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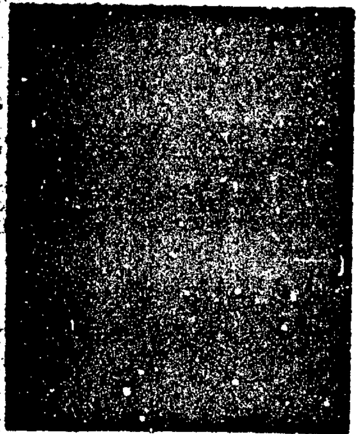

Technical Report

AD 640 117

MECHANIZATION STUDY OF THE U.S. NAVY MARINE ENGINEERING LABORATORY LIBRARY, ANNAPOLIS, MARYLAND

BOOZ • ALLEN APPLIED RESEARCH INC.

Technical Report

AD 640 117

MECHANIZATION STUDY OF THE U.S. NAVY MARINE ENGINEERING LABORATORY LIBRARY, ANNAPOLIS, MARYLAND

Submitted to

Defense Supply Agency
Defense Documentation Center
Cameron Station, Virginia

by

Booz, Allen Applied Research Inc.
4733 Bethesda Avenue
Bethesda, Maryland 20014

Under Contract No. DSA-7-15489

BAARINC Report No. 914-1-22

September 1966

ABSTRACT

Computer mechanization at the Marine Engineering Laboratory (MEL) Library presently consists of production of a journal listing on an IBM 1401 computer from punched cards. When the computer file of information on reports is expanded, it will be the data base for bibliographic searches and retrieval of information. This data base will be maintained and processed by the Information Storage Package, a series of computer programs developed by the Applied Physics Laboratory of Johns Hopkins University. The MEL Library feels that, while the Information Storage Package is useful, a universally accepted information system would be more beneficial for all aspects of library mechanization; with such a system, centralized cataloging might become feasible.

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I. SUMMARY

Mechanization by computer at the Marine Engineering Laboratory (MEL) Library is limited at present. Punched cards are being used to produce a journal listing on the IBM 1401. Information on approximately 500 reports has been added to the computer file and, when expanded, will be the data base for bibliographic searches and retrieval of information. This data base will be maintained and processed by the Information Storage Package, a series of computer programs developed by the Applied Physics Laboratory (APL) of Johns Hopkins University. The APL thesaurus and synonym listing is used for indexing and searching. Programs for processing accessions lists, renewal order forms, periodical holdings lists, and periodical routing lists are planned for the future.

The book collection numbers about 11,000, with an annual growth of 1,000; technical reports number 60,000 - 65,000 with an annual growth of 2,000 - 2,500, and periodical subscriptions now number 280 with only 5 to 10 titles added per year. The technical reports collection includes both classified and unclassified items.

Major subject areas covered are engineering (marine, mechanical, electronic, and electrical), chemistry, physics, and mathematics.

The Library has a staff of two professionals and two clerical assistants, but both of the clerical positions are vacant at this time. The Library serves the Marine Engineering Laboratory's 900 personnel and, under a reciprocal arrangement with the Naval Academy Library, serves Academy personnel also. The largest percentage of the users are engineers and scientists who usually make a visit to the Library for required information. Periodicals and documents are routed to the technical staff as well as to the administrative staff. Interlibrary loan to other activities is limited, although the Library borrows an average of 200 items per month.

II. MECHANIZATION

1. DESCRIPTION OF PERIODICALS PROCESSES

(1) Input Procedures

Titles of periodicals to which the Library subscribes are assigned broad subject areas or classes of interest (i.e., management, scientific, etc.) and are forwarded to the Computer Operations Branch for keypunching.

(2) Output

Cards are keypunched and arranged alphabetically in several groups reflecting the broad subject areas or classes of interest. A listing is run periodically using MEL's 1401 computer, which serves to indicate new accessions received by the Library. (For sample of listing, see Appendix A.)

2. DESCRIPTION OF TECHNICAL REPORTS PROCESSES

In the present mechanization program, only the currently received items are being added to the computer file. There is some

possibility that DDC files might be used at some future date to process older items already in the collection when the computer program began, but no firm plans for this have been made.

(1) Input Procedures

1. Incoming reports are checked for duplication. Items requested from DDC by an individual scientist or engineer are sent directly to the requestor without cataloging or processing; items received on distribution and maintained in the Library collection are cataloged.

2. Accession numbers are assigned to each report that is to be cataloged. The cataloger then adds descriptive cataloging information to the input form SRNC-MEL 5070/5 (see Figure 1 for sample), including accession number, classification, report number, AD number, title and author, period covered, pages, date, and contract number.

3. Descriptors selected from the Thesaurus are added to the input form, with each descriptor separated from the next one by a virgule (slash), i.e., guided missile/ testing. (The APL thesaurus allows individual words or phrases to be used as descriptors.)

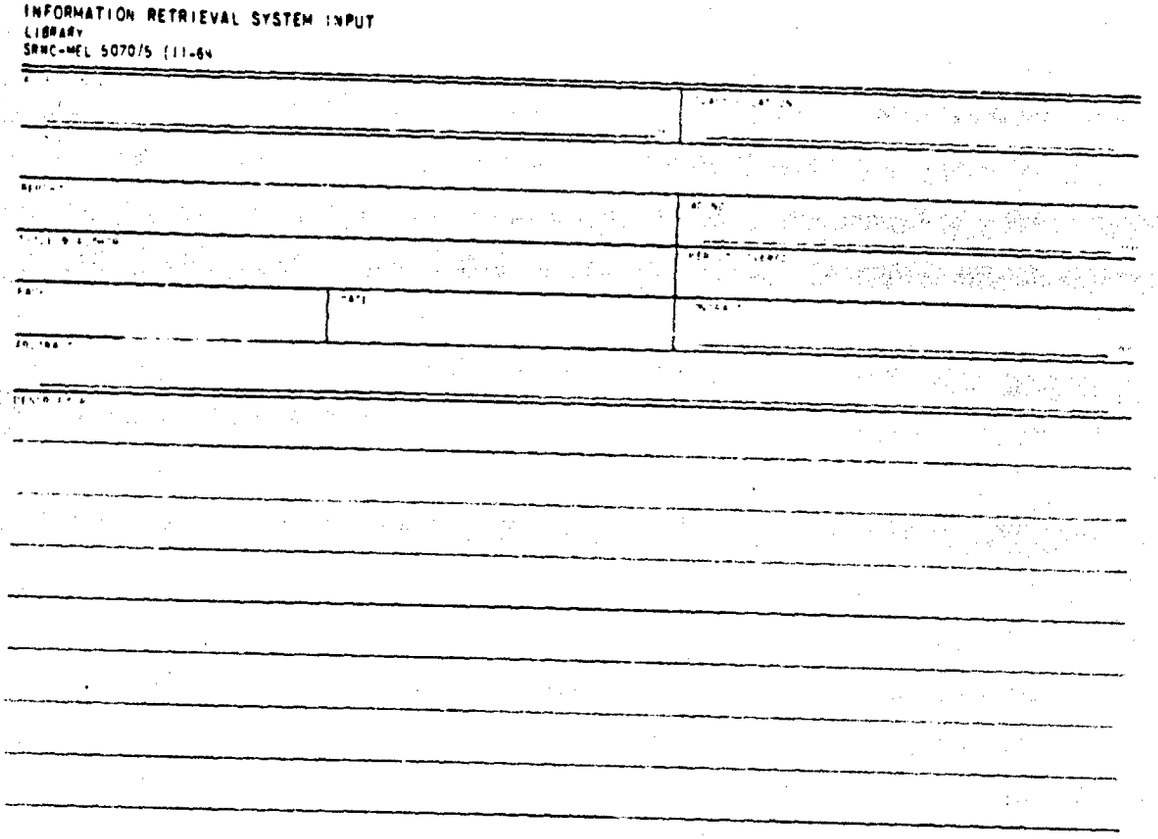

FIGURE 1

Input form SRNC-MEL 5070/5

4. Input forms are forwarded to the Computer Operations Branch for keypunching, editing, and updating of the magnetic tape files.

(2) Output

Since only 400-500 items are presently on the tape, the system has not produced printouts of search requests.

3. MAJOR PROBLEMS

Conversion of the report files to computer format has been delayed by the shortage of both Library and keypunch personnel. When the staff is augmented, a keypunch may be installed in the Library.

While the Information Storage Package is useful, a universally accepted information system would be most welcome for all aspects of Library mechanization; if there were such a system, such activities as centralized cataloging might become feasible.

III. PROGRAM SYSTEM DATA

1. MASTER FILE

The Master File is made up of variable-length records, each of which has a maximum of 3,500 characters. Each field within a record is delineated by virgules. The fields may contain any combination of characters except / and $, which are reserved for the system. That is, they may contain title, author, descriptors, abstracts, etc., in any mix.

2. PROGRAMS

The series of programs which will be used at MEL, called the Information Storage Package, was devised by Fenton Kennedy at the Applied Physics Laboratory and was used in the APL Library until it was replaced by a more powerful series.

The Information Storage Package was reprogrammed (from the 1401 computer) for the 7094 computer at APL. It still performs the programs of Edit, Test, Paragraph Lister, Substitutor, Print, Search, and Scan, but adds one program, the Alphabetical Listing.

This program compares a tape file with a list of descriptors that are also on tape. The output may be either an alphabetical listing of the descriptors on the master file or an alphabetical listing of those descriptors on the master file which are not on the thesaurus tape, or both.

The Information Storage Package has not been used in the MEL Library to any extent, since file conversion has not yet been effected. Of the following programs, the only one that is presently in use at MEL is the Edit Program.

(1) Edit

This program is used to establish and maintain a standard file of descriptive and bibliographic data. It accepts as input a deck of change cards describing the editing operations to be performed on zero, one, or two previous files. A single new file is the result.

New records, bound text, free text, indented free text, free text line for line or one card per line may be inserted into the file. One or more records may be deleted. Any string of characters may be replaced by any other string of characters. A record may be split into two records, or two consecutive

records may be combined into one. Any sequence of records from the old file may be inserted into the new file.

(2) Test

This is a preeditor for the Edit Program. It will read a deck of change cards, review the contents, and print each card with a notification of format errors detected.

(3) Paragraph Lister

The Paragraph Lister Program will print a tape file, record by record, in a form convenient for preparing input to the edit program. The paragraph is headed by the numbers 1 to 100 with space between each group of 10 characters ; the lines are numbered 0 to 9 and A to Y.

(4) Substitutor

This program will replace specified strings of characters in a tape file by other specified strings of characters. For example, the request to replace ABC by DEFG causes the computer to search the file and to insert DEFG in place of each occurrence of ABC in the file.

(5) Print

The Print Program will print one or more magnetic tape files in a flexible format that can be changed from one file to the next by control cards. Control card parameters specify the characters of each record to be printed, margin locations, indentation, spacing, justification, paging, record selection, headings, file control, and other printing options.

(6) Search

This program will read a deck of cards containing one or more search requests, will match the requests against the file, and will create a new file containing all records that satisfy the request. That tape may be printed or may be used for additional searches in the first file of the tape. An on-line listing is also provided indicating the number of records which satisfied each request. In addition, error messages are provided.

The search requests are punched on one or more cards in free-text format. They are made up of descriptors (strings of characters bounded by virgules) and logical operators (AND, INCLUSIVE OR, NOT, LESS OR EQUAL, EQUAL, GREATER OR EQUAL).

(7) Scan

This program is similar to the Search Program, but the search description will be limited to a single descriptor with no logical operators. This restriction permits much faster operation. Multiple reels may be scanned to produce a single tape file. The primary advantage of the Scan Program is in reducing the file size for a number of subsequent, detailed searches.

IV. EQUIPMENT AND COSTS

1. EQUIPMENT

The MEL computer facility currently rents a large IBM 1401 computer which is run two shifts for solving scientific problems and a few management problems. Most routines are written in FORTRAN or COBOL. The 1401 component list is as follows:

	1401	16K memory
	1402	card reader/punch
	1403	printer (132 characters)
5	7330	tape units

2. COSTS AND TIME

Development costs were absorbed by APL and were minimized by the adoption of a system that was already in use. The system was obtained by MEL essentially free. The librarian made several trips to APL for familiarization, and the cataloger spent three days there actually cataloging for the system.

BIBLIOGRAPHY

"Memorandum to Distribution on Information Storage Package," from Olmer, Peebles, Rich, and G. B. Swartz, BCC 294, revised 1 April 1964.

APPENDIX A

SAMPLE OF PERIODICALS LISTING

LIST (E)

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION. JOURNAL. CODE 163.1
AMERICAN MACHINIST/METALWORKING MANUFACTURING. CODE 280.
AMERICAN SOCIETY FOR METALS. TRANSACTIONS. CODE 257
AMERICAN SOCIETY FOR TESTING AND MATERIALS. STANDARDS. CODE 257
AMERICAN SOCIETY OF METALS. REVIEW OF METAL LITERATURE. ANNUAL. CODE 25
APPLIED SCIENCE AND TECHNOLOGY INDEX. CODE 257
A.T.D. PRESS. (AEROSPACE TECHNOLOGY DIV. - LIBRARY OF CONGRESS) KATY VAN
AUDIOVISUAL INSTRUCTION. FRANK TRAYNOR
BIBLIOGRAPHIC INDEX. CODE 257
BRITISH WELDING JOURNAL. CODE 872
BUILDINGS. CODE 335
CIRF ABSTRACTS CODE 164
CHEMICAL ABSTRACTS. CODE 257
CIVIL SERVICE JOURNAL CODE 160
COMPUTING REVIEWS. CODE 950
CONSUMER BULLETIN. CODE 257
CONSUMER REPORTS. CODE 257
CUMULATIVE BOOK INDEX. CODE 257
DATA PROCESSING MAGAZINE. CODE 950
DIRECTORY OF PUBLISHED PROCEEDINGS CODE 257
ELECTRONIC TECHNICIAN. CODE 280
ENGINEERING ALLOYS DIGEST. CODE 860
ENGINEERING INDEX MONTHLY BULLETIN AND ANNUAL VOLUME. CODE 257
ENENING CAPITAL, DAILY. CODE 107
FEDERAL ACCOUNTANT. CODE 120
FEDERAL TIMES. CODE 162
FINANCIAL EXECUTIVE. CODE 125
GOVERNMENT EMPLOYEES RELATIONS REPORT. CODE 160
INSTITUTE OF METALS. JOURNAL. CODE 850
IRON AND STEEL INSTITUTE. JOURNAL. CODE 850
JOURNAL OF COLLEGE PLACEMENT. CODE 160
JOURNAL OF METALS. CODE 850
LABOR RELATIONS ADVISORY LETTER. CODE 163
MACHINE AND TOOL BLUE BOOK. CODE 330
METALLURGICAL REVIEWS. CODE 850
METALWORKING NEWS. CODE 280
MODERN MATERIALS HANDLING. CODE 235
MONTHLY CATALOG OF U. S. GOVERNMENT PUBLICATIONS. CODE 257
NATIONAL ASSOCIATION OF SUGGESTION SYSTEMS. CODE 163
NAVAL RESEARCH LOGISTICS. CODE 257
NAVY CIVIL ENGINEER. CODE 310
NAVY TIMES. CODE 107
NEWSLETTER. CODE 230
NEWSWEEK. CODE 2108
OCCUPATIONAL HAZARDS. CODE 163.1
OFFICIAL AIRLINE GUIDE. CODE 128.1
OFFICIAL AIRLINE GUIDE. QUICK REFERENCE. CODE 128.1
OFFICIAL GUIDE TO THE RAILWAYS. CODE 128.1
OPERATIONS RESEARCH/MANAGEMENT SCIENCE CODE 950
PERSONNEL JOURNAL. CODE 160
PURCHASING. CODE 230

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

BOOZ ALLEN APPLIED RESEARCH, INC. 4733 Bethesda Avenue Bethesda, Maryland 20014	Unclassified

1 REPORT TITLE

Mechanization Study of the U.S. Navy Marine Engineering Laboratory Library, Annapolis, Maryland

4 DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final Report of on-site survey

5 AUTHOR(S) (Last name, first name, initial)

G. A. Kershaw, D. Crowder, J. E. Davis, E. G. Loges, E. Merendini, S. M. Thomas

6 REPORT DATE	7a TOTAL NO. OF PAGES	7b NO. OF REFS
September, 1966	22	0

8a CONTRACT OR GRANT NO	9a ORIGINATOR'S REPORT NUMBER(S)
DSA-7-15489	914-1-22
b PROJECT NO	
c	9b OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d	AD 640 117

10 AVAILABILITY LIMITATION NOTICES

Distribution of this Document is unlimited

11 SUPPLEMENTARY NOTES	12 SPONSORING MILITARY ACTIVITY
None	Defense Supply Agency Defense Documentation Center Cameron Station, Virginia

13 ABSTRACT

Computer mechanization at the U.S. Navy Marine Engineering Laboratory (MEL) Library presently consists of production of a journal listing on an IBM 1401 computer from punched cards. When the computer file of information on reports is expanded, it will be the data base for bibliographic searches and retrieval of information. This data base will be maintained and processed by the Information Storage Package, a series of computer programs developed by the Applied Physics Laboratory of Johns Hopkins University. The MEL Library feels that, while the Information Storage Package is useful, a universally accepted information system would be more beneficial for all aspects of library mechanization; with such a system, centralized cataloging might become feasible.

DD FORM 1473

Unclassified

Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Digital Computers						
Information Systems						
Libraries						

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5. AUTHOR(S): Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. REPORT DATE: Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7a. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. NUMBER OF REFERENCES: Enter the total number of references cited in the report.

8a. CONTRACT OR GRANT NUMBER: If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

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There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

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