahgan						
Yakan						
Yakut						
Yiddish		X			.34	
Yoruba	X					
Yucatan						
Yuit (Eskimo)						
Yurak (Nenets)						
Zanaki						
Zapotec						
Zavante						
Ziba						
Zoque						
Zulu	X					

TABLE VI

Expanded Library Character Set (Internal L.C. Paper)

4. CHARACTER SET

(Starred items recommended by NAL and NLM)

	ASCII HEX Code	Character	Name	Comments
1	1F	‡	Double dagger	to be used as a printing delimiter
2	21	!	Exclamation point	
3	22	"	Quotation marks	
4	23	#	Number or sharp sign	
5	24	\$	Dollar mark	
6	25	%	Percent	
7	26	&	Ampersand	
8	27	'	Apostrophe	
9	28	(	Parenthesis	
10	29	)	Parenthesis	
*11	2A	*	Asterisk	
*12	2B	+	Plus	
13	2C	,	Comma	
14	2D	-	Hyphen or minus	
15	2E	.	Period (Decimal point	

A-50

A-52

35
36
37
38
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41
42
43
44
45
46
47
48
49
50
51
52
53
54

42
43
44
45
46
47
48
49
4A
4B
4C
4D
4E
4F
50
51
52
53
54
55

B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U

A-53

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57
58
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60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75

56
57
58
59
5A
5B
5D
61
62
63
64
65
66
67
68
69
6A
6B
6C
6D
6E

V
W
X
Y
Z
[
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a
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k
l
m
n

}

Brackets

76	6F	o		
77	7ø	p		
78	71	q		
79	72	r		
80	73	s		
81	74	t		
82	75	u		
83	76	v		
A-54 84	77	w		
85	78	x		
86	79	y		
87	7A	z		
88	A1	Ł	Polish L- upper case	special character
89	A2	ø	Scandanavian O with slash	special character
9ø	A3	Đ	D with cross bar- upper case (eth)	special character used in Icelandic, Anglo- Saxon, Croatian, Serbian, & Vietnamese
91	A4	Þ	Icelandic thorn- upper case	

92	A5	Æ		special character - used in Danish, Norwegian, Anglo-Saxon, Icelandic, etc.
93	A6	Ɔ		special character - used in Icelandic, Anglo-Saxon, Thai
94	A7	'	Miagkil znak	special character used in romanized Cyrillic & Hebrew
95	A8	.	Dot in middle of line	special character used in Catalan
96	A9	b	Musical flat	
*97	AA	Ⓜ	Subscript patent marks	
A-55 *98	AB	±	Plus or minus	
99	AC	◌̣		special character used in Vietnamese
100	AD	Ư		special character used in Vietnamese and Thai
101	AE	'	Alif	special character used in romanized Indic, Persian, etc.
102	BØ	‘	‘Ayn	special character used in romanized Hebrew, Arabic, Chinese, etc.
103	B1	±	Polish l-lower case	
104	B2	ø	Scandinavian o with slash-lower case	
105	B3	đ	D with cross-bar lower case	
106	B4	þ	Icelandic thorn lower case	

A-56

107	B5	æ		special character - used in Danish, Norwegian Anglo-Saxon, Icelandic, etc.
108	B6	œ		special character - used in Anglo-Saxon, Icelandic, Thai
109	B7	“	Tverdyĭ znak	special character used in romanized cyrillic
110	B8	ı	Turkish i - lower case	
111	B9	£	British pound	
112	BA	ð	Eth	special character used in Icelandic - prints as ð
*113	BC	ơ		special character - used in Vietnamese
*114	BD	ư		special character - used in Vietnamese
115	Eø	?	Pseudo-question	diacritical mark - used in Vietnamese
116	E1	`	Grave	diacritical mark - always used with another character - used in French, Italian, etc.
117	E2	´	Acute	diacritical mark - almost universal use
118	E3	ˆ	Circumflex	diacritical mark - used in French, Turkish, Rumanian, etc.
119	E4	˜	Tilde	diacritical mark - used in Spanish, Portuguese and the Indic languages
120	E5	ˉ	Macron	diacritical mark - used in the romanization the Cyrillic, Indic, and Oriental languages
121	E6	˘	Breve	diacritical mark - used in Polish, Lithuanian and in romanized Cyrillic and Indic languages

122	EF	.	Superior dot	diacritical mark - used in Polish, Lithuanian and in Romanized Cyrillic and Indic languages
123	ES	..	Umlaut - <i>Dieresis</i>	diacritical mark - used in German, French, et
124	E9	ˇ	Haček	diacritical mark - used in East European languages, etc.
125	EA	◊	Circle or anstrom	diacritical mark - used in Scandinavian languages, Finnish, Czech and Lithuanian
126	EB	⸀	Ligature (⸀)	used together to make a single diacritical mark - used in romanized Cyrillic languages Also may be used for ⸀ in Tagalog
127	EC	'	High comma	diacritical mark - used in East European languages
128	ED	'	High comma diacritical	diacritical mark - used in East European languages
129	EE	''	Double acute	diacritical mark - used in Hungarian
130	EF	◌̣	Candrabindu	diacritical mark - used in romanization of Indic languages
131	F0	◌̣	Cedilla	diacritical mark - used in French, Portuguese, etc.
132	F1	◌̣	Right hook	diacritical mark - used in Anglo-Saxon, Lithuanian and Polish.
133	F2	◌̣	Dot below character	diacritical mark - used in romanized Indic, Persian, Arabic, Hebrew, etc.
134	F3	◌̣	Double dot below character	diacritical mark - used in romanized Indic
135	F4	◌̣	Circle below character	diacritical mark - used in romanized Indic

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136	F5	=	Double under- score	diacritical mark - used in Hindi
137	F6	_	Underscore	diacritical mark - used in romanized Indic and Persian
138	F7	ʹ	Left hook	diacritical mark - used in Rumanian and Latvi prints as ʹ (cedilla)
139	F8	ꞌ	Right cedilla	diacritical mark - used in Thai - prints as right hook ꞌ
140	F9	˘	Upadhmaniya	diacritical mark - used in Sanskrit - prints underscore ˘
141	FA	˜	Double tilde (˜)	diacritical mark - used in Tagalog-prints as ligature ˜
142	FB	˘		
143				
144	FE	ˆ	High comma (centered)	diacritical mark - used in Latvian - prints as high comma ˆ
*145	ESCp 2B	+	Superscript plus	
*146	ESCp 2D	-	Superscript minus	
*147	ESCp 28	(	Superscript open parens	
*148	ESCp 29	)	Superscript closed parens	

used also for degree

*149	ESCp 30	0	} — Superscript numbers
*150	ESCp 31	1	
*151	ESCp 32	2	
*152	ESCp 33	3	
*153	ESCp 34	4	
*154	ESCp 35	5	
*155	ESCp 36	6	
*156	ESCp 37	7	
A-59 *157	ESCp 38	8	
*158	ESCp 39	9	
*159	ESCp 2B	+	Subscript plus
*160	ESCb 2D	-	Subscript minus
*161	ESCb 28	(Subscript open parens
*162	ESCb 29)	Subscript closed parens
*163	ESCb 30	0	} — Subscript numbers
*164	ESCb 31	1	
*165	ESCb 32	2	
*166	ESCb 33	3	

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*167	ESC _b 34	4	
*168	ESC _b 35	5	
*169	ESC _b 36	6	Subscript numbers
*170	ESC _b 37	7	
*171	ESC _b 38	8	
*172	ESC _b 39	9	
*173	ESC _g 61	α	Alpha
*174	ESC _g 62	β	Beta
*175	ESC _g 63	γ	Gamma

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APPENDIX B
Library of Congress
Environmental Considerations

1. GENERAL.

Present Library of Congress operations center about the old Library building and the Annex across Second Street (occupied in 1939). Certain activities of the Library are presently located outside of these two buildings but these are not of immediate concern to this study. Because of the crowded conditions in the present buildings a new building, the James Madison Memorial Building, across Independence Avenue from the present main building, has been proposed. The various environmental characteristics of these buildings will be detailed in subsequent paragraphs. Coded designators in parentheses refer to the Library of Congress Location Codes in Appendix C. Present and proposed location of the organizational components of the Library are listed in the User profile portions of Section 3.

2. MAIN LIBRARY OF CONGRESS BUILDING (LIXX).

- a. Floor Loading (all areas, all levels)
 - 150 lb/ft².
- b. Electric Power Characteristics
 - 110 volt and 220 volt.
 - 60 cycle.
 - No emergency power.
- c. Power Ducts - None
 - No provision for additional cabling except as installed on interior walls.
- d. Temperature
 - Central air conditioning.
 - No provision for local air conditioning.
 - Normal Temperature 72°F.
 - Variation - Minimum - 68°F.
Maximum - 80°F.

e. Humidity

- Normal - 50%.
- Variation - Minimum 45%.
Maximum 65%.

f. Lighting

- Office and reading room space (L1X1), (L1X2), (L191).
 - Level - 100 foot candles.
 - Spectral - warm white fluorescent.

• Stacks (L192)

- Level - 100 foot candles.
- Spectral - warm white fluorescent.

g. Acoustics

- Noise level no greater than that of a standard typewriter is acceptable.
- Sound proofing can be installed if necessary.

h. Floor Space

- Normally 35-70 ft² per worker with desk and chair.

3.

LIBRARY OF CONGRESS ANNEX (L2XX).

a. Floor Loading

- Office and reading room space (L2X1), (L2X2), (L291) - 120 lb/ft².
- Stacks (L292) - 100 lb/ft².

b. Electric Power Characteristics

- 110 volt and 220 volt.
- 60 cycle.
- No emergency power.

c. Power Ducts

- Under floor ducts.
- 7 ft. X 10 ft. grid on 5 inch centers.
- Space for telephone cables only.

d. Temperature

- Central air conditioning.
- Some provision for local air conditioning (power available).
- Normal temperature 72°F.
- Variation - Minimum 68°F.
Maximum 80°F.

e. Humidity

- Normal - 50%.
- Variation - Minimum 45%.
Maximum 65%.

f. Lighting

- Office and reading room space (L2X1), (L2X2), (L291).
- Level - 100 foot candles.
- Spectral - warm white fluorescent.

g. Acoustics

- Noise level no greater than that of a standard typewriter is acceptable.
- Sound proofing can be installed in necessary.

h. Floor Space

- Normally 35-70 ft² per worker with desk and chair.

4. MADISON BUILDING (L3XX).

a. Floor Loading (all areas, all levels)

- 150 lb/ft².

b. Electric Power Characteristics

- 110 volt and 220 volt.
- 60 cycle.
- Emergency power available.

c. Power Ducts

- Under floor ducts.
- 5 ft X 5 ft grid on 8 inch centers.
- Standard telephone and/or coaxial cable can be used.

d. Temperature

- Central air conditioning.
- Some provision for local air conditioning (power and space available).
- Normal temperature 72°F.
- Variation - Minimum 68°F.
Maximum 80°F.

e. Humidity

- Normal - 50%.
- Variation - Minimum 45%.
Maximum 65%.

f. Lighting

- Office and reading room space (L3X1) (L3X2) (L391).
 - Level - 120 foot candles.
 - Spectral - warm white fluorescent.
- Stacks (L392)
 - Level - 100 foot candles.
 - Spectral - warm white fluorescent.

g. Acoustics

- Noise level no greater than that of a standard typewriter is acceptable.
- Sound proofing can be installed if necessary.

h. Floor Space

- Catalogers: (125 square feet) One single-pedestal desk (30"x48") with L return. One chair.
- Clerical Station: (100 square feet) One double pedestal desk (30"x48") desk or work table. One chair.
- Reference Assistant: (125 square feet) One double-pedestal desk (30"x60"). One desk chair, one side chair.
- Revisers: See Catalogers.
- Secretarial Station: (125 square feet) One double-pedestal (30"x60") desk with L return. One chair.

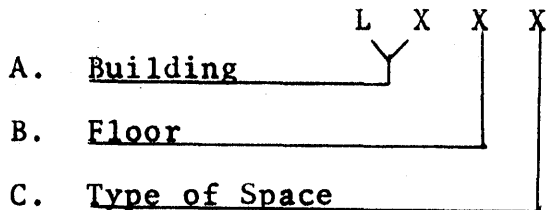
Appendix C

Library of Congress
Location Codes and
Organizational
Department Codes

I. LIBRARY OF CONGRESS LOCATION CODE.

The Library of Congress location code is a three level code to indicate location of terminals within each of the Library's three major buildings.

It is written as follows:



A. First level breakout - Building

- L1 - Main Building
- L2 - Annex Building
- L3 - Madison Building
- L4 - Remote Building

B. Second level breakout - Floor

- 0. Basement
- 1. Ground Floor
- 2. 1st floor
- 3. 2nd floor
- 4. 3rd floor
- 5. 4th floor
- 6. 5th floor
- 7. 6th floor
- 8. Reserved for spare
- 9. Stacks

C. Third level breakout (for second levels 0-7) - Type of space

- 1. Office space
- 2. Reference/reading room space

D. Third level breakout (for second level 9) - Type of space

- 1. Office space
- 2. Collection storage space

An example: Main reading room is coded as L122.
Preliminary Cataloging (Present Location)
is coded as L231 and L291.

II.

LIBRARY OF CONGRESS ORGANIZATIONAL DEPARTMENTS*

Dept.	Off./ Div.	Sect./ Unit	Dept/Div/Office, etc. Name
A	00	0	Administrative Department
A	01	0	Office of Director
A	02	0	Data Processing Office
A	03	0	Photoduplication Service
A	04	0	Space Management Office
A	05	0	Ass't. Dir. for Mgt. Service
A	06	0	Buildings Mgt. Office
A	07	0	Financial Mgt. Office
A	08	0	Office Sec. of Library
A	09	0	Ass't. Dir. of Personnel
A	10	0	Employee Relations Office
A	11	0	Manpower Utilization
A	12	0	Personnel Operations Office
A	13	0	Personnel Security Office
A	14	0	Placement Office
A	15	0	Position Classification Office
A	16	0	Training
A	17	0	Ass't Dir. for Preservation
A	18	0	Binding Office
A	19	0	Collections Maint. Office
A	20	0	Preservation Microfilm Off.
A	21	0	Preserv. Res. & Test. Off.
A	22	0	Restoration Office
B	00	0	Copyright Office
B	01	0	Office of Register
B	02	0	Catalog Division
B	03	0	Examining Division
B	04	0	Reference Division
B	05	0	Service Division
C	00	0	Law Library
C	01	0	Off. Law Librarian & General Council
C	02	0	American-British Law Div.
C	03	0	European Law Division
C	04	0	Far Eastern Law Division
C	05	0	Hispanic Law Division
C	06	0	Near Eastern & African Law Division
D	00	0	Legislative Reference Service
D	01	0	Office of Director
D	02	0	American Law Division

*Codes should be read as a letter followed by a 3 digit number. For example, Administrative Department is A000.

II.

LIBRARY OF CONGRESS ORGANIZATIONAL DEPARTMENTS (Cont'd)

Dept.	Off./ Div.	Secr./ Unit	Dept/Div/Offices, etc. Name
D	03	0	Congressional Refer. Div.
D	04	0	Economics Division
D	05	0	Education & Public Welfare Div.
D	06	0	Foreign Affairs Division
D	07	0	Gov'tt & General Research Div.
D	08	0	Library Services Division
D	09	0	Natural Resources Division
D	10	0	Science Policy Research Div.
D	11	0	Senior Specialists Division
E	00	0	Processing Department
E	01	0	Office of Director
E	01	1	MARC Editorial Unit
E	02	0	National Union Catalog Publication Project
E	03	0	Technical Processes Research Office
E	04	0	Office of Ass't Director for Acquisitions & Overseas Operations
E	05	0	Selection Office
E	06	0	Order Division
E	07	0	Exchange & Gift Div.
E	07	1	Documents Exped. Proj.
E	07	2	E & G Sections
E	07	3	Monthly Checklist Section
E	08	0	Overseas Operations Division
E	08	1	Shared Catalog. Center
E	08	2	PL 480 Office
E	09	0	Office of Ass't. Director of Cataloging
E	10	0	Office of Cataloging Instr.
E	11	0	Descriptive Catalog. Div.
E	11	1	Preliminary Catalog Sect.
E	12	0	Shared Cataloging Division
E	13	0	Subject Cataloging Division
E	13	1	Subject Catalog Section
E	13	2	Editorial Section
E	14	0	Decimal Class. Division
E	15	0	Office of Ass't. Director for Processing Service
E	16	0	Card Division
E	17	0	Catalog Maintenance & Catalog Publications Division

II. LIBRARY OF CONGRESS ORGANIZATIONAL DEPARTMENTS (Cont'd)

Dept.	Off./ Div.	Secr./ Unit	Dept/Div/Offices, etc. Name
E	18	0	Serial Record Division
E	18	1	NST Section
E	19	0	Union Catalog Division
F	00	0	Reference Department
F	01	0	Office of Director
F	02	0	Aerospace Technology Division Cyrillic Bibliog. Project
F	03	0	Defense Research Division
F	04	0	Division for Blind & Physically Handicapped
F	05	0	General Reference & Bibliographic Division
F	05	1	Bibliographic & Refer. Corresponding Section
F	05	2	Public Reference Sect.
F	06	0	Geography & Map Division
F	07	0	Hispanic Foundation
F	08	0	Loan Division
F	09	0	Manuscript Division
F	10	0	Music Division
F	11	0	Orientalia Division
F	12	0	Prints & Photo. Division
F	13	0	Rare Book Division
F	14	0	Science & Technology Division
F	15	0	National Referral Center for Science & Technology
F	16	0	Serial Division
F	17	0	Slavic & Central European Div.
F	18	0	Stack & Reader Division
G	00	0	Controlled Users
G	01	0	Privileged Readers
G	02	0	Stack Pass Holders
G	03	0	On-Premise Readers

Appendix D

Extract from ISO System Format
document dated 8/26/69

I. SCHEDULE OF INPUTS

A. ACQUISITION OPERATION

- Purchase Requisition Records (Monographs & Serials)
- Pre-Publication Bibliographic Records
- Exchange Request Records
- Non-GPO Federal Imprint Records
- State & Local Govt. Imprint Records
- DCCEX Records
- Serials Check-In Records
- Other Exchange Records

B. CATALOGING OPERATION

- Completed Monograph Cataloging Records (Current & Retrospective Roman Alphabet Language)
- Completed Map Cataloging Records (Map Collection)
- Completed Serial Cataloging Records (Current & Retrospective)
- NPAC Cataloging Records (BNB and selected overseas cataloging activities)
- Preliminary Cataloging Records (Updated acquisition records and selected initial keyboardings)
- Subject Heading Records
- Name Authority Records
- Series Treatment Authority Records
- L.C. Classification Records
- Shelflisting Records
- Status & Location Records

C. REFERENCE OPERATION

- Queries (Off-Line and On-Line)

D. PREPARATION OPERATION

- Status & Location Records
- Binding Records
- Filming Records

E. CALCULATION OPERATION

- Status & Location Records
- Outside Loan Records
- Custodial Assignment Records
- Reading Room Circulation Records

II. SCHEDULE OF OUTPUTS

A. INDIVIDUAL CATALOG RECORDS

- Cataloging Distribution Records
- Catalog Cards
- Material Preparation Labels

B. CATALOGS

- Special Bibliographics
- Asserted Accessions Lists
- L.C. Book Catalog: English Language Monographs
- L.C. Book Catalog: Main Reading Room Reference Collection
- L.C. Book Catalog: Serials
- L.C. Book Catalog: S&T Reading Room Reference Collection
- NST
- L.C. Book Catalog: Roman Alphabet Language Monographs
- Special Book Catalogs
- Others
- Monthly Checklist of State Publications
- Non-GPO Federal Imprints
- DCCEX Checklist

C. REPORTS

- Purchase Order Action Notices
- Recommending Lists
- Purchase Requisition Statistical Reports
- Purchase Requisition Status Reports
- Purchase Requisition Management Reports
- Exchange Action Notices
- Exchange Statistical Reports
- Exchange Status Reports
- Exchange Management Reports
- Binding Order Action Notices
- Binding Statistical Reports
- Binding Status Reports
- Binding Management Reports
- Filming Order Action Notices
- Filming Statistical Reports
- Filming Status Reports
- Filming Management Reports
- Outside Loan Management Reports
- Custodial Assignment Reports
- Outside Loan Statistical Reports
- Reading Room Circulation Statistical Reports

- Cataloging Status Reports
- Cataloging Statistics Reports
- Cataloging Management Reports

D. ACTION MESSAGES

- Purchase Orders
- Purchase Order Claiming Messages
- Purchase Order Settlement Messages
- Process Control Messages
- Cataloging Worksheets
- Exchange Requests Slips
- Exchange Claiming Messages
- Exchange Settlement Messages
- Binding Orders
- Binding Order Claiming Messages
- Binding Order Settlement Messages
- Filming Orders
- Filming Order Claiming Messages
- Filming Order Settlement Messages
- Outside Loan Charge Slips
- Reading Room Charge Slips
- Outside Loan Claiming Messages
- Other Circulation Claiming Messages

E. FILE PRINTOUTS

- Purchase Accounts
- Vender Directories
- Recommending Officer Directories
- Acquisition Control File
- Partner/Source Accounts
- Exchange Mailing Lists
- Depositor Registers
- Pre-Assigned Card No. Lists
- Name Authorities Lists
- Series Treatment Authorities Lists
- Subject Headings Authority Lists
- L.C. Classification Schedules
- L.C. Shelflisting Schedules
- Binding Block Schedules
- Bindery Directories
- Filming Directories
- Congressional Accounts Directories
- Government Accounts Directores
- Interlibrary Loan Accounts Directories
- Other Borrowers Accounts Directories

- Custodial Accounts Directories
- Information Resources Directories
- Information Requesters Directories
- Library Directories
- Query Language Dictionary