

LOCKHEED MARTIN ENERGY RESEARCH LIBRARIES

3 4456 0515539 1

CENTRAL RESEARCH LIBRARY
DOCUMENT COLLECTION

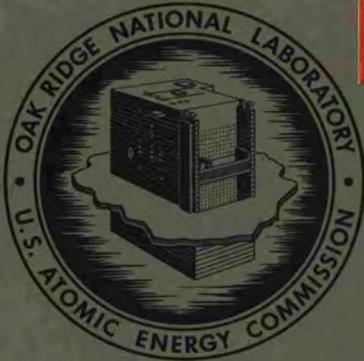
1

ORNL-4314
UC-32 - Mathematics and Computers

JOURNAL CONTROL SYSTEM
AT OAK RIDGE NATIONAL LABORATORY

OAK RIDGE NATIONAL LABORATORY
CENTRAL RESEARCH LIBRARY
DOCUMENT COLLECTION
LIBRARY LOAN COPY
DO NOT TRANSFER TO ANOTHER PERSON
If you wish someone else to see this
document, send in name with document
and the library will arrange a loan.

UCN-7969
(3-3-67)



OAK RIDGE NATIONAL LABORATORY
operated by
UNION CARBIDE CORPORATION
for the
U.S. ATOMIC ENERGY COMMISSION

Printed in the United States of America. Available from Clearinghouse for Federal
Scientific and Technical Information, National Bureau of Standards,
U.S. Department of Commerce, Springfield, Virginia 22151
Price: Printed Copy \$3.00; Microfiche \$0.65

— LEGAL NOTICE —

This report was prepared as an account of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission:

- A. Makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or
- B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.

As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission, or employee of such contractor, to the extent that such employee or contractor of the Commission, or employee of such contractor prepares, disseminates, or provides access to, any information pursuant to his employment or contract with the Commission, or his employment with such contractor.

ORNL-4314

Contract No. W-7405-eng-26

MATHEMATICS DIVISION
TECHNICAL INFORMATION DIVISION

JOURNAL CONTROL SYSTEM
AT OAK RIDGE NATIONAL LABORATORY

Shirley B. Opstrup
Ann S. Klein

JANUARY 1969

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee
operated by
UNION CARBIDE CORPORATION
for the
U.S. ATOMIC ENERGY COMMISSION

LOCKHEED MARTIN ENERGY RESEARCH LIBRARIES



3 4456 0515539 1

CONTENTS

	Page
Abstract	1
Introduction	1
1.1 Title Tape	3
1.2 Vendor Tape	8
1.3 Subscriber Tape	10
1.4 Order Control and Statistics Programs	12
1.5 Automatic Renewal	23
1.6 Automatic Vendor Change	24
1.7 Vendor Requisition	25
2.1 Journal Check-in and Binding Program	27
2.2 Tape Preparation for Claiming	40
2.3 Claim Letter Program	41
2.4 Irregular Journal Arrival Check	42
3.1 Union Tape	43
3.2 Union List	46
4. Conversion	47
Appendix	49
Figure 1 Order Master Tape Input Cards	18
Figure 2 Journal Renewal List	20
Figure 3 Journal Renewal Notice	20
Figure 4 Journal Order Information by Title	21
Figure 5 Journal Order Information by Subscriber	22
Figure 6 Vendor Requisition Form	26
Figure 7 "9000" Frequency "Check-In" Card	34

Figure 8	"0000" Frequency "Check-In" Card	35
Figure 9	Regular Frequency "Check-In" Card	35
Figure 10	Title Page Output Card	38
Figure 11	Contents Output Card	38
Figure 12	Index Output Card	39
Figure 13	Bindery Output Card	39
Figure 14	Bindery Output Notice	39
Figure 15	Claim Letter	41
Figure 16	Union List	46
Figure A-1	Title Tape Edit and Update Programs	51
Figure A-2	Vendor Tape Update Program	51
Figure A-3	Subscriber Tape Update Program	52
Figure A-4	Order Control and Statistics Programs	53
Figure A-5	Journal Check-In and Binding Program	54
Figure A-6	Union Edit and Update Programs	55

JOURNAL CONTROL SYSTEM
AT OAK RIDGE NATIONAL LABORATORY

Shirley B. Opstrup
Ann S. Klein

ABSTRACT

The ORNL Central Research Library has transferred its handling of journals to a computer. A series of programs have been written to provide management information in the form of cost, subscriber, and title statistics and to simplify and accelerate the handling of journals in the library. The arrangement of the sections in this report is in the order that the programs were implemented to the total automated journal system. Section 1 describes the maintenance of the three basic journal information files (title, subscriber, and vendor), the control of ordering and statistics, and the automation of renewal of journals. Section 2 discusses the checking in, binding, and claiming of journals. Section 3 is concerned with programs which provide a union list of all journals in the Knoxville-Oak Ridge area. The Appendix contains data flow charts of programs in the system.

Introduction

The automatic handling of journals was planned as a total system. Mechanization was implemented first where the greatest management need existed. The basic purposes of the system are three-fold: (1) every wanted periodical is renewed, (2) every missing journal issue is claimed, and (3) complete information is available about journals maintained in libraries in the Knoxville-Oak Ridge area. At the same time, the programs accelerate and standardize binding procedures and catch variations in journal arrival and numbering. Information is arranged and included on tape files so that it is readily available for the present programs and for future programs.

Information about journals easily breaks into separate files. Conversion of data from these various library files into logical tape files for computer processing is the cause of the input problems connected with journals. Examination of the various programs in this report shows that three main files are used against "master tapes" generated and updated by the programs. The three files are the title tape, subscriber tape and vendor tape. The union tape is a much larger version of the title tape and is only used for preparing union lists. Editing of input to all tape files used in the various journal programs is required to keep these programs in production.

1.1 Title Tape

The journal title tape contains the full journal title name, an identifying title code, and information such as check-in, binding, and subject information about every journal ordered by the laboratory. The title code is designated by the library and designed so that when the codes are sorted the titles will be arranged in alphabetical order on the tape. The tape records, one per journal title, are fixed-length, unblocked, and 640 characters long. A logical record is composed of eight fixed-length parts, each part corresponding to an 80 character punched card.

The first piece is described as follows:

Position	Contents
1 - 8	title code
9 - 10	"11"
11 - 79	full title
80	"\$" - if title fits this card blank - if title extends to next card

The second part is present only if needed to complete the full title. Its format is:

Position	Contents
1 - 8	title code
9 - 10	"12"
11 - 79	full title
80	"\$"

The third, fourth, and fifth parts describe subject information.
A maximum of three parts are allowed, but not required. The format is:

Position	Contents
1 - 8	title code
9 - 10	"41" - third part
	"42" - fourth part
	"43" - fifth part
11 - 79	subject information
80	"\$" - if last card of subject information
	blank - if subject information extends to next card

The sixth part contains information concerning checking in and
claiming the journal:

Position	Contents
1 - 8	title code
9 - 10	"51"
11 - 14	frequency code - a four digit code describing the arrival of the journal, i.e., 1111 for quarterly, 7777 for monthly, etc.
15	blank
16 - 17	code predicting number of supplements expected
18	blank
19	increment by which the issue number of the journal is increased
20	code indicating the presence of title page, contents, and/or index for the journal ¹

¹ 0 - none; 1 - index only; 3 - contents only; 4 - contents and index;
5 - title page only; 6 - title page and index; 8 - title page and contents;
9 - index, title page, and contents

21	"0" if issue numbering is continuous or a number to which the issue number is reset when a volume completes
22 - 24	number of issues in a biographical volume
25	blank
26	detailed information about title page ²
27	blank
28	detailed information about contents ²
29	blank
30	detailed information about index ²
31	blank
32 - 34	number of issues in a journal year
35 - 54	blank
55	"*" - if journal does not bind blank - if journal binds
56	blank
57 - 58	code of language journal written in
59 - 60	blank
61 - 68	purchase order number of Central Research Library order
69 - 73	blank
74 - 79	vendor code of Central Research Library order
80	blank

² 0 - none published; 1 - issued separately, purchase; 2 - supplied in last issue; 3 - supplied upon request; 4 - supplied automatically; 5 - supplied in first issue

The seventh part contains binding information and is arranged as follows:

Position	Contents
1 - 8	title code
9 - 10	"70"
11 - 12	number of issues in a bound volume
13	blank
14 - 17	color journal bound in
18	blank
19	bind as is? 1 - yes; 0 - no
20	blank
21	index back? 1 - yes; 0 - no
22	blank
23	index front? 1 - yes; 0 - no
24	blank
25	spine writing how? 1 - horizontal; 0 - vertical
26	blank
27	spine lettering how? 1 - gold; 0 - black
28	blank
29	how covers? 1 - in; 0 - out
30	blank
31	front cover only? 1 - yes; 0 - no
32	blank
33	how ads? 1 - in; 0 - out
34	blank

35	ads with text in? 1 - yes; 0 - no
36	blank
37	special handling? 1 - yes; 0 - no
38 - 80	blank

The eighth part is presently blank and is reserved for future use. The eight parts of the record are arranged in numerical order by the type field in columns 9 - 10 of each piece. If not all eight parts are used, those parts present are written in sequence and left justified, with the remaining portion of the record blank.

The title tape is maintained with the title update program. The input cards are first sent through an edit program to check for any punching errors or missing cards in a set. The "11" and "12" (if necessary to complete the title) cards are always required in a title card set. The presence of the remaining cards is optional. Error free card sets are added to the title tape in the update program. In order to add a new title record to the tape, or to write over a title record already on tape, the whole card set must be input in card type (columns 9 - 10) order. The only card which may go into the program alone, out of a set, is the "51" card to write over a "51" part already on tape. A record may be deleted by putting in an erase card with the title code in columns 1 - 8, a "11" in columns 9 - 10, and an "E" in column 80.

1.2 Vendor Tape

The journal vendor tape contains the vendors of all library journals and their addresses. The tape is arranged in the order of vendor codes, each vendor identified by an individual six character code. The records, one per vendor, are fixed-length, unblocked and 160 characters long.

A tape record is composed of two 80 character parts. The first part is described as follows:

Position	Contents
1 - 6	vendor code
7	blank
8 - 43	vendor's complete name
44 - 79	first line of vendor address
80	blank

The second half of the record is similarly divided:

Position	Contents
1 - 6	vendor code
7	blank
8 - 43	second line of vendor address
44 - 79	third line of vendor address
80	blank

Periodically the library receives from the purchasing department a vendor master tape containing vendor codes, vendor names, and vendor addresses

for most library journal vendors. The names and addresses are taken from the vendor master tape and written on the library's vendor tape by means of the vendor update program. Input to this program is a punched card made for each vendor to be added to the library tape. The card contains only the vendor code in columns 1-6, and the remaining vendor information is taken from the vendor master tape and written on the library vendor tape. For vendors not on the tape, a set of two punched cards is made identical to the record described above, except containing an "M" in column 80 of each card, a "1" in column 7 of the first card, and a "2" in column 7 of the second card. If a vendor address takes only one line, the second card of the set must still be included with blanks in the address section of the second card. These cards are also written on the library vendor tape. If a card set is input to the program when that particular vendor actually is on the vendor master tape, the vendor information is taken from the vendor master tape instead of from the cards. An erase card, containing the vendor code in columns 1-6 and an "E" in column 80, will delete any vendor from the library vendor tape.

1.3 Subscriber Tape

The subscriber tape is designed to give detailed information about each journal subscriber, either an individual or a department, in the laboratory. The tape consists of fixed-length, unblocked logical records, each of which is 120 characters long. A record is divided into two 60 character parts, each giving information on a subscriber. Subscribers are arranged in ascending sequence by the subscriber codes, which are badge numbers for individuals and specially assigned codes for departments.

The format of the first 60 character part of the record is:

Position	Contents
1 - 6	subscriber code
7 - 8	initials of subscribers' first and middle name
9 - 38	subscriber's last name (may be the name of the department if the department is the subscriber)
39 - 42	room number
43 - 48	building number
49 - 53	phone number
54 - 55	division number
56 - 59	charge code number
60	"S"

The second half of the record is identical to the first half and refers to the next subscriber in sort order.

The subscriber tape is generated with the journal order run. As new orders are placed on the order master tape the corresponding badge numbers of the new subscribers are inserted into columns 1-6 of a record in the proper sort sequence on the subscriber tape. The personnel department sends a magnetic tape which contains names and plant addresses of all ORNL and Y-12 employees. The recording format of this tape is the same as the recording format of the subscriber tape, except that it is blocked, one block containing 10 records. The subscriber tape is run against this personnel tape and against punched cards containing information about subscribers not on the personnel tape, such as departments, in a subscriber update program. Employees who are no longer on the personnel tape are deleted from the subscriber tape. Name and address information is supplied to the subscriber tape for all subscriber codes. If this information is not on the personnel tape for any subscriber and column 60 of the record is blank, the subscriber code is displayed with an error message. Erroneous subscriber codes may be deleted from the tape by means of a delete card, containing the subscriber code in columns 1-6 and an "E" in column 60.

1.4 Order Control and Statistics Programs

The previously described title and subscriber tapes are used in the main journal order and statistics program. This program aids in the ordering and renewal of all journals for both libraries and individuals in the laboratory. It also maintains statistics on journal costs, individual journals ordered, and journal order duplication. The program creates and maintains an order master tape which contains information for ordering and renewing journals. The tape is composed of fixed-length, unblocked, 80 character records, one record corresponding to a single order. The contents of the record are as follows:

Position	Contents
1 - 8	journal title code
9 - 14	subscriber code
15	blank
16 - 23	current purchase order number - (cross reference number to the actual document effecting the purchase)
24	blank
25 - 30	journal vendor code
31	blank
32 - 38	unit cost of journal
39	blank
40 - 41	number of copies ordered
42	blank
43 - 48	date order expires - year, month, day
49	blank

50 - 61	charge code - (tells who pays for the journal)
62	blank
63 - 70	purchase order number from the previous order - presence of this number indicates that the present order is a renewal order
71 - 78	blank
79	code indicating whether a notice for renewal should be sent: blank - not time to renew "φ" - notice should be sent this time "*" - notice previously sent, but order hasn't been renewed
80	"C" - order was corrected with a "C" card "φ" - original order or renewal

The order master tape is sorted first by title code, second by subscriber code, and finally by purchase order number.

Input to the order control and statistics program is as follows: the latest title, subscriber, and order master tapes, and punched cards which are first edited for punching errors. The input cards fall into two class types: (1) straight ordering and renewing and (2) price and title changes.

Class (1): ordering, renewing, correcting and erasing an order

A. Ordering card format:

Position	Contents	Remarks
1 - 8	title code	
9 - 14	subscriber code	
15	blank	
16 - 23	purchase order number	
24	blank	

Position	Contents	Remarks
25 - 30	journal vendor code	
31	blank	
32 - 38	unit cost of journal	Decimal point assumed between col. 36 and 37; Field justified right and the field filed with leading zeros.
39	blank	
40 - 41	number of copies ordered	Justified right. The remaining field filled with leading zeros.
42	blank	
43 - 48	expiration date in the sequence: year, month, day (e.g., 680309 stands for 68-03-09)	Two types of expiration dates are used: (1) the sequence type date (e.g., 680309) and (2) automatic renewal date (e.g., 999999)
49	blank	
50 - 61	charge code	Justified left. The remainder of this field left blank
62 - 79	blank	
80	"∅"	

B. A correction card, for correcting information in columns 24-79 only, uses the same format as the order card except column 80 contains the letter "C".

C. An erase card erases orders from the master tape and must be used with an order card to correct mistakes in title code, subscriber code, or purchase order number. Erase card format is:

Position	Contents
1 - 8	title code
9 - 14	subscriber code
15	blank
16 - 23	taped purchase order number
24 - 79	blank
80	"E"

D. A renewal card has the same format as an order card except: (1) the title code, subscriber code, and purchase order number are on the master tape; (2) vendor code, cost, number of copies and charge code reflect the information of the renewal order; (3) column 80 contains the letter "ø"; and (4) columns 63-70 contain the new purchase order number.

Class (2): Price changes and journal title changes.

A. A price change card may not be used in combination with any class (1) input card of the same title code. A price change card changes all the prices of a journal title on a purchase order already on the master tape.

Position	Contents
1 - 8	title code
9 - 15	blank
16 - 23	taped purchase order number
24 - 31	blank
32 - 38	new cost per unit punched as on order cards

Position	Contents
39 - 79	blank
80	"p"

B. Title change cards are arranged alphabetically after all the Ø, E, C, and P cards. Consequently, orders may be corrected or renewed before titles are changed on the master tape. The title change card format is:

Position	Contents
1 - 8	old title code on master tape
9 - 62	blank
63 - 70	new title code
71 - 79	blank
80	"T"

Usually the new title is filled out on the form in figure 1 along with the title change line.

The first two lines of the form are used as input to the title tape; the other lines of the form have been previously described. The questions on the bottom of the form are used to make necessary changes in the journal maintenance programs described in section 2.

The order of input to the master tape is: (1) control cards; (2) order, correction, erase, and price change cards; (3) title change cards.

The first control card is keypunched according to the following rules:

Position	Contents
1 - 4	"DATE"
5 - 14	blank
15 - 23	Date of program run in the sequence: year, month, date e.g., 68-06-13
24	blank - normal run "*" - if time for automatic renewals to be listed
25 - 80	blank

The second control card is optional. Its presence generates lists by title and subscriber, and cost statistics. The format is:

Position	Contents
1 - 7	"LISTIME"
8 - 80	blank

The output from the program consists of:

(1) an updated order master tape.
 (2) an updated subscriber tape with new subscribers inserted
 (section 1.3).

(3) a list for library use of all journal orders which will expire within the next three months - a journal appears on this list every run until the order is renewed.

(4) printed notices to subscribers of journals which have been flagged for renewal - a notice comes out only the first time the order comes up for renewal.

(5) complete list of all journal order information arranged by titles - comes out only if the optional "LISTIME" control card is present.

(6) complete list of all journal order information arranged in subscriber order - only generated when "LISTIME" card present.

(7) cost totals by charge code, total number of journals ordered, total cost to laboratory - generated when "LISTIME" card present.

Samples of these different output forms may be seen in figures 2 through 5. A general flow diagram of the program appears in the appendix in figure A-4. The program is run on the IBM 7090 because the many tape drives and the internal sort program needed are available.

The order control and statistics program has been a production program since 1966. The program controls ordering on approximately 2815 journal titles comprising 4673 orders.

RENEWAL LIST FOR LIBRARY USE						
65-12-31						
A2890000	AMERICAN ANTHROPOLOGIST					
DD3410	CIVIL DEFENSE			K243	4500	36781
34X07516	A06220	\$ 15.00	1	304765		
T1940000	TECHNICAL TRANSLATIONS					
X11969	*****					
34X09171	S15890	\$ 12.00	1	347565-1		
U4000000	U.S. DEPARTMENT OF DEFENSE. INDEX OF SPECIFICATIONS AND STANDARDS					
X08744	*****					
34X92324	S15890	\$ 15.00	1	320065		
U7775000	U.S. SUPERINTENDENT OF DOCUMENTS. MONTHLY CATALOG					
X04545	*****					
34X92324	S15890	\$ 4.50	1	319165		
X04838	*****					
34X92324	S15890	\$ 4.50	1	446065-2		
X07408	*****					
34X02451	S15890	\$ 4.50	1	336565-1		
99-99-99						
A3748000	AMERICAN JOURNAL OF MEDICAL ELECTRONICS					
X09354	*****					
34B15145	S15526	\$ 10.00	1	446065-10		
A8335000	ATOMIC ENERGY CLEARING HOUSE. WEEKLY PUBLICATIONS					
DC3047	CENTRAL RESEARCH LIBRARY			175	4500	31466
34X92310	S15526	\$150.00	3	304765		
B2800000	BEHAVIORAL SCIENCE					
DD3410	CIVIL DEFENSE			K243	4500	36781
34B15145	S15526	\$ 6.00	1	304765		
C6700000	CLINICAL CHEMISTRY					
DB4047	BIOLOGY LIBRARY				9207	35506
34X92310	S15526	\$ 12.00	1	304765		
I7875000	INSTRUMENTS AND CONTROLS SYSTEMS					
DC3047	CENTRAL RESEARCH LIBRARY			175	4500	31466
34X92320	S15526	\$ 3.00	1	304765		

Figure 2. Journal Renewal List.

JOURNAL RENEWAL NOTICE

FROM CENTRAL RESEARCH LIBRARY

65-12-07

TO DB4047
 BIOLOGY LIBRARY
 ROOM
 BLDG 9207

THE PERIODICAL LISTED BELOW IS CURRENTLY BEING CHARGED TO YOU
 *** CLINICAL CHEMISTRY ***

CHARGE CODE 304765 COPIES 01 COST/COPY \$ 12.00 TOTAL COST \$ 12.00

THE LIBRARY WILL NOT RENEW THIS ORDER IF YOU DO NOT RETURN THIS NOTICE. PLEASE
 VERIFY CHARGE CODE NUMBER, CHECK BELOW, SIGN AND RETURN THIS NOTICE.

RENEW
 DO NOT RENEW
 SIGNATURE

C6700000 DB4047 34X92310 S15526 999999

REFOLD AND RETURN TO

CLORA CAWRSE
 RM 171 4500 BLDG
 ORNL

Figure 3. Journal Renewal Notice.

LIST OF JOURNALS ORDERED

TITLE	CHARGE CODE	SUBSCRIBER	NO.	COST/COPY	TOTAL	EXPIRATION	ORDER NO.	VENDOR
ACTA CRYSTALLOGRAPHICA	304765	BIOLOGY LIBRARY	1	\$ 35.00	\$ 35.00	651231	34X13399	S13410
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 35.00
AMERICAN ANTHROPOLOGIST	304765	CIVIL DEFENSE	1	\$ 15.00	\$ 15.00	651231	34X07516	A06220
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 15.00
AMERICAN JOURNAL OF MEDICAL ELECTRONICS	446065-10	*****	1	\$ 10.00	\$ 10.00	999999	34815145	S15526
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 10.00
APPLIED PHYSICS LETTERS	304765	BIOLOGY LIBRARY	1	\$ 15.00	\$ 15.00	651231	34X94671	A07860
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 15.00
ATOMIC ENERGY CLEARING HOUSE, WEEKLY PUBLICATIONS	304765	CENTRAL RESEARCH LIBRARY	3	\$150.00	\$ 450.00	999999	34X92310	S15526
TOTAL SUBSCRIPTIONS TO THIS TITLE			3				TOTAL COST THIS TITLE	\$ 450.00
AUTOMATIC WELDING (USSR)	304765	CENTRAL RESEARCH LIBRARY	1	\$ 26.98	\$ 26.98	651231	34X99462	B09040
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 26.98
BEHAVIORAL SCIENCE	304765	CIVIL DEFENSE	1	\$ 6.00	\$ 6.00	999999	34815145	S15526
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 6.00
BUSINESS WEEK	304765	CENTRAL RESEARCH LIBRARY	1	\$ 4.00	\$ 4.00	661231	34X66407	M90501
TOTAL SUBSCRIPTIONS TO THIS TITLE			1				TOTAL COST THIS TITLE	\$ 4.00

Figure 4. Journal Order Information by Title.

JOURNAL SUBSCRIBERS

SUBSCRIBER	TITLE	CHARGE CODE	NO.	COST/COPY	TOTAL	EXPIRATION	ORDER NO.	VENDOR	
OB4047	BIOLOGY LIBRARY								
	ACTA CRYSTALLOGRAPHICA	304765	1	\$ 35.00	\$ 35.00	651231	34X13399	S13410	
	APPLIED PHYSICS LETTERS	304765	1	\$ 15.00	\$ 15.00	651231	34X94671	A07860	
	CLINICAL CHEMISTRY	304765	1	\$ 12.00	\$ 12.00	999999	34X92310	S15526	
	NUCLEONICS	304765	1	\$ 5.33	\$ 5.33	661231	34X66407	M90501	
	PSYCHOMETRIKA	304765	1	\$ 14.00	\$ 14.00	651231	34X02488	S15526	
TOTAL SUBSCRIPTIONS FOR THIS SUBSCRIBER			5	TOTAL COST THIS SUBSCRIBER		\$ 81.33			
DC3047	CENTRAL RESEARCH LIBRARY								
	ATOMIC ENERGY CLEARING HOUSE. WEEKLY PUBLICATIONS	304765	3	\$150.00	\$ 450.00	999999	34X92310	S15526	
	AUTOMATIC WELDING (USSR)	304765	1	\$ 26.98	\$ 26.98	651231	34X99462	809040	
	BUSINESS WEEK	304765	1	\$ 4.00	\$ 4.00	661231	34X66407	M90501	
	CHEMICAL COMMUNICATIONS	304765	1	\$ 15.00	\$ 15.00	651231	34X02490	S13410	
	GEOPHYSICAL ABSTRACTS	304765	1	\$ 4.25	\$ 4.25	671231	34X92325	S15890	
	INSTRUMENTS AND CONTROLS SYSTEMS	304765	1	\$ 3.00	\$ 3.00	999999	34X92320	S15526	
	JOURNAL OF ACOUSTICS (USSR)	304765	1	\$ 20.00	\$ 20.00	660630	34X05021	A07860	
	MOODYS INDUSTRIALS	304765	1	\$140.00	\$ 140.00	660630	34X09103	M09520	
	NUCLEONICS	304765	2	\$ 5.33	\$ 10.66	661231	34X66407	M90501	
	RUSSIAN JOURNAL OF INORGANIC CHEMISTRY	304765	1	\$125.55	\$ 125.55	660630	34X13371	C05040	
	SOLID STATE ABSTRACTS	304765	1	\$ 81.90	\$ 81.90	671231	34X09106	C00715	
	TOTAL SUBSCRIPTIONS FOR THIS SUBSCRIBER			14	TOTAL COST THIS SUBSCRIBER		\$ 881.34		
	DD3060	ENGINEERING LIBRARY							
FACTORY		308965	1	\$ 1.33	\$ 1.33	661231	34X66407	M90501	
NUCLEONICS		300365	3	\$ 5.33	\$ 15.99	661231	34X66407	M90501	
NUCLEONICS WEEK		308965-1	1	\$ 40.00	\$ 40.00	661231	34X66407	M90501	
TOTAL SUBSCRIPTIONS FOR THIS SUBSCRIBER			5	TOTAL COST THIS SUBSCRIBER		\$ 57.32			

Figure 5. Journal Order Information by Subscriber.

1.5 Automatic Renewal

The automatic renewal program permits renewal of all items on an order without using individual renewal cards for each title on an order. Input to the program consists of the master tape and cards punched in the following format:

Position	Contents
1 - 8	taped purchase order number
9 - 42	blank
43 - 48	expiration date of new purchase order in the sequence: year, month, day (e.g., 681231 stands for 68-12-31)
71 - 79	blank
80	"B"

The expiration date on the master tape is written over by the new expiration date. The old purchase order number on the master tape is put in columns 63-70 and the new purchase order number is put in columns 16-23. This process constitutes an automatic renewal of these orders.

1.6 Automatic Vendor Change

The automatic vendor change program is used when a large journal supplier changes name and a new vendor code is assigned. Input to the program consists of the order master tape and punched cards, one for each vendor code to be changed.

Position	Contents
1 - 6	vendor code on tape
7 - 62	blank
63 - 68	new vendor code
69 - 80	blank

1.7 Vendor Requisition

Input to the vendor requisition program consists of the latest title, subscriber, vendor, and order master tapes. The vendor requisition program has two purposes. By means of a control card the user may specify what he wishes the program to do. If the card has "SIGNAL" in columns 1-6 the program compares the title, vendor, and subscriber tapes against the latest order master tape. An error message is displayed for any code present on the master tape and missing from the other tapes. A new subscriber tape is generated with subscriber codes inserted for any subscriber on the master tape and not on the subscriber tape.

If the control card input to the vendor requisition program is blank in columns 1-6, the tape comparisons are made and, in addition, complete requisitions are printed for each journal vendor. A requisition contains the vendor name and address at the top of the page and the purchase order numbers in order beneath the vendor. Under each purchase order number appears the charge code for the order, the subscriber's name and address, and the journal title and number of copies ordered. Each new vendor begins on a new page, thus making it possible to send the printed computer output directly to the vendor. An example of a vendor requisition form is shown in figure 6.

JOURNAL VENDORS

BRITISH INFORMATION SERVICES		845 THIRD AVENUE
NEW YORK NY 10022		
00X15907		
	USAEC-UCCND	
302165	ENGINEERING LIBRARY	1000
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	BUILDING SCIENCE ABSTRACTS	
	1 COPIES	
00X16168		
	USAEC-UCCND	
304765	CENTRAL RESEARCH LIBRARY	4500
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	WATER POLLUTION ABSTRACTS, LONDON	
	1 COPIES	
00X17296		
	USAEC-UCCND	
446065-2	THERMONUCLEAR DIVISION	9201-2
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	MASS SPECTROMETRY BULLETIN	
	1 COPIES	
34X54524		
	USAEC-UCCND	
304765	CENTRAL RESEARCH LIBRARY	4500
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	MASS SPECTROMETRY BULLETIN	
	1 COPIES	
34X54526		
	USAEC-UCCND	
446065-18	CF BARNEIT	920102
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	MASS SPECTROMETRY BULLETIN	
	1 COPIES	
34X54526		
	USAEC-UCCND	
304765	Y-12 TECHNICAL LIBRARY	9711-1
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	MASS SPECTROMETRY BULLETIN	
	1 COPIES	
34X58979		
	USAEC-UCCND	
439065-6	AE CAMERON	973500
	P. O. BOX	
	OAK RIDGE, TENN. 37830	
	MASS SPECTROMETRY BULLETIN	
	1 COPIES	

Figure 6. Vendor Requisition Form.

2.1 Journal Check-in and Binding Program

The check-in and binding program handles approximately 1850 journals subscribed to by the Central Research Library. Eight frequency codes have been used to describe the arrival of these journals: monthly³, bimonthly⁴, and quarterly⁵. However, most of the journals have a "9000" frequency. This group includes monthly, bimonthly, and quarterly journals for which several issues arrive simultaneously or for which claiming for missing issues cannot be made at the end of the month of expected arrival (e.g., journals published in foreign countries). Journals for which the number of issues per year is predictable, but not four, six, or twelve, are also classed under "9000" frequency. The "0000" frequency is used for all journals for which the number of issues per arbitrary calendar year is not predictable.

The check-in and binding program creates and maintains a current status tape giving information concerning the latest volume and issue of every journal received by Central Research Library. A record on the tape for a particular journal is created by inputting a "start" card to the program. The "start" card, described in detail later, contains volume, issue, and journal year information about the most recently received issue of the journal. After a journal has been "started," its record on the

³ Frequency code "7777"

⁴ Frequency codes are: "5252" - arrival in January, March, May, July, September, November; "2525" - arrival in February, April, June, August, October, December

⁵ Frequency codes are: "4444" - arrival in January, April, July, October; "2222" - arrival in February, May, August, November; "1111" - arrival in March, June, September, December

status tape is updated by inputting a "check-in" card, seen in figures 7, 8, and 9, each time an issue of that journal is received.

The status tape is composed of fixed-length, 80 character, unblocked logical records, one record per journal title. The format of a record is as follows:

Position	Contents
1 - 8	title code
9	letter denoting library receiving the journal - "C" for Central Research
10	number of copies received
11 - 13	blank
14 - 15	counter of supplements received per volume
16 - 19	missing issue of a volume signal ⁶
20 - 22	biographical counter - counts "check-in" cards punched toward completing biographical volume
23 - 29	blank
30 - 31	binding counter - counts "check-in" cards input for issues that have arrived toward completing a bound volume
32 - 39	blank
40 - 42	journal year counter - counts "check-in" cards punched toward completing a journal year
43 - 49	blank
50	blank - if journal "0000" or "9000" frequency "*" - if any other frequency

⁶ Signal is set when the "check-in" card for the last issue of a volume is punched. When the "check-in" card for the first issue of the next volume is punched, signal is checked to see if last issue arrived.

51	blank
52 - 57	year, month, day of arrival for journals of "0000" or "9000" frequency - blank if any other frequency
58 - 62	blank
63 - 66	volume number of most recently received journal
67 - 70	issue number of most recently received journal
71 - 72	journal year of most recently received journal
73 - 74	month when the next issue of the journal is expected to arrive - the "check-in" card will be punched at the beginning of the month denoted by this field
75 - 79	blank
80	"s"

Input to the check-in and binding program consists of the latest journal title tape, latest status tape, and various types of input cards, described in detail below. Journals may be added to the status tape every month by means of "start" cards, and an erroneous record may be "restarted" by reinputting a corrected "start" card. However, "start" cards may be processed only when a control card input to the program signals that it is a "beginning of the month" run. Thus, the program is not limited by the actual calendar date. After a status record is created for a journal, at every "beginning of the month" run a "check-in" card is punched for that journal if it is expected to arrive within that month time period. Each time a "check-in" card is punched for a journal the biographical and journal year counters on the status tape are incremented. When a biographical

volume is completed (the biographical counter equals the biographical constant on the "51" part of the title tape), the volume number on the status tape is incremented. When the journal year completes (the journal year counter equals the journal constant on the "51" part of the title tape), the journal year on the status tape is incremented. The volume and issue numbers on the status tape match those numbers on the most recently punched "check-in" card. The "check-in" cards are used by the library in checking in journals received. At the end of a month time period any "check-in" cards remaining unused may be input to a claim letter program (section 2.3) to request the missing issues. "Check-in" cards for journals that arrived are input to the check-in and binding program. A "check-in" card may be input any time during the month, and it causes the binding counter for a journal that binds to be incremented. When a bound volume is completed (the binding counter on the status tape equals the binding constant on the "70" part of the title tape), bindery information, described in detail later, is output from the program.

A "9000" frequency journal is processed differently. A "check-in" card for the next issue is punched every time the "check-in" card for the issue just received is input to the program. (For the regular frequencies, a "check-in" card is punched only at "beginning of the month" run time and only if the journal is expected to arrive in that month time period, and is not affected by inputting a "check-in" card). The binding counter for a "9000" journal is incremented in the regular way, each time a "check-in" card is input, and bindery information is given when a volume to be bound completes.

When a "0000" frequency "check-in" card is punched, it is kept by the library until all issues of the volume have arrived. Each time a "check-in" card for a "0000" frequency is input to the program, the bindery information for the last volume and a "check-in" card for the next volume are issued.

A message is generated when processing for a new volume begins. Error messages for input cards out of sequence, for illegal cards, and for incomplete volumes are also displayed by the program.

A general flow chart of the check-in and binding program may be seen in the appendix in figure A-5. The program is submitted weekly and runs approximately three minutes. It has been in operation for six months.

All input to the check-in and binding program is preceded by a control card. The data following the control card is in title code order and within a title code, in journal issue order. Supplement cards precede "check-in" cards. "Start" cards are only run once a month and a special "beginning of the month" signal on the control card is used. Because "start" cards for journals that arrived in the preceding month are used to issue "check-in" cards for the next month, bimonthly and quarterly journals must be "started" the month in which they arrived.

The format of the control card is:

Position	Contents
1 - 6	date of run in the sequence year, month, day (e.g., 680531)
7	blank

8 - 9	month for which "check-in" cards are issued (e.g., 06 for June) ⁷ or blank for other runs
10 - 44	blank
45 - 46	label of status tape being made
47 - 48	label of status tape used as input tape
49 - 79	blank
80	"D"

Card input to the check-in and binding program consists of:

(1) "Start" cards which determine the status of each journal at the time automatic check-in is initiated; (2) "Check-in" cards issued by the computer; (3) Manually prepared cards for arrival variation of "9000" frequency journals; and (4) Manually prepared supplement and erase cards.

(1) The "start" card carries the counters of each journal at the time automatic check-in is initiated. (All back issues of a journal are assumed to have arrived at the time the current issue is initiated.) The "start" card format is:

Position	Contents	Remarks
1 - 8	title code	
9	"C"	"C" represents Central Research Library
10	number of copies expected	

⁷ This is the "beginning of the month" control card signal.

11 - 19	blank	
20 - 22	biographical volume counter	justified right - remainder of field filled with zeros
23 - 29	blank	
30 - 31	binding counter	justified right - remainder of field filled with leading zeros
32 - 39	blank	
40 - 42	journal ⁸ year counter ⁸	justified right - remainder of field filled with leading zeros
43 - 51	blank	
52 - 57	blank for all frequencies except "9000" and "0000" frequencies which use this field for arrival date.	In year, month, day sequence; example of arrival date is 680615 for 68-06-15 (the arrival date is the actual date that the journal arrived at our library)
58 - 62	blank	
63 - 66	volume number (if exists) otherwise blank ⁹	justified right - remainder of field filled with leading zeros

⁸ The year counter counts an arbitrary calendar year. A journal whose volume number changes in September, has six issues per volume, and is initiated into the program in March of the following year, would have punched on the "start" card "04" for both the issue and binding counters and "02" for the journal year counter.

⁹ When a journal is of "0000" frequency and has no volume number, the year on the journal cover at the time the journal is initiated into the program is used in this field (e.g., 1967).

A missing issue is handled by a three-step routine. The journal card for the missing issue is duplicated to column 77, creating a card with blanks in columns 79 and 80. When this card is input to the program only biographical and journal year counters are incremented. Then a card with "***" in columns 79-80¹¹ is made for the issue that arrived. (Both these cards are input and must be in issue order.) A card for the missing issue is duplicated with "\$\$" in columns 79-80. This card is refiled with the "check-in" cards for expected journals, and when input to the program, increments the binding counter, if the journal binds.

(4) Erase and supplement cards are used to modify the status tape.

a. An erase card has the format:

Column	Contents
1 - 8	title code
9 - 79	blank
80	"E"

b. A supplement card has the format:

Column	Contents
1 - 8	title code
9	blank
10	"S"
11 - 80	blank

¹¹ The cards produced later by the program which are duplicates of the manually prepared journal cards are discarded.

Output from the check-in and binding program consists of:

- (1) "check-in" cards - These cards are punched for issues expected to arrive in the next month time period, and then become input to the program after the journal is checked in by the library. Samples of "check-in" cards are shown in figures 7, 8, and 9.
- (2) updated status tape
- (3) title page, contents, and index cards - These cards are punched when the "check-in" card for the first issue of a new volume is punched. The cards contain the title code in columns 1-8, library code in column 9, card type in column 10, title, card type spelled out, journal year in columns 75-76, and volume number in columns 77-80. They are issued only for binding materials which arrive separately from the journal and are used to collect the binding materials at binding time. Samples are shown in figures 10, 11, and 12.
- (4) bindery output card - This card is punched when the binding counter completes for a bound volume, indicating the issues for a bound volume have all arrived. If there are missing issues in a bound volume, the card will be generated when the next volume begins, along with a "missing issue" message. The bindery card contains the title code in columns 1-8, the library code in column 9, blank in column 10, title, volume number in columns 64-67, and journal year in 74-75. A sample card is shown in figure 13. The card is used as a guide in collecting issues for binding.
- (5) bindery notice - This form is issued along with the bindery output card, and is sent to the binding company to give detailed directions on how the journal is to be bound. A sample notice is shown in figure 14.

2.2 Tape Preparation for Claiming

Since vendor codes and purchase order numbers for Central Research Library orders periodically change, a program was written to transfer this information from the order master tape (see section 1.4) to the "51" part of the title tape. The program takes the purchase order number from the library's order on the order master tape and places it in columns 61-68 of the "51" part of the title tape and takes the vendor code and places it in columns 74-79 of the "51" part. This information is then easily available for claiming purposes.

2.3 Claim Letter Program

"Check-in" cards are input to a program which writes claim letters to the vendors of missing journals. Also input to the program are the title and vendor tapes. The claim letter gives the purchase order number, title, issue number, and year of the missing issue, and the vendor's name and address. A sample of a claim letter may be seen in figure 15. The form is designed to be used with an open window envelope.

CLAIM NOTICE

PURCHASE ORDER NO. 34281641

AUDIO - ENGINEERING, MUSIC, SOUND, REPRODUCTION, SAN FRANCISCO

VOL. 52 NO. 4 1968

EBSCO SUBSCRIPTION SERVICES
 DIV. OF EBSCO INDUSTRIES INC.
 FIRST AVE N AT 13 ST
 BIRMINGHAM, ALA 35203

REMARKS-

* * * * *

VENDOR RESPONSE - PLEASE CHECK APPLICABLE STATEMENTS

OUT OF PRINT
 CLAIM SENT TO PUBLISHER
 NOT YET PUBLISHED
 NOT PUBLISHED AT ALL
 WILL SUPPLY LATER
 CAN NOT SUPPLY

REMARKS-

REFOLD AND RETURN TO -

ORNL LIBRARY
 ATTN - CLORA CAWSE
 BLDG. 4500, P.O. BOX X
 OAK RIDGE, TENN. 37830

Figure 15. Claim Letter.

2.4 Irregular Journal Arrival Check

Journals of "9000" or "0000" frequency arrive at unpredictable times. Status tape records of these journals have a field containing the actual date the latest journal arrived. The arrival check program checks the status tape and displays a message for any "0000" or "9000" journals for which no issue was received within the last six months.

3.1 Union Tape

The journal union tape contains titles, history, and holdings information for all journals in the Knoxville-Oak Ridge area for which holdings exist. A title may appear on either, or both, the journal title tape (see section 1.1) and the union tape. When a title is contained on both tapes it retains the same title code. The union tape consists of fixed-length, unblocked logical records, 3600 characters per record. The tape is arranged in format like the title tape (section 1.1), except that it contains 45 fixed-length pieces of 80 characters, each corresponding to a punched card in the input card set.

The first two fixed-length parts are like the title tape:

Position	Contents
1 - 8	title code
9 - 10	"11" first card "12" second card
11 - 79	full title - may fill one or both cards
80	"\$" - if last card of title blank - if title extends to next card

The next nine parts describe the history of the title:

Position	Contents
1 - 8	title code
9 - 10	"31" through "39"
11 - 79	history of title
80	blank

The next piece is a "51" part, but is different from the "51" section of a title tape record:

Position	Contents
1 - 8	title code
9 - 10	"51"
11 - 68	blank
69 - 73	Coden - identification code for a journal title, established by the American Society for Testing and Materials
74 - 80	blank

The remaining parts of the union tape are used to describe holdings information at various libraries and installations. All the parts have the title code in columns 1-8, a type in columns 9-10, and holdings information on the rest of the piece. The different locations for which holdings are described and the corresponding types are as follows:

Type	Location
"61", "62", "63"	Biology library
"64", "65", "66"	K-25 library
"67", "68", "69"	KAM library
"71", "72", "73"	ORNL library
"74", "75", "76", "77", "78", "79"	reserved for future use
"81", "82", "83"	Y-12 library
"84", "85", "86"	future use
"87", "88", "89"	ORAU
"91", "92", "93"	TVA
"94", "95", "96"	University of Tennessee

The 45 fixed-length pieces are arranged in the record in numerical order by the type field in columns 9-10. Not all 45 parts are required, so the record is written piece by piece, left justified, with the remaining portion of the record blank.

The union tape is maintained and updated with the union update program. Card sets, a set corresponding to a single union tape record, are first run in an edit program to check for punching errors and missing cards in a set. The cards always required in a card set are the "11", "12" (if needed to complete title), and "51" cards. Error free card sets are then added to the union tape in the union update run. In order to add a new record to the tape, or to correct a record already there by writing over it, the complete card set must be input in card type order (field in columns 9-10). A record may be deleted from the tape by inputting an erase card with the title code in columns 1-8, a "11" in columns 9-10, and an "E" in column 80.

3.2 Union List

The union list program generates a formal list of the union tape. The history of each journal, its Coden, cross references, a general history, and the holdings are all listed. A separate list is made for journals whose Coden is unknown. Figure 16 shows a sample of the union list.

J1642000		JHMB
JOHNS HOPKINS HOSPITAL. BALTIMORE. BULLETIN		
BIOL	1-	1889-
KAM	(28-105)	(1917-59)
ORAU	85-115	1948-64
UT	74-	1944-
JOURNAL OF COLLOID SCIENCE. SEE J4445000		
J4445000		JCOOA
JOURNAL OF COLLOID AND INTERFACE SCIENCE. NEW YORK		
V.1-20, 1946-65 AS JOURNAL OF COLLOID SCIENCE. 1, 1946-		
K-25	1-16	1946-61
ORNL	1-	1946-
Y-12	3,5-10(11)12-	1948,1952-55(1956)1957-
ORAU	1-	1946-
TVA	1-	1946-
UT	1-6,8-	1946-51,1953-
J4975000		JDEQA
JOURNAL OF DIFFERENTIAL EQUATIONS. NEW YORK		
ORNL	1-	1965-
UT	1-	1965-
J5556000		JEPHA
JOURNAL OF ENGINEERING PHYSICS (USSR)		
ENGLISH TRANSLATION FROM THE RUSSIAN JOURNAL, INZHERENO-FIZICHESKII ZHURNAL, WITH EXCEPTION OF A FEW ARTICLES FROM ENGLISH LANGUAGE SOURCES. 6, 1963-		
ORNL	6-	1963-
UT-E	5-7	1962-64
JOURNAL OF INSECT PATHOLOGY. SEE J6466000		
J6466000		JIVPA
JOURNAL OF INVERTEBRATE PATHOLOGY. NEW YORK		
V.1-6, 1959-64 AS JOURNAL OF INSECT PATHOLOGY. 1, 1959-		
BIOL	1-	1959-
UT-A	1-	1959-
J6494000		JLCAA
JOURNAL OF LABELLED COMPOUNDS. BRUSSELS		
BIOL	1-	1965-
ORNL	1-	1965-
ORAU	1-	1965-

Figure 16. Union List.

4. Conversion

Conversion of data to machine readable form was started in July, 1965, for all the journal programs. Data from library files was recorded on Fortran coding paper, or a modification of this form (figure 1), because none of the files were suitable for direct keypunching. Although data is still being collected for the binding and union tape files, all new periodical titles and title changes are incorporated into the system immediately. Title information was divided into title and union tapes to give a short title tape for weekly use and a much longer union tape for semiannual use.

The handling of journals will always be complex. However, the automation of the whole journal procedure has provided new and better library services to journal subscribers and accurate library records and statistics.

APPENDIX

APPENDIX
DATA FLOW CHARTS

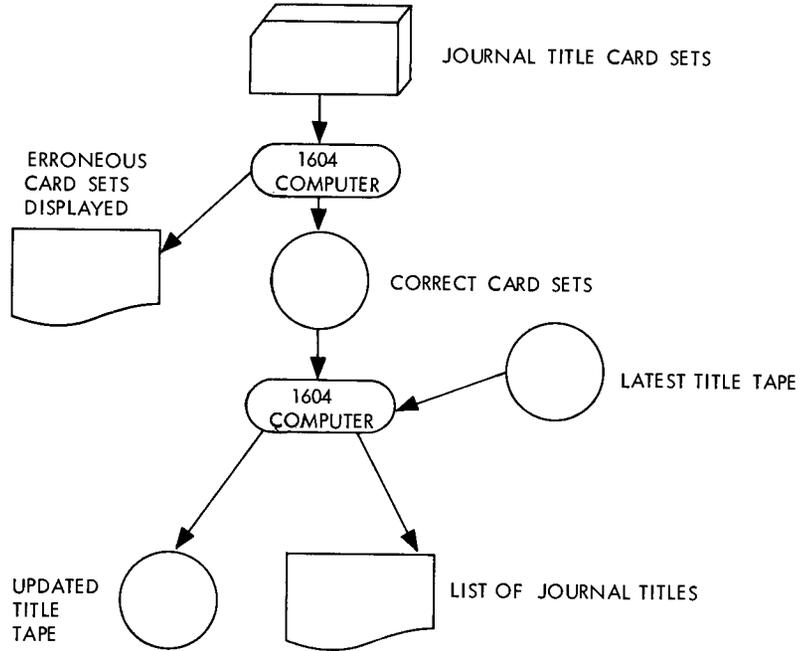


Figure A-1. Title Tape Edit and Update Programs.

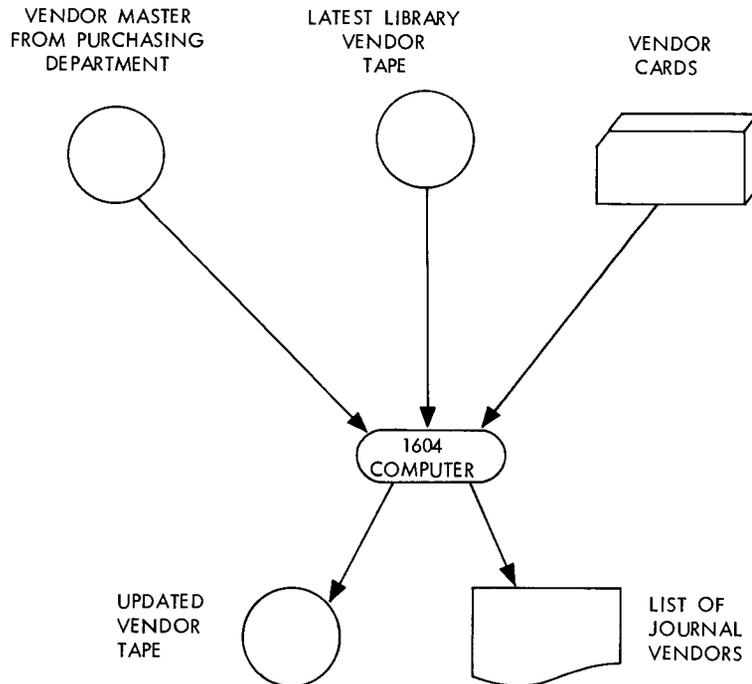


Figure A-2. Vendor Tape Update Program.

ORNL DWG. 68-7699

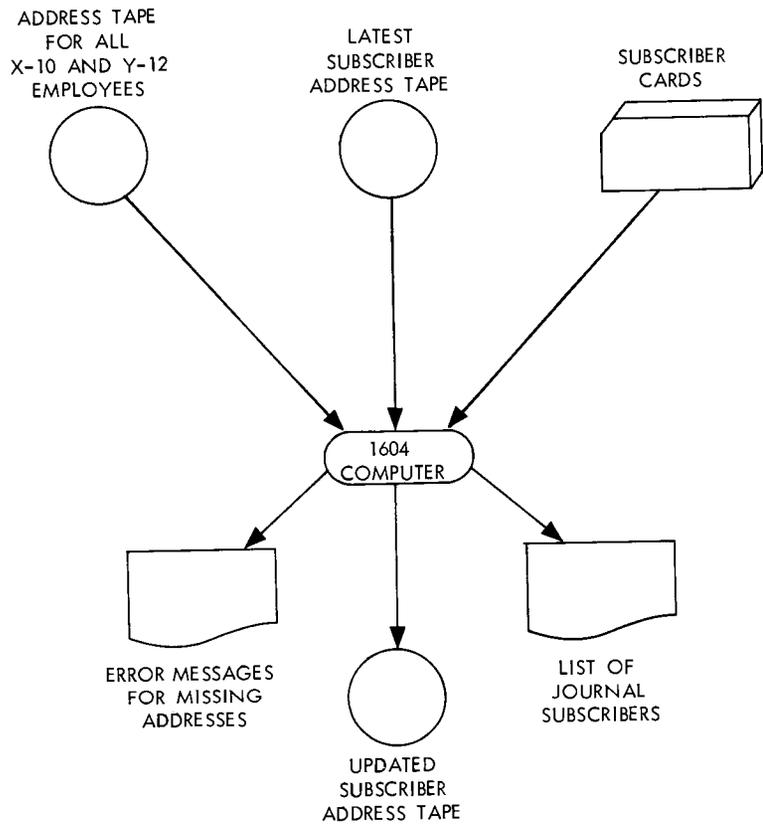


Figure A-3. Subscriber Tape Update Program.

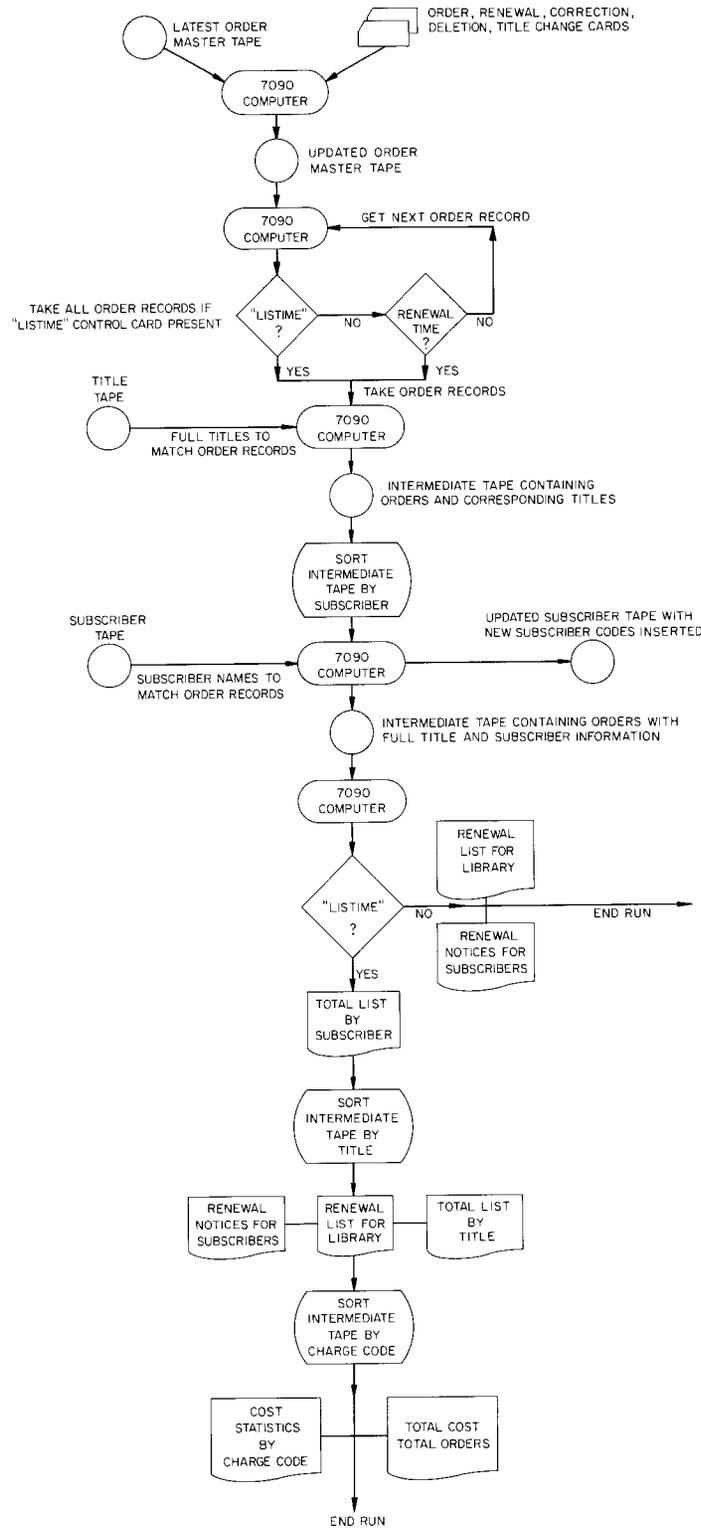


Figure A-4. Order Control and Statistics Programs.

ORNL DWG 68-7696

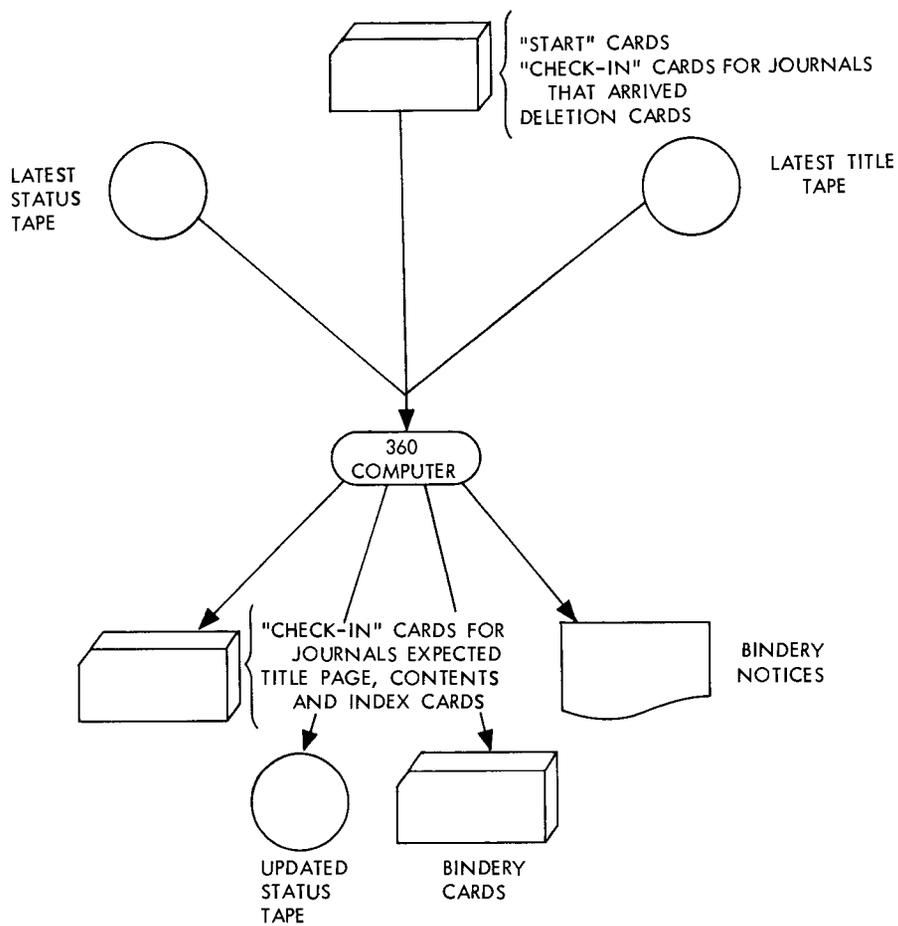


Figure A-5. Journal Check-In and Binding Program.

ORNL DWG. 68-7700

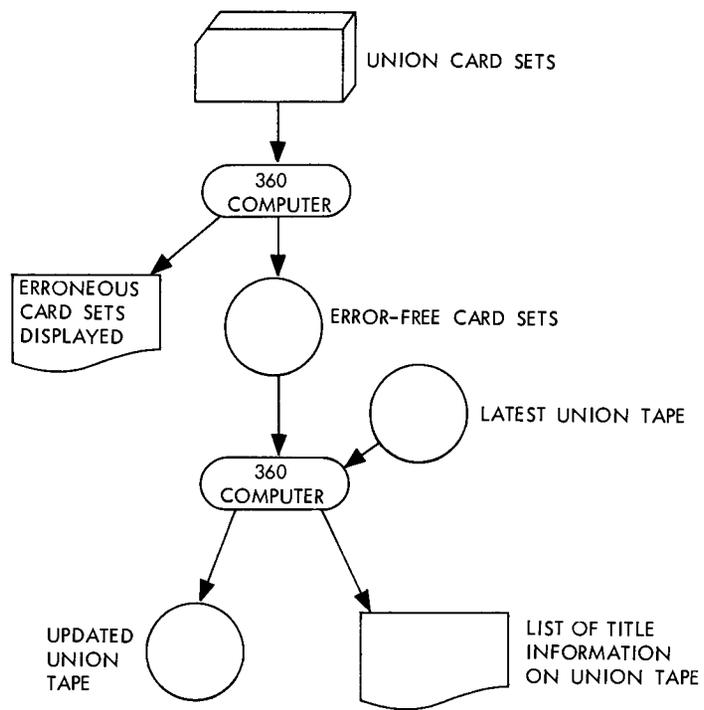


Figure A-6. Union Edit and Update Programs.



ORNL-4314
UC-32 - Mathematics and Computers

INTERNAL DISTRIBUTION

- | | |
|-------------------------------------|---------------------------|
| 1-3. Central Research Library | 61. H. W. Joy |
| 4-5. ORNL - Y-12 Technical Library | 62. M. A. Kastenbaum |
| Document Reference Section | 63. E. M. Kidd |
| 6-25. Laboratory Records Department | 64. F. Kertesz |
| 26. Laboratory Records, ORNL R.C. | 65-74. A. S. Klein |
| 27. R. K. Adams | 75. R. H. Lafferty, Jr. |
| 28. E. D. Arnold | 76. C. E. Larson |
| 29. D. E. Arnurius | 77. E. Leach |
| 30. P. S. Baker | 78. H. A. Levy |
| 31. C. R. Baldock | 79. T. A. Lincoln |
| 32. C. O. Beasley | 80. J. J. Lovvorn |
| 33. C. E. Bettis | 81. H. G. MacPherson |
| 34. N. A. Betz | 82. K. H. McCorkle |
| 35. Jack Bobb | 83. F. L. Miller |
| 36. V. R. Cain | 84. P. D. Miller, Jr. |
| 37. H. P. Carter | 85. Lois Morris |
| 38. Clora Cawrse | 86. C. W. Nestor, Jr. |
| 39. C. C. Congdon | 87. J. S. Olson |
| 40. A. M. Craig | 88-97. Shirley Opstrup |
| 41. A. H. Culkowski | 98. C. E. Parker |
| 42. H. L. Davis | 99. Margaret Passiakos |
| 43. M. H. Davis | 100. R. P. Rannie |
| 44. R. R. Dickison | 101. Jim Riikola |
| 45. R. A. Dory | 102. M. T. Robinson |
| 46. M. Feliciano | 103. C. R. Sherlin |
| 47. R. L. Ferguson | 104. Marjorie Shipe |
| 48. D. A. Gardiner | 105. M. J. Skinner |
| 49. C. D. Goodman | 106. W. S. Snyder |
| 50. N. B. Gove | 107. R. W. Stelzner |
| 51. D. A. Griffin | 108. Ruth Stemple |
| 52. W. L. Griffith | 109. J. G. Sullivan |
| 53. G. K. Haeuslein | 110. D. A. Sundberg |
| 54. A. S. Householder | 111. M. L. Tobias |
| 55. M. R. Hill | 112. D. R. Vondy |
| 56. Elizabeth Howard | 113. G. M. Watson |
| 57. N. C. Hull | 114. A. M. Weinberg |
| 58. P. C. Johnson | 115. C. S. Williams |
| 59. T. D. Jones | 116. J. H. Zeigler (K-25) |
| 60. W. H. Jordan | |

EXTERNAL DISTRIBUTION

117. J. H. Barrett, Mathematics Dept., University of Tennessee
 118. Documents Room, Computing Center, University of Notre Dame,
 Notre Dame, Indiana
 119. J. A. Swartout, Union Carbide Corporation, New York
 120. Laboratory and University Division, AEC, ORO
 121-372. Given distribution as shown in TID-4500 under Mathematics and
 Computers category (25 copies - CFSTI)